Komoditas : KAMBING

Title:Thermal balance of livestock 1. A parsimonious model
View Article: Agricultural and Forest Meteorology. 2000. 101 (1). 15-27
CD Volume:325
Print Article: Pages: 15-27
Author(s):Turnpenny J R McArthur A J Clark J A Wathes C M
Author Affiliation:Division of Environmental Science, School of Biological Sciences, University of Nottingham, Sutton Boninghon Campus, Loughborough, Leics, LE12 5RD, UK
Language:English
Abstract:A mathematical model based on the physics of heat transfer, predicted the thermal balance of a homeotherm, given standard meteorological data as input. While certain assumptions made the model tractable, it was based on established physical relationships and documented physiological processes. Its application to animals indoors and outdoors in the UK showed that greater sophistication is probably unwarranted
Descriptors:livestock. environment. heat-flow. heat-loss. heat-transfer. mathematical-models. heat-stress. thermal-analysis. meteorological-factors
Geographic Locator:UK
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. British-Isles. Western-Europe. Europe. Developed-Countries. Commonwealth-of-Nations. European-Union-Countries. OECD-Countries
Subject Codes:LL860. LL180
Supplementary Info:60 ref
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Journal Title:Agricultural and Forest Meteorology
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Title:Thermal balance of livestock. 2. Applications of a parsimonious model
View Article: Agricultural and Forest Meteorology. 2000. 101 (1). 29-52
CD Volume:325
Print Article: Pages: 29-52
Author(s):Turnpenny J R Wathes C M Clark J A McArthur A J
Author Affiliation:Division of Environmental Science, School of Biological Sciences, University of Nottingham, Sutton Bonington Campus, Loughborough, Leics, LE12 5RD, UK
Language:English
Abstract:A mathematical model developed from heat transfer principles to predict the thermal status of a homeotherm was applied to sheep and cattle outdoors and pigs and broiler chickens indoors. The climatological variables considered in the model included air temperature, wind speed, vapour pressure and solar radiation. For sheep, the fleece depth varied seasonally and thermal balance was achieved by a metabolic response, vasodilation and panting. For cattle, the thermal responses included sweating and piloerection of the coat. The insulation provided by the pig's sparse hair coat was neglected, but the increase in its body insulation with age and environmental conditions was included as a major determinant of heat loss. For chickens, the insulation provided by the body tissue and feathers was described by a single thermal resistance. Their thermal responses included feather fluffing, vasomotor action in the combs

and feet, and changes in respiration rate and body temperature. The models were tested successfully for each species by simulating the experimental conditions used by previous workers and comparing the predictions with measured values of heat loss, skin and body temperature. The interception of solar radiation by animals outdoors was also tested successfully for solar elevations up to 45 deg C. For sheep, the predicted heat loss agreed with measurements to within 10%. The onset of vasodilation for a shorn sheep on maintenance food intake was predicted successfully to occur at an air temperature of 25 deg C, and the variation of skin temperature on the legs with air temperature was predicted to within the uncertainty of the measurements. The model predicted the heat loss from cattle in the cold with acceptable accuracy when the wind speed was low, but overestimated heat loss from calves by up to 30% in wind. In warm conditions, the evaporative heat loss from cattle as a consequence of sweating was predicted with acceptable accuracy. The errors incurred by ignoring solar radiation penetration into the coat were acceptably small, given the associated reduction in model complexity. Sensitivity analysis showed that the predictions of heat loss from sheep and cattle were sensitive to wind speed and coat length, especially when the coat was short. For both species, the level of stress was sensitive to ambient vapour pressure at high air temperatures. For a single new-born pig, the model underestimated heat loss at 30 deg C with an overall error of -9% over the range of wind speeds likely to be experienced indoors. The model over-predicted heat loss by an average of 20% at 20 deg C, probably due to the absence in the model of a temperature-dependent huddling response. However, for a 25 kg pig exposed to air temperatures from -5 to 35 deg C, the model predicted the skin temperature on the trunk, a good indication of its thermal status, to within the limits of the experimental uncertainty. The total heat loss from chickens exposed to temperatures in the range 0-38 deg C was predicted with an overall error of 6%. In a separate test, the body core temperature of hens was predicted to within 0.3 deg C on average for the same range of air temperature, again within the limits of experimental uncertainty. Sensitivity analysis showed that the prediction of body temperature for chickens was most sensitive to ambient humidity at high air temperatures, and to body resistance. The paper discusses the limitations of the models and the need for more measurements of heat losses from current breeds of livestock
Descriptors:livestock. body-temperature. broilers. poultry. environment. feathers. feet. hair. heat-loss. heat-transfer. humidity. buildings. insulation. mathematical-models. models. penetration. radiation. respiration. skin-temperature. solar-radiation. heat-stress. sweating. heat-resistance. vapour-pressure. vasodilation. thermal-analysis. meteorological-factors
Organism Descriptors:cattle. fowls. pigs. sheep
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Gallus-gallus. Gallus. Phasianidae. Galliformes. birds. Sus-scrofa. Sus. Suidae. Suiformes. Ovis
Subject Codes:LL180. LL860
Supplementary Info:71 ref
ISSN:0168-1923
Year:2000
Journal Title:Agricultural and Forest Meteorology

Title:Grassland desertification by grazing and the resulting micrometeorological changes in Inner Mongolia

View Article: Agricultural and Forest Meteorology. 2000. 102 (2/3). 125-137
CD Volume:325
Print Article: Pages: 125-137
Author(s):Li ShengGong Harazono Y Oikawa T Zhao HaLin He ZongYing Chang XueLi
Author Variant:Li-S-G. Zhao-H-L. He-Z-Y. Chang-X-L
Author Affiliation:Institute of Biological Sciences, University of Tsukuba, Tsukuba 305-8572, Ibaraki, Japan
Language:English
Abstract:Overgrazing is one of the most primary causes of desertification in semi-arid zones of China. From 1992 to 1994 we conducted a grazing experiment in Naiman (lat. 42 deg 58'N, long. 120 deg 43'E, 345 m asl), Inner Mongolia, China to elucidate desertification mechanisms. The experimental field, which was covered with some short grasses, legumes and forbs, included four plots where grazing sheep numbers differed (0, 3, 6, or 9 individuals). Micrometeorological measurement data were analysed using the Bowen ratio energy balance method. Ground surface reflectivity (albedo) increased with grazing intensity. The overgrazed plot had been desertified after 3 year's grazing experiment. Albedo can be regarded as an important indicator of potential grassland desertification. When desertification occurs, then albedo will exceed a critical value. Partitioning of net radiation exhibited distinct patterns among the four plots as a result of the interplay between albedo and in situ vegetation. Ratios of the net radiation or net available radiation to solar radiation tended to decrease with increasing grazing intensity. But this pattern of changes was largely affected by soil moisture regime and vegetation status during the measurements. Grazing also remarkably affected wind regimes over the experimental plots through altering surface roughness. Especially, sustained overgrazing decreased surface roughness length so substantially that wind could act directly on sandy grassland surface to initiate desertification. A permissible grazing capacity of the studied temperate semi-arid grassland was also proposed for future grassland management
Descriptors:desertification. grazing. energy-balance. grasslands. semiarid-zones. soil-water. solar-radiation. semiarid-grasslands. albedo. overgrazing
Geographic Locator:China. Nei-Menggu
Organism Descriptors:Poaceae. grasses. sheep
Supplemental Descriptors:Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Poaceae. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. East-Asia. Asia. Developing-Countries. Northern-China. China
Subject Codes:PP350. PP500. PP600
Supplementary Info:37 ref
ISSN:0168-1923
Year:2000
Journal Title:Agricultural and Forest Meteorology

Title:Grazing alone is not enough to maintain landscape diversity in the Montseny Biosphere Reserve
View Article: Agriculture, Ecosystems & Environment. 2000. 77 (3). 267-273
CD Volume:325
Print Article: Pages: 267-273
Author(s):Bartolome J Franch J Plaixats J Seligman N G

Author Affiliation:Departament de Patologia i Produccion Animals, Facultat de Veterinaria, Edifici V. Universitat Autonoma de Barcelona, 08193 Bellaterra, Spain
Language:English
Abstract:Conservative land-use over the past few decades has converted the Montseny Biosphere Reserve (Spain) from the original open, patchy landscape to almost continuous woodland. The effects of current grazing practice on the main vegetation components of the Reserve were investigated. Three flocks, composed of sheep and goats, that graze year-long on three separate ranges in the Reserve were selected for study. The ranges represent the wooded slopes and the shrubby upland (altiplano) in the area. Biomass consumption by the flocks was estimated by calculation of normative requirements for observed production and the botanical composition of the livestock diets over a whole annual cycle was determined by micro-histological analysis of the faeces. Production of herbaceous vegetation was determined by clipping sample quadrats, while the production of the woody vegetation was derived from previous work in the Reserve. Grazing removed a very small proportion of the dominant Holm oak (Quercus ilex) on the slopes, and a moderate fraction of the shrubby and herbaceous vegetation on the altiplano. Only the heath tree (Erica arborea), an edible shrub in the woodlands, was relatively heavily grazed. It is concluded that grazing alone is not enough to maintain the open, diverse landscape with its many natural values. As in other northern Mediterranean countries, under-utilization of these woodlands is becoming a serious problem that is also increasing the fire hazard. Maintaining landscape diversity in the region is a complex challenge that land managers should recognize
Descriptors:nature-reserves. nature-conservation. biomass. botanical-composition. consumption. diets. grazing. livestock. woodlands. woody-plants. landscape-ecology
Geographic Locator:Mediterranean-Region. Spain
Organism Descriptors:Erica-arborea. goats. Quercus-ilex. sheep
Supplemental Descriptors:Erica. Ericaceae. Ericales. dicotyledons. angiosperms. Spermatophyta. plants. Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Quercus. Fagaceae. Fagales. Ovis. Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries
Subject Codes:LL500. PP720. PP300. KK150
Supplementary Info:27 ref
ISSN:0167-8809
Year:2000
Journal Title:Agriculture, Ecosystems & Environment

Title:Resistance to gastrointestinal parasites in Florida and Pelibuey sheep and their hybrids in the Mexican tropics
View Article: Agrociencia. 2000-. 34- (1-). 13-20
CD Volume:297
Print Article: Pages: 13-20
Author(s):Diaz Rivera P Torres Hernandez G Osorio Arce M M Perez Hernandez P Pulido Albores A R Becerril Perez C M Herrera Haro J G
Author Affiliation:IREGEP, Colegio de Postgraduados, 56230 Montecillo, Mexico
Other Title:Resistencia a parasitos gastrointestinales en ovinos Florida, Pelibuey y sus cruzas en el tropico mexicano
Language:English. Spanish
Abstract:The resistance of Florida sheep to gastrointestinal nematodes was evaluated in Veracruz, Mexico, in an experiment using 32 six- to 8-month-old lambs (15 ewes and 17 rams) comprising 6

Florida (F), 6 Pelibuey (P), 8 F x P and 6 P x F, and 6 lambs representing all these genotypes which served as controls. The lambs were naturally infected (phase 1) while grazing on Andropogon gayanus. The intensity of infection was measured by faecal egg counts (epg), haematocrit (Hb) levels and body weight from weeks 4 to 7 pi. The lambs were drenched in week 7 and then reinfected (phase 2) and the intensity of infection measured again from weeks 12 to 15. Control lambs were only infected once. The data were analysed using phase of infestation (P), lamb genotype (G) and lamb sex (S) as discrete variables, plus week of sampling as a time factor. The results indicated that P, S, the interaction P x S, week of sampling (WS) and the interaction WS x P affected (P<0.01) both epg and Hb. Ram lambs in phase 2 showed higher epg levels than ewe lambs (3631 versus 45). The means for Hb in phase 2 were higher in ewes than in rams (11.6 versus 9.0 g). Haemonchus contortus was the most important parasite, with 40 larvae/kg of green matter in phase 1 and 20 larvae/kg in phase 2. Body weight was affected by sex (P<0.01), the interaction sex x genotype (P<0.05), WS (P<0.01) and the interaction WS x P (P<0.05). There were genotype differences in body weight among ewes but not among rams. F x P ewe lambs were the heaviest group (26.3 kg) and the control group was the lightest (19.9 kg). Lambs lost body weight from phase 1 to phase 2. It was concluded that Florida sheep, both pure bred and crossbred with Pelibuey, were not resistant to gastrointestinal nematodes
Descriptors:disease-resistance. gastrointestinal-diseases. domestic-animals. breed-differences. lambs. helminth-ova. faeces. body-weight. haematocrit. tropics. genotypes. crossbreds. ewes. rams. nematode-larvae. parasites. helminths. sheep-breeds
Geographic Locator:Mexico
Organism Descriptors:sheep. Nematoda
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. invertebrates. North-America. America. Developing-Countries. Threshold-Countries. Latin-America. OECD-Countries
Subject Codes:LL822. HH600. LL120. LL145
Supplementary Info:27 ref
ISSN:1405-3195
Year:2000
Journal Title:Agrociencia

Title:Kikuyo (Pennisetum clandestinum Hochts.) grazed by growing lambs at different levels of herbage allowance
View Article: Agrociencia. 2000-. 34- (2-). 127-134
CD Volume:297
Print Article: Pages: 127-134
Author(s):Hernandez Mendo O Perez Perez J Martinez Hernandez P A Herrera Haro J G Mendoza Martinez G D Hernandez Garay A
Author Affiliation:IREGEP, Colegio de Postgraduados, 56230, Montecillo, Edo. de Mexico, Mexico
Language:English. Spanish
Abstract:Kikuyu (Pennisetum clandestinum) is widely used for grazing lambs in temperate regions of Mexico. The effects of three levels of herbage allowance (5, 8, and 11%) on forage production, in situ digestibility and liveweight gain of lambs grazing on Kikuyu swards were examined in Montecillo, Mexico. Twenty-seven criollo 6- to 8-month-old lambs (25 kg initial liveweight) were allocated in three treatments with three replications, 3 lambs per treatment. The period of evaluation lasted 84 days with two grazing periods during the rainy season (July to October, 1995). Kikuyu swards were rotationally grazed for 7-day periods every 42 days. There were no

differences (P<0.05) in forage offered, digestibility of offered and residual forage, and liveweight gain per animal across grazing treatments. Treatment effects (P<0.05) were found for dead material, herbage harvested, liveweight gain ha-1, and stocking rate. During the recovery stage of the first grazing period, dead material increased 49.7% with the highest herbage allowance. Also, disappearing forage in the second grazing period increased by 1.88 g m-2 d-1 for each increment in herbage allowance, whereas the forage digestibility rate increased 1.1 and 0.7% ha-1 in offered and residual forage, respectively. The total calculated liveweight gain ha-1 and stocking rate were 452.4 kg ha-1 and 61.7 lambs ha-1, respectively, during the evaluation period. Kikuyu grass at 5% herbage allowance showed better liveweight gain per animal and per ha than at 8 and 11%
Descriptors:grazing. stocking-rate. lambs. lamb-production. liveweight-gain. digestibility. grazing-systems. rotational-grazing. sheep-feeding. stocking-density. grassland-management
Geographic Locator:Mexico
Organism Descriptors:Pennisetum-clandestinum. sheep
Supplemental Descriptors:Pennisetum. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. North-America. America. Developing-Countries. Threshold-Countries. Latin-America. OECD-Countries
Subject Codes:PP350. LL120. LL500. RR300. LL520
Supplementary Info:21 ref
ISSN:1405-3195
Year:2000
Journal Title:Agrociencia

Title:The potential of some neotropical Albizia species and close relatives as fodder resources
View Article: Agroforestry Systems. 2000. 49 (1). 17-30
CD Volume:309
Print Article: Pages: 17-30
Author(s):Stewart J L Dunsdon A J
Author Affiliation:Oxford Forestry Institute, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, UK
Language:English
Abstract:Six neotropical woody (tree) mimosoid legume species in the genera Albizia, Hesperalbizia, Pseudosamanea and Samanea were evaluated for potential as animal fodder, using a combination of analytical techniques - in vitro digestibility, and assessment of relative palatability to sheep in a preference test in Honduras. Leaf chemical composition was evaluated in terms of content of crude protein, acid detergent fibre, neutral detergent fibre, condensed tannins (acid butanol assay) and total tannins (protein precipitation: radial diffusion assay). Crude protein and digestibility data were combined into an 'index' by which the species could be ranked. According to this criterion the most promising species were Pseudosamanea guachapele, Albizia adinocephala and Hesperalbizia occidentalis. In the preference test, however, Pseudosamanea guachapele and Albizia niopoides appeared much more palatable to sheep than any of the other species. A small amount of H. occidentalis was also eaten, but the other species were completely refused throughout the 16-day experiment. H. occidentalis was the fastest-growing species on this site. Using a combination of these evaluation criteria, H. occidentalis and P. guachapele appear to be the species with the greatest potential for fodder use

Descriptors:fodder. assessment. chemical-composition. crude-protein. evaluation. palatability. tannins. choice-of-species. fodder-legumes. digestibility. sheep-feeding. plant-composition. woody-plants. fibre-content. nutritive-value. species-trials
Geographic Locator:Honduras
Identifiers:Albizia niopoides. Pseudosamanea guachapele. Hesperalbizia. Pseudosamanea. Albizia adinocephala. Hesperalbizia occidentalis
Organism Descriptors:Albizia. Samanea. sheep. Fabaceae
Supplemental Descriptors:Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Central-America. America. Developing-Countries. CACM. Latin-America. Albizia
Subject Codes:KK600. KK110. LL300. RR300. FF040. FF007
Supplementary Info:22 ref
ISSN:0167-4366
Year:2000
Journal Title:Agroforestry Systems
Copyright:Copyright CAB International

Title:Functional role of angiotensin II type 1 and 2 receptors in regulation of uterine blood flow in nonpregnant sheep
View Article: American Journal of Physiology. 2000. 278 (2). H353-H359
CD Volume:311
Print Article: Pages: H353-H359
Author(s):Lambers D S Greenberg S G Clark K E
Author Affiliation:Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, University of Cincinnati College of Medicine, Cincinnati, Ohio 45267, USA
Language:English
Descriptors:angiotensin. uterus. receptors. blood-flow. antagonists. vasoconstriction. vasodilation
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:21 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
Copyright:Copyright CAB International

Title:Ovine male genital duct epithelial cells differentiate in vitro and express functional CFTR [cystic fibrosis transmembrane conductance regulator] and ENaC [epithelial sodium channel]
View Article: American Journal of Physiology. 2000. 278 (5). C885-C894
CD Volume:312
Print Article: Pages: C885-C894
Author(s):Bertog M Smith D J Bielfeld Ackermann A Bassett J Ferguson D J P Korbmacher C Harris A
Author Affiliation:Paediatric Molecular Genetics, Institute of Molecular Medicine, Oxford University, John Radcliffe Hospital, Oxford OX3 9DS, UK
Language:English
Descriptors:in-vitro. transmembrane-proteins. epithelium. ductus-deferens. epididymis. sodium. chloride. carbonate. messenger-RNA. cell-culture. ions. differentiation
Organism Descriptors:sheep

Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:46 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Regulation of types I and III NOS in ovine uterine arteries by daily and acute estrogen exposure
View Article: American Journal of Physiology. 2000. 278 (6). H2134-H2142
CD Volume:313
Print Article: Pages: H2134-H2142
Author(s):Salhab W A Shaul P W Cox B E Rosenfeld C R
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Language:English
Descriptors:arteries. blood-flow. endothelium. estradiol. ewes. guanosine-monophosphate. nitric-oxide. uterus. vasodilation
Identifiers:nitric oxide synthase
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:46 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Developmental changes in respiratory, febrile, and cardiovascular responses to PGE2 in newborn lambs
View Article: American Journal of Physiology. 2000. 278 (6). R1460-R1473
CD Volume:313
Print Article: Pages: R1460-R1473
Author(s):Tai T C Adamson S L
Author Affiliation:Department of Obstetrics and Gynecology, Institute of Medical Science, University of Toronto and the Samuel Lunenfeld Research Institute, Rm. 138P, Mount Sinai Hospital, 600 University Ave., Toronto, Ontario M5G 1X5, Canada
Language:English
Abstract:PGE2 has centrally mediated respiratory, febrile and cardiovascular effects that markedly differ between fetal and adult life. We hypothesized that the transition from fetal to adult responses to PGE2 occurs in the newborn period. Thus effects of an intracarotid infusion of PGE2 (3 micro g/min for 60 min) were determined in 12 unanaesthetized newborn lambs at 5, 10 and 15 days after birth. At 5 days, PGE2 reduced central CO2 sensitivity, reduced lung ventilation due to a decrease in breathing frequency, and induced hypercapnia. By 15 days, these effects of PGE2 had waned significantly. In contrast, phasic (expiratory) thyroarytenoid muscle electromyogram activity, number of short apneas and incidence of Biot periodic breathing were similarly increased at all 3 ages. PGE2 induced a sustained fever at 10 and 15 days. Heart rate and mean arterial blood pressure were unchanged in contrast to marked increases observed by others in adults. Results showed that the transition from fetal to adult respiratory and febrile responses to

PGE2 occurs in early postnatal life, whereas adult cardiovascular responses develop later in life in sheep
Descriptors:blood-pressure. carbon-dioxide. cardiovascular-system. fever. heart-rate. hypercapnia. lambs. lung-ventilation. lungs. muscles. newborn-animals. respiration. respiration-rate. prostaglandins
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL600
Supplementary Info:52 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Functional and molecular biological evidence of SGLT-1 in the ruminal epithelium of sheep
View Article: American Journal of Physiology. 2000. 279 (1). G20-G27
CD Volume:313
Print Article: Pages: G20-G27
Author(s):Aschenbach J R Wehning H Kurze M Schaberg E Nieper H Burckhardt G Gabel G
Author Affiliation:Veterinar-Physiologisches Institut, Universitat Leipzig, An den Tierkliniken 7, D-04103 Leipzig, Germany
Language:English
Abstract:Because of the effective catabolism of D-glucose to short-chain fatty acids by intraruminal microorganisms, the absorption of glucose from the rumen was thought to be of minor importance. However, clinical studies suggested that significant quantities of glucose are transported from the ruminal contents to the blood. This study therefore tested the ruminal epithelium of sheep for the presence of Na+-glucose cotransporter 1 (SGLT-1) on both the functional and mRNA levels. In the absence of an electrochemical gradient, 3-O-methylglucose (3-OMG) was net absorbed across isolated ruminal epithelia mounted in Ussing chambers. The net transport of 3-OMG followed Michaelis-Menten kinetics and was sensitive to phlorizin or decreasing Na+ concentrations. The mucosal addition of 10 mM -glucose induced an immediate, phlorizin-sensitive increase in short-circuit current (Isc). Isc could also be increased by serosal addition of glucose or mannose, but electrogenic uptake of glucose or 3-OMG added on the mucosal side was still detectable after serosal stimulation of Isc. RT-PCR using primers specific for the ovine intestinal SGLT-1 with subsequent TA cloning and sequencing revealed 100% identity between the cloned cDNA and mRNA fragment 187-621 of ovine intestinal SGLT-1. In conclusion, the ruminal epithelium has a high-affinity SGLT-1, which indicates that it maintains the capacity for glucose absorption
Descriptors:epithelium. absorption. catabolism. complementary-DNA. short-chain-fatty-acids. intestines. kinetics. microorganisms. messenger-RNA. rumen. uptake. rumen-epithelium. glucose
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:28 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Effect of maternal undernutrition in early gestation on ovine fetal blood pressure and cardiovascular reflexes
View Article: American Journal of Physiology. 2000. 279 (1). R340-R348
CD Volume:313
Print Article: Pages: R340-R348
Author(s):Hawkins P Steyn C Ozaki T Saito T Noakes D E Hanson M A
Author Affiliation:Department of Obstetrics and Gynaecology and Physiology, University College London, London WCIE 6HX, UK
Language:English
Abstract:Human epidemiological and animal experimental studies suggest that maternal undernutrition during pregnancy may alter cardiovascular development of the offspring. The extent to which these effects involve changes in fetal cardiovascular function and whether they are necessarily linked to reduced fetal growth is unknown. In sheep, we investigated the effect of a 15% reduction in maternal global nutrition for the first 70 days of gestation (term=147 days) on fetal blood pressure development, baroreflex control of fetal heart rate (FHR), and cardiovascular responses to acute hypoxaemia in late gestation. Basal mean arterial pressure ($P<0.05$), systolic blood pressure ($P<0.05$), diastolic blood pressure ($P<0.05$), and rate-pressure product ($P<0.001$) were significantly lower in fetuses of nutritionally restricted ewes (R) compared with controls (C). FHR was not altered. The operating point for the fetal baroreflex was significantly lower in R fetuses compared with C ($P<0.01$), but there was no difference between the groups in the cardiovascular response to hypoxaemia. We conclude that mild maternal undernutrition alters fetal cardiovascular development, producing low blood pressure and resetting of baroreflex control mechanisms. This effect occurs without any changes in fetal growth or blood gas status
Descriptors:blood-pressure. cardiovascular-system. fetus. pregnancy. reflexes. undernutrition. ewes. heart. heart-rate. fetal-development. responses. hypoxia
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:VV140. LL510
Supplementary Info:26 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology

Title:Renal Na excretion in dehydrated and rehydrated adrenalectomized sheep maintained with aldosterone
View Article: American Journal of Physiology. 2000. 279 (1). R17-R24
CD Volume:313
Print Article: Pages: R17-R24
Author(s):McKinley M J Evered M D Mathai M L
Author Affiliation:Howard Florey Institute of Experimental Physiology and Medicine, University of Melbourne, Parkville, Victoria 3052, Australia
Language:English
Abstract:The effect of water deprivation for 19 h on renal Na excretion of conscious adrenalectomized (ADX) sheep maintained on a constant intravenous infusion of aldosterone and cortisol (ADX-constant steroid sheep) was investigated. Both ADX and normal sheep showed large increases in renal Na excretion when they were deprived of water. ADX-constant steroid sheep also exhibited a normal postprandial natriuresis 3-6 h after feeding, whether or not water

was available to drink. In another experiment, sheep deprived of water for 41 h were then allowed to drink water. Both normal and ADX-constant steroid sheep exhibited a large reduction of renal Na excretion in the 6 h after rehydration. Changes in plasma Na and K concentration and osmolality were similar in normal and ADX-constant steroid sheep during periods of dehydration and rehydration. These results show that change in aldosterone secretion is not a major factor in causing either dehydration-induced or postprandial natriuresis. Neither is it a major cause of rehydration-induced renal Na retention
Descriptors:excretion. hydrocortisone. dehydration. kidneys. retention. water-deprivation. sodium. aldosterone. feeding. water-intake
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:VV140. LL510
Supplementary Info:30 ref
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Journal Title:American Journal of Physiology

Title:Effects of chronic reduction in uterine blood flow on fetal and placental growth in the sheep
View Article: American Journal of Physiology. 2000. 279 (1). R53-R59
CD Volume:313
Print Article: Pages: R53-R59
Author(s):Lang U Baker R S Khoury J Clark K E
Author Affiliation:Department of Obstetrics and Gynecology, Justus-Liebig-University, 35385 Giessen, Germany
Language:English
Abstract:Pregnancy is associated with a significant increase in uteroplacental blood flow (UBF), which is responsible for delivering adequate nutrients and oxygen for fetal and placental growth. The present study was designed to determine the effects of vascular insufficiency on fetal and placental growth. 39 late-term pregnant ewes were instrumented to investigate the effects of chronic UBF reduction. Animals were split into 3 groups based on uterine blood flow, and all animals were killed on gestational day 138. UBF, which began at 851 plus or minus 74 ml/min (n = 39), increased in controls (C) to 1409 plus or minus 98 ml/min (day 138 of gestation) and in the moderately restricted (RM) group to 986 plus or minus 69 ml/min. In the severely restricted (RS) group, UBF was only 779 plus or minus 79 ml/min on gestational day 138. This reduction in UBF significantly affected fetal body weight with RM fetuses weighing 3685 plus or minus 178 g and RS fetuses weighing 2920 plus or minus 164 g compared with C fetal weights of 4,18 plus or minus 208 g. Fetal brain weight was not affected, whereas ponderal index was significantly reduced in RM (2.94 plus or minus 0.09) and RS fetuses (2.49 plus or minus 0.08) compared with the value of the C fetuses (3.31 plus or minus 0.08). Placental weight was also significantly reduced in the RM group (302 plus or minus 24 g) whereas the RS group placenta weighed 274 plus or minus 61 g compared with the C values of 414 plus or minus 57 g. Fetal heart, liver, lung and thymus were all significantly smaller in the RS group. Thus the present study shows a clear relationship between the level of UBF and both fetal and placental size. The observation that fetal brain weight was not affected, whereas fetal body weight was significantly reduced suggests that this experimental preparation may provide a useful model in which to study asymmetric fetal growth restriction

Descriptors:blood-flow. fetus. placenta. brain. ewes. fetal-growth. pregnancy. uterus. body-weight
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:23 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
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Title:Calcium-activated potassium channels and nitric oxide coregulate estrogen-induced vasodilation [sheep]
View Article: American Journal of Physiology. 2000. 279 (1). H319-H328
CD Volume:313
Print Article: Pages: H319-H328
Author(s):Rosenfeld C R White R E Roy T Cox B E
Author Affiliation:Department of Pediatrics, UT Southwestern Medical Center at Dallas, 5323 Harry Hines Boulevard, Dallas, TX 75390, USA
Language:English
Descriptors:nitric-oxide. vasodilation. oestrogens. uterus. transmembrane-proteins
Identifiers:potassium channels
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL600. LL250
Supplementary Info:44 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
Copyright:Copyright CAB International

Title:Central neuropeptide Y stimulates ingestive behavior and increases urine output in the ovine fetus
View Article: American Journal of Physiology. 2000. 279 (3(1)). E494-E500
CD Volume:314
Print Article: Pages: E494-E500
Author(s):Roberts T J Caston Balderrama A Nijland M J Ross M G
Author Affiliation:Perinatal Research Laboratories, Department of Obstetrics and Gynecology, University of California Los Angeles (UCLA) School of Medicine, Harbor-UCLA Medical Center, 1124 West Carson St., RB-1, Torrance, California 90502, USA
Language:English
Descriptors:feeding-behaviour. urine. neuropeptides. fetus. renal-function. kidneys
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL300
Supplementary Info:33 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology
Copyright:Copyright CAB International

Title:Mechanisms of calcitonin gene-related peptide-induced increases of pulmonary blood flow in fetal sheep

View Article: American Journal of Physiology. 2000. 279 (4(2)). H1654-H1660
CD Volume:315
Print Article: Pages: H1654-H1660
Author(s):Takahashi Y Vroomen M de Roman C Heymann M A
Author Variant:de-Vroomen-M
Author Affiliation:Department of Pediatrics, Akita University School of Medicine, Akita 010, Japan
Language:English
Abstract:Fetal pulmonary blood flow is regulated by various vasoactive substances. One, calcitonin gene-related peptide (CGRP), increases pulmonary blood flow. We examined four key physiological mechanisms underlying this response using the blocker drugs CGRP receptor blocker (CGRP8-37), nitric oxide synthase inhibitor [N omega -nitro-L-arginine (L-NNA)], adenosine triphosphate-dependent potassium (KATP) channel blocker (glibenclamide), and cyclooxygenase inhibitor (indomethacin) in 17 near-term fetal sheep. Catheters were placed in the left (LPA) and main pulmonary arteries, and an ultrasonic flow transducer was placed around the LPA to measure flow continuously. CGRP was injected directly into the LPA (mean 1.02 micro g/kg) before and after blockade, and responses to CGRP were statistically compared. Before blockade, CGRP increased LPA blood flow from 23 plus or minus 25 to 145 plus or minus 77 ml/min (means plus or minus SD), and these increases were significantly attenuated by CGRP8-37 (n=6; 91% inhibition), L-NNA (n=6; 86% inhibition), and glibenclamide (n=6; 69% inhibition). No significant changes were found with indomethacin (n=6; 4% inhibition). Thus, in the fetal pulmonary circulation, CGRP increases pulmonary blood flow not only through its specific receptor but also, in part, through nitric oxide release and KATP channel activation
Descriptors:blood-flow. calcitonin. fetus. ligases. lungs. potassium. receptors. respiratory-system
Identifiers:cyclooxygenase. nitric oxide synthase
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL600
Supplementary Info:37 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology

Title:Effect of hyperinsulinemia on amino acid utilization in the ovine fetus
View Article: American Journal of Physiology. 2000. 279 (6(1)). E1294-E1304
CD Volume:317
Print Article: Pages: E1294-E1304
Author(s):Thureen P J Scheer B Anderson S M Tooze J A Young D A Hay W W Jr
Author Affiliation:Department of Pediatrics, Perinatal Research Center, Campus Box B-195, University of Colorado Health Sciences Center, 4200 East 9th Ave., Denver, CO 80262, USA
Language:English
Abstract:We studied the effect of an acute 4-h period of hyperinsulinaemia (H) on net utilization rates (AAURnet) of 21 amino acids (AA) in 17 studies performed in 13 late-gestation fetal sheep by use of a novel fetal hyperinsulinemic-euglycemic-euaminoacidemic clamp. During H [84 plus or minus 12 (SE) micro U/ml H, 15 plus or minus 2 micro U/ml control (C), P<0.00001], euglycemia was maintained

by glucose clamp (19 plus or minus 0.05 micro mol/ml H, 1.19 plus or minus 0.04 micro mol/ml C), and euaminoacidemia (mean 4.1 plus or minus 3.3% increase for all amino acid concentrations [AA], nonsignificantly different from zero) was maintained with a mixed amino acid solution adjusted to keep lysine concentration constant and other [AA] near C values. H produced a 63.7% increase in AAURnet (3.29 plus or minus 0.66 micro mol min-1 kg-1 H, 2.01 plus or minus 0.55 micro mol min-1 kg-1 C, P<0.001), accounting for a 60.1% increase in fetal nitrogen uptake rate (2,064 plus or minus 108 mg.day-1.kg-1 H, 1,289 plus or minus 73 mg day-1 kg-1 C, P<0.001). Mean AA clearance rate (AAURnet/[AA]) increased by 64.5 plus or minus 18.9% (P<0.001). Thus acute physiological H increases net amino acid and nitrogen utilization rates in the ovine fetus independent of plasma glucose and [AA]
Descriptors:amino-acid-metabolism. blood-plasma. blood-sugar. fetus. hyperinsulinaemia. lysine. nitrogen-metabolism
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:31 ref
ISSN:0002-9513
Year:2000
Journal Title:American Journal of Physiology

Title:Chemical composition, DM and NDF degradation kinetics in rumen of seven legume straws
View Article: Animal Feed Science and Technology. 2000. 83 (1). 75-80
CD Volume:332
Print Article: Pages: 75-80
Author(s):Bruno Soares A M Abreu J M F Guedes C V M Dias da Silva A A
Author Affiliation:Instituto Superior de Agronomia, Tapada da Ajuda, 1399 Lisbon Codex, Portugal
Language:English
Abstract:A study was conducted to estimate the chemical composition and degradation kinetics of 7 legume straws (Cicer arietinum, Vicia benghalensis, V. sativa, V. villosa, V. faba, Lens culinaris and Pisum sativum) in the rumen of 3 cannulated rams. Chemical composition of the legume straws varied from 4.3 to 10.1% for ash, 6.1 to 11.4% for CP, 58.0 to 76.5% for NDF, 40.3 to 59.6% for ADF and 8.2 to 14.2% for acid detergent lignin (ADL). Extent of degradation for DM and NDF by the nylon-bag technique varied between 45.4 and 63.2%, and 36.6 and 57.1%, respectively. The lowest DM degradability was seen in chickpeas and the lowest NDF degradability in horse beans. Highest values for NDF and DM were seen in peas. Significant differences between DM and NDF degradation kinetics were observed in most of the straws using the Gallant test. The differences were attributed to variation in cell wall contents. NDF potential degradability was negatively correlated with NDF, ADF, and ADL contents (r = -0.829, Pless than or equal to 0.05; r = -0.826, Pless than or equal to 0.05; and r = -0.917, Pless than or equal to 0.01; respectively). The use of the legume straws evaluated may have some advantages relative to some cereal straws, due to their higher DM degradability and degradation rate in the rumen
Descriptors:chemical-composition. rumen-digestion. legumes. straw. composition. kinetics. rumen. beans. chickpeas. faba-beans. peas. nutritive-value. lentils
Organism Descriptors:Cicer-arietinum. Vicia-sativa. Vicia-villosa. Vicia-faba. Lens-culinaris. Vicia-benghalensis. Cicer. Lens. Pisum-sativum. sheep

Supplemental Descriptors:Cicer. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Vicia. Lens. Pisum. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:RR300. LL500
Supplementary Info:12 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Changes in the alkaline-labile phenolic compounds of wheat straw cell walls as affected by SO2 treatment and passage through the gastro-intestine of sheep
View Article: Animal Feed Science and Technology. 2000. 83 (2). 115-126
CD Volume:332
Print Article: Pages: 115-126
Author(s):Yosef E Ben Ghedalia D
Author Affiliation:Metabolic Unit, Institute of Animal Science, ARO, The Volcani Center, Bet Dagan 50250, Israel
Language:English
Abstract:Sheep were fed on 2 rations based on untreated (WS) and SO2-treated (SO2-WS) wheat straw, and the effect of chemical treatment and passage through the gastro-intestine on the composition and degradation of ester and ether-linked cell wall (CW) phenolics was studied. SO2 treatment reduced the content of total ferulic acid (FA) and p-coumaric acid (PCA) by 35% while tripling the level of vanillin and increasing by 40% the concentration of protocatechuic acid. In WS most of the phenolic compounds were CW-bound, but 37% of the vanillic and 88% of the protocatechuic acids were in the alcohol-soluble (AS) fraction. The solubilizing effect of the treatment was expressed by releasing the phenolics from the CW mainly as AS-lignins. Most of the FA (62%) was ether-linked, whereas most of the PCA (78%) was ester-linked in the CW of WS. The other minor components were entirely or mostly, etherified units. SO2 treatment was more effective in cleaving the ester than the ether bonds of the cinnamic acids. Ester-linked FA was more extensively degraded in the rumen than ester-linked PCA. Ester-linked FA and PCA were more extensively degraded in the rumen than the respective ether-linked compounds. Nevertheless, substantial amounts of ether-linked FA, PCA and other phenolics were removed from CW in the rumen, most likely as oligolignols. Phenolic compounds were determined in rumen liquor of sheep fed on WS and WS-SO2 rations. FA was not detected and PCA was at a very low (20-40 micro M) concentration. Phenylpropanoic acid (PPA) was the major monomeric phenolic compound detected, at concentrations of 580 and 380 micro M in the rumen of WS and WS-SO2 sheep, respectively. It is suggested that hydrogenation of PCA and combined hydrogenation and demethoxylation of FA were responsible for the production of PPA in the rumen
Descriptors:phenolic-compounds. wheat-straw. processing. sulfur-dioxide. chemical-treatment. treatment. cell-walls. straw. rumen-digestion. composition. rumen. wheat
Organism Descriptors:sheep. Triticum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR100. LL510
Supplementary Info:41 ref
ISSN:0377-8401
Year:2000

Journal Title:Animal Feed Science and Technology
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Title:In vitro study of the rumen and hindgut fermentation of fibrous materials (meadow hay, beech sawdust, wheat straw) in sheep
View Article: Animal Feed Science and Technology. 2000. 83 (2). 127-138
CD Volume:332
Print Article: Pages: 127-138
Author(s):Varadyova Z Zelenak I Siroka P
Author Affiliation:Institute of Animal Physiology, Slovak Academy of Sciences, Kosice, Slovakia
Language:English
Abstract:The influence of rumen and hindgut inocula of sheep on fermentation of fibrous materials in vitro was investigated. Different fibrous materials (meadow hay, beech sawdust, wheat straw) and cellulose were used as substrates. The study was carried out to compare: (1) fermentation of substrates with rumen and hindgut inocula, (2) fermentation of meadow hay (reference substrate) and other substrates, (3) fermentation of the two types of cellulose (amorphous and crystalline), and (4) fermentation of treated fibrous materials (treated beech sawdust by defibration and impregnation and fungal treated wheat straw) and untreated fibrous materials. Hindgut fermentation of fibrous materials was associated with decreased DM and NDF degradabilities, and also methane and total gas production. The calculated hydrogen recoveries with hindgut inoculum showed a tendency to lower values compared with the rumen inoculum. Significant differences were found between meadow hay and other fibrous materials, between both celluloses and between treated and untreated fibrous materials. The positive correlation between hydrogen recoveries and methane production of untreated wheat straw with a hindgut inoculum suggested the presence of reductive acetogenesis with the hindgut inoculum. It is concluded that reductive acetogenesis with hindgut inoculum instead of methanogenesis may increase the energetic yield from volatile fatty acid per substrate, and to some extent also the energetic yield for the host animal
Descriptors:rumen-fermentation. fibre. sources. hay. sawdust. wheat-straw. fermentation. rumen. straw. cellulose. gas-production. in-vitro. methane. processing. treatment. methane-production. wheat
Organism Descriptors:sheep. Triticum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. RR000. RR100
Supplementary Info:32 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology
Copyright:Copyright CAB International

Title:Effect of a yeast culture (Saccharomyces cerevisiae) and monensin on ruminal fermentation and digestion in sheep
View Article: Animal Feed Science and Technology. 2000. 83 (2). 165-170
CD Volume:332
Print Article: Pages: 165-170
Author(s):Garcia C C G Mendoza M G D Gonzalez M S Cobos P M Ortega C M E Ramirez L R

Author Affiliation:Colegio de Postgraduados, Especialidad de Ganaderia, Montecillo, km 35.5 Carr., Mexico-Texcoco Estado de Mexico, 56230, Mexico
Language:English
Abstract:A metabolism trial was conducted to evaluate the effects of supplying a yeast culture containing S. cerevisiae (Levucell) and monensin to sheep, on rumen fermentation and digestibility of diets. Four rumen-cannulated Suffolk sheep, 30 kg body weight, were used in a Latin square design, where treatments were control (C), 1 g Levucell daily (L, 20 x 109 CFU/g), 25 mg monensin daily (M) and a combination of L and M. Additives were dosed directly into the rumen. The diet was based on lucerne hay (50%) and a concentrate containing sorghum grain (60%), molasses (24%), urea (2%) and soyabean meal (14%). Digestibility of DM and NDF, and DM intake were not affected by treatments. The ionophore alone or in combination, reduced (P<0.05) the molar proportion of acetate from 71.2 to 66.2, and increased propionate from 18.6 to 24.4 without any effect on butyrate. Rumen protozoa counts (organisms x 104) were greater (P<0.05) in the control group (69.4) than with feed additives (15.9-39.7). No effects were detected in rumen pH. Monensin and M+L increased propionate proportion, but no effects was observed with S. cerevisiae alone
Descriptors:rumen-digestion. rumen-fermentation. feed-additives. digestion. fermentation. monensin. ionophores. additives. digestibility. fibre. hay. molasses. rumen. soyabean-oilmeal. urea
Organism Descriptors:yeasts. Saccharomyces-cerevisiae. sheep. Sorghum
Supplemental Descriptors:Eumycota. fungi. Saccharomyces. Endomycetales. Ascomycotina. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR130. LL510
Supplementary Info:37 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Colonization and source of N substrates used by microorganisms digesting forages incubated in synthetic fibre bags in the rumen
View Article: Animal Feed Science and Technology. 2000. 83 (3/4). 261-272
CD Volume:332
Print Article: Pages: 261-272
Author(s):Dixon R M Chanchai S
Author Affiliation:School of Agriculture and Forestry, The University of Melbourne, Parkville, Vic 3052, Australia
Language:English
Abstract:Six mature Merino sheep (43-53 kg, 2-3 years old) were fed restricted amounts of either a medium quality roughage or a 1:1 mixture of the roughage and barley grain. Disappearance of DM of three roughages (barley straw, oat hay and lucerne hay) from synthetic fibre bags incubated in the rumen for 6 and 24 h was determined. Also, during intraruminal infusions of 15NH4Cl, synthetic fibre bags containing each of the three roughages were incubated in the rumen for 6 and 24 h. The origins and amounts of adherent microbial N associated with the bag residues after incubation and washing were estimated from the 15N enrichments of rumen ammonia, adherent microbial N and bag residue total N. The proportion of adherent microbial N derived from the rumen ammonia pool was not affected by diet, but was lower (P<0.05 or P<0.01) for microorganisms

adherent to lucerne hay bag residues (26 and 33% at 6 and 24 h, respectively) than microorganisms adherent to barley straw (47 and 77% at 6 and 24 h, respectively) or oat hay bag residues (44 and 80% at 6 and 24 h, respectively). The proportion of bag residue N consisting of microbial N was not affected by the diet, but was lower (P<0.01) in lucerne hay bag residues (54 and 69% at 6 and 24 h, respectively) than in barley straw or oat hay bag residues (75-76% at 6 h and 81% at 24 h). Microbial N remaining associated with bag residues ranged from 3.7 to 7.6 mg microbial N/g residual DM. Because of this microbial N associated with bag residues, rumen degradability of lucerne hay N was underestimated by 12 and 4% at 6 and 24 h, respectively. The underestimation of the rumen degradability of oat hay N was more than 26% units, and that of barley straw N was more than 75% units. In conclusion, this experiment indicated that the microorganisms digesting low N forages are much more dependent on rumen ammonia as a N substrate than those digesting high N forages, and that microbial N associated with the residues remaining in synthetic fibre bag residues following incubation and washing was substantial
Descriptors:sources. rumen-digestion. fibre. forage. microorganisms. rumen. ammonia. barley. barley-straw. hay. lucerne. lucerne-hay. oat-hay. quality. residues. roughage. straw
Organism Descriptors:sheep. Hordeum-vulgare. Medicago
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Hordeum. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Papilionoideae. Fabaceae. Fabales. dicotyledons
Subject Codes:LL510
Supplementary Info:47 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:The effect of animal species on in sacco degradation of dry matter and protein of feeds in the rumen
View Article: Animal Feed Science and Technology. 2000. 83 (3/4). 273-285
CD Volume:332
Print Article: Pages: 273-285
Author(s):Nandra K S Dobos R C Orchard B A Neutze S A Oddy V H Cullis B R Jones A W
Author Affiliation:Elizabeth Macarthur Agricultural Institute, PMB 8, Camden, NSW 2570, Australia
Language:English
Abstract:A study was undertaken on lucerne (LUC), ryegrass (RG), kikuyu (KIK), soyabean meal (SBM), wheat grain (WG) and meat and bone meal (MBM) to determine the effect of animal species (sheep vs. cattle) on in sacco degradation of DM and protein. The approach of cubic smoothing splines fitted as a linear mixed model was used for the analysis of degradability of DM and protein of feeds. The quickly degradable DM (QDDM), cumulative slowly degradable DM (CSDDM), total degradable DM (TDDM) and rate of degradation of slowly degradable DM of LUC, RG, KIK, SBM and WG in the rumen of sheep and cattle did not differ. The QDDM, CSDDM and TDDM of these forages and concentrates ranged from 22.9 to 57.6, 35.3 to 54.9 and 70.2 to 92.9 (g/100 g). Estimates of in sacco quickly degradable protein (QDP), cumulative slowly degradable protein (CSDP), total degradable protein (TDP), rate of degradation of slowly degradable protein of LUC, RG, KIK and SBM were similar for sheep and cattle. For the WG a vertical shift was found in the species cubic splines fitted to logit

transformed protein degradation data. This resulted in QDP of 52.0 and 43.8 g/100 g, CSDP of 41.6 and 48.0 g/100 g and TDP of 93.6 and 91.6 g/100 g for sheep and cattle, respectively. In sacco degradation of DM and protein of MBM was irregular for both sheep and cattle, consistent with extreme heterogeneity of the concentrate
Descriptors:species-differences. feeds. rumen-digestion. protein-sources. protein-digestion. dry-matter. rumen. concentrates. forage. lucerne. meat-and-bone-meal. protein-degradation. soyabeans. soyabean-oilmeal. wheat
Organism Descriptors:sheep. cattle. Medicago. Glycine-(Fabaceae). Triticum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Poaceae. Cyperales. monocotyledons
Subject Codes:LL240. LL510
Supplementary Info:18 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Energy metabolism with particular reference to methane production in Muzaffarnagari sheep fed rations varying in roughage to concentrate ratio
View Article: Animal Feed Science and Technology. 2000. 83 (3/4). 287-300
CD Volume:332
Print Article: Pages: 287-300
Author(s):Chandramoni Jadhao S B Tiwari C M Khan M Y
Author Affiliation:Energy Metabolism and Respiration Calorimetry Laboratory, Animal Nutrition Division, Indian Veterinary Research Institute, Izatnagar 243 122, India
Language:English
Abstract:Methane production in Muzaffarnagri sheep was studied using the open circuit respiration calorimetry technique. Twelve rams were assigned to 3 treatment groups of 4 each and fed at maintenance on diets containing 3 roughage (oat hay) to concentrate ratios (R:C), 92:8 (group I), 50:50 (group II) and 30:70 (group III). Concentrate mixture was formulated to contain 93% crushed maize grain, 3.5% wheat bran and 3.5% groundnut cake fortified with minerals. While the digestibility of DM, organic matter and energy was similar that of nitrogen was higher (P<0.05) in groups II and III; digestibility of NDF was lower (P<0.05) in group III. Nitrogen retention was improved but not beyond 50R:50C. As a percentage of gross energy intake, urinary energy losses in groups I, II and III were 3.0, 2.9 and 2.8%, and methane energy losses 3.39, 3.34 and 2.98%, respectively. Though gross energy intakes (kcal/kg0.75) were similar, methane loss (g) per 100 g digestible organic matter was higher (P<0.05) in group I (2.2) than in groups II (1.84) and III (1.54). ME value (Mcal/kg DM) and energy balances (kcal/kg0.75) for rations in groups II and III were similar but those for group I were lower (P<0.05) than in the other groups. Efficiency of utilization of ME for maintenance (km) of diets in groups I, II and III calculated as per ARC (1980) were 0.674, 0.688 and 0.693, respectively, and did not differ significantly. Based on the evaluation of 3 R:C ratios, it was inferred that an R:C ratio of 50:50 in the diet of Muzaffarnagri sheep is optimum for economical and sustainable sheep production through reduced methane emissions
Descriptors:metabolizable-energy. energy-metabolism. concentrates. methane. methane-production. roughage. diet. diets. digestibility.

dry-matter. energy-intake. evaluation. fibre. groundnut-oilmeal. hay. losses. maize. minerals. nitrogen-retention. oat-hay. rams. respiration. retention. wheat. wheat-bran
Organism Descriptors:sheep. Zea-mays. Triticum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. LL500
Supplementary Info:53 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Rumen degradation in sacco in sheep of wheat straw treated with calcium oxide, sodium hydroxide and sodium hydroxide plus hydrogen peroxide
View Article: Animal Feed Science and Technology. 2000. 83 (3/4). 313-323
CD Volume:332
Print Article: Pages: 313-323
Author(s):Chaudhry A S
Author Affiliation:Department of Agriculture, University of Newcastle, Newcastle-upon-Tyne NE1 7RU, UK
Language:English
Abstract:A split-unit study involving two sheep, seven incubation times and four test straws was conducted to compare the effect of CaO (160 g CaO plus 21 of water), NaOH (80 g NaOH in 31 of water) and alkaline hydrogen peroxide (NaOH plus 132 g H2O2 in 31 of water, AHP) treatments on composition and rumen degradation in sacco of wheat straw in sheep. After 14 days of storage, each straw was mixed with molasses, dried, ground, weighed into nylon bags and incubated ruminally for various periods in sheep fed daily on 1 kg dried grass cubes. After removal, the residues within bags were washed together with unincubated samples (0 h) of straws, dried and analysed for DM, organic matter (OM) and NDF to estimate nutrient disappearance from straws. The data on nutrient disappearance were fitted exponentially to estimate quick (a), slow (b) and predicted (P0.025) degradable fractions and degradation rate (c) for b. NDF and hemicellulose were reduced in treated compared with untreated straw (P<0.001). Disappearance of nutrients from treated straws was greater than that from untreated straw at almost all incubations (P<0.001). a, b, c and P0.025 estimates were increased by all treatments (P<0.001). AHP treatment increased straw degradation more than NaOH and CaO treatments. Although CaO did not improve rumen degradation as well as NaOH did, its ability to increase straw digestion even moderately may be satisfactory because it is readily available, cheap and less dangerous for manipulation and the environment
Descriptors:rumen-digestion. processing. chemical-treatment. calcium-oxide. sodium-hydroxide. alkali-treatment. degradation. wheat-straw. calcium. hydrogen-peroxide. straw. wheat. composition. digestion. hay. dry-matter. fibre. molasses. nutrients. residues. rumen. storage
Organism Descriptors:sheep. Triticum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR100. LL500
Supplementary Info:20 ref
ISSN:0377-8401
Year:2000

Journal Title:Animal Feed Science and Technology

Title:A comparison of filter bag methods with conventional tube methods of determining the in vitro digestibility of forages
View Article: Animal Feed Science and Technology. 2000. 84 (1/2). 33-47
CD Volume:332
Print Article: Pages: 33-47
Author(s):Wilman D Adesogan A
Author Affiliation:Welsh Institute of Rural Studies, University of Wales, Llanbadarn Campus, Aberystwyth, SY23 3AL, UK
Language:English
Abstract:In vitro digestibility of forages is commonly estimated by 2-stage methods in which the various samples are kept completely separate from one another, using tubes. A possible alternative approach, which may save labour, is to use larger vessels, within which up to as many as 25 samples are incubated, each contained in its own filter bag. The 2 approaches were compared for estimating apparent dry matter (DM) digestibility, apparent digestible organic matter in DM, true DM digestibility, true digestible organic matter in DM and digestibility of neutral detergent fibre. The forage samples analysed comprised all 72 combinations of 2 forage species (Lolium multiflorum and Medicago sativa), 3 plant parts (whole crop, leaf and stem), 3 degrees of particle breakdown (0.5, 1.0 and 1.5 mm sieve size when milling) and 4 field replicates. Rumen fluid from sheep was used for 2 field replicates and rumen fluid from cattle for the other two. There was no discernible effect on digestibility of the sieve size used when milling, e.g. true digestible organic matter in dry matter using filter bags was 674, 677 and 663 g kg-1, respectively, (SE 6.4) with the 0.5, 1.0 and 1.5 mm sieves. There were smaller differences between the 2 forage species (in respect of whole crop, stem and leaf) with the filter bag than with the tube method. The standard errors and coefficients of variation were higher with the filter bag than with the tube method; of 16 coefficients of variation calculated for each method, the mean with filter bags was 4.0% and the mean with tubes was 2.7%. Linear regression indicated that true digestibility using tubes could be predicted more precisely than apparent digestibility using tubes from the results using filter bags. The difference between apparent and true digestibility, when estimated using filter bags, appeared unrealistically low. The estimates of forage digestibility when using rumen fluid from sheep were very similar to those when using rumen fluid from cattle. It is concluded that the traditional methods, using tubes, are likely to give more precise results than using filter bags, although at the cost of requiring more labour
Descriptors:forage. methodology. in-vitro-digestibility. rumen-fluid. plant-parts. techniques. digestion. fibre. organic-matter. particle-size. analytical-methods. lucerne
Organism Descriptors:Lolium-multiflorum. Medicago-sativa. cattle. sheep
Supplemental Descriptors:Lolium. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Medicago. Papilionoideae. Fabaceae. Fabales. dicotyledons. Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis
Subject Codes:ZZ900. RR300
Supplementary Info:16 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effects of energy and protein supplementation on microbial-N synthesis and allantoin excretion in sheep fed guinea grass
View Article: Animal Feed Science and Technology. 2000. 84 (3/4). 167-181
CD Volume:332
Print Article: Pages: 167-181
Author(s):Jetana T Abdullah N Halim R A Jalaludin S Ho Y W
Author Affiliation:Institute of Bioscience, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia
Language:English
Abstract:An experiment was conducted to determine the effects of two types of protein, soyabean meal (SBM) and fish meal (FM); and two types of energy supplements, maize flour (CF) and paper pulp (PP) on in vivo digestibility of organic matter (OM), rumen fermentation pattern and dilution rate, rumen microbial-N synthesis and flow of organic matter and nitrogenous compounds through the duodenum in four Merino rams, average weight 54.4 plus or minus 4.5 kg. The relationships between duodenal purine flow and urinary allantoin and duodenal protein/energy (MJ rumen volatile fatty acids per day) ratio were also investigated. The experiment was conducted in a 4 x 4 Latin square design with a 2 x 2 factorial arrangement of dietary treatments. The animals with rumen and duodenal cannulae were housed in individual crates and fed chopped fresh guinea grass ad libitum twice daily, 100 g molasses and one of the four dietary supplements: (i) 170 g FM + 268 g PP (FM + PP); (ii) 170 g FM + 268 g CF (FM + CF); (iii) 200 g SBM + 200 g PP (SBM + PP); and (iv) 200 g SBM + 200 g CF (SBM + CF). Each supplement, at varying rates of rumen degradability, was formulated to provide similar amount of N and gross energy. The results showed that rumen pH values were similar, ranging from pH 5.8 to 6.0, for all animals fed the different dietary supplements. Rumen ammonia concentration was higher (P<0.05) in animals fed SBM (N 170.2-190.7 mg/litre) than in animals fed FM supplement (N 166.8-170.2 mg/litre). Rumen VFA concentrations were similar (94-103 mM) but molar proportions of acetate and propionate were, respectively, lower and higher in treatment SBM + CF, leading to a significantly decreased acetate:propionate ratio in this treatment (3.6) compared with SBM + PP (4.3). There were no significant differences between treatments in rumen fluid dilution rate and rumen volume. Duodenal OM flow was similar in PP supplemented diets, but differed (P<0.05) between protein supplements in the CF diets. Organic matter digestibility in the rumen was higher (P<0.05) in the CF + FM diet. Moreover, animals fed SBM supplement showed higher total tract OM digestibility than animals fed FM supplement. The flow of nitrogenous compounds to the duodenum, total-N, non-ammonia-N and rumen-undegradable-N were not significantly affected by either protein or energy supplements. Microbial-N flow tended (P<0.08) to be higher in sheep fed CF supplement (average of 10.2 g per day) than in those fed PP supplement (average of 8.1 g per day). Urinary allantoin excretion was low (0.30-0.42 mmol per day/kg0.75). A positive linear correlation (r = 0.73, P<0.005) between urinary allantoin (micro mol per day/kg0.75) and duodenal purines (micro mol per day/kg0.75) was observed. The efficiency of rumen microbial-N synthesis based on OM truly digested in the rumen was higher (P<0.02) in sheep fed CF supplement (N 15.2-16.6 g/kg OMTDR) than in those fed PP supplement (N 12.2-12.8 g/kg OMTDR). Differences in microbial protein:energy ratio or total duodenal protein:energy ratio among dietary treatments were not significant
Descriptors:energy. supplements. protein-supplements. digestibility. protein-sources. sources. protein. allantoin. excretion.

supplementary-feeding. synthesis. ammonia. corn-flour. diets. duodenum. energy-sources. fermentation. fish-meal. flours. molasses. nitrogenous-compounds. purines. rams. rumen. rumen-fermentation. rumen-fluid. soyabeans. soyabean-oilmeal. effects. maize
Organism Descriptors:sheep. Zea-mays. Glycine-(Fabaceae)
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Papilionoideae. Fabaceae. Fabales. dicotyledons
Subject Codes:LL500. LL510
Supplementary Info:34 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effect of sodium hydroxide and alkaline hydrogen peroxide treatment on physical and chemical characteristics and IVOMD of mustard straw
View Article: Animal Feed Science and Technology. 2000. 84 (3/4). 257-264
CD Volume:332
Print Article: Pages: 257-264
Author(s):Mishra A S Chaturvedi O H Ananta Khali Prasad R Santra A Misra A K Parthasarathy S Jakhmola R C
Author Variant:Khali-A
Author Affiliation:Animal Nutrition Division, Central Sheep and Wool Research Institute, Avikanagar 304 501, India
Language:English
Abstract:Mustard (Brassica campestris) straw (MS) was soaked for 6 h in solutions containing 0 (S0), 1 (S1) or 2% (S2) sodium hydroxide (NaOH) and 0 (H0) or 1.5% (H1) hydrogen peroxide (H2O2) following a 3 x 2 factorial design. The pH of the untreated MS (near neutral) was increased to more than 10 after treatment with NaOH (S1H0 and S2H0) or alkaline hydrogen peroxide (AHP; S1H1 and S2H1). The treatment effect on tenacity was not significant. NDF and ADF contents of MS increased (P<0.01) in treatment S0H1, and decreased (P<0.01) in treatments S2H0 and S2H1. However, the change in NDF and ADF was not significant in S0H0, S1H0 and S1H1 treatments. NDF and ADF contents decreased linearly (P<0.01) with increasing level of NaOH in the soaking medium. The effect of various treatments on cellulose content was almost similar to that of NDF and ADF. The acid detergent lignin content of MS increased (P<0.01) in the case of S1H0, S0H1 and S1H1 but the differences were not significant among UMS, S0H0, S2H0 and S2H1. The in vitro organic matter digestibility (IVOMD) content of untreated MS was 162 g/kg DM and it increased (P<0.01) when straw was soaked in S1H0, S2H0, S1H1 and S2H1, whereas it reduced slightly due to water (S0H0) or H2O2 (S0H1) treatment. Increasing NaOH improved IVOMD (P<0.01). It is concluded that the cell wall constituents and IVOMD of MS were modified by NaOH with or without H2O2 in a way that IVOMD of treated MS was 82-112% units higher than untreated MS
Descriptors:in-vitro-digestibility. processing. chemical-treatment. treatment. straw. hydrogen-peroxide. sodium-hydroxide. cell-walls. cellulose. digestibility. alkali-treatment. mustard. in-vitro. lignin
Geographic Locator:India
Organism Descriptors:Brassica-campestris
Supplemental Descriptors:Brassica. Brassicaceae. Capparidales. dicotyledons. angiosperms. Spermatophyta. plants. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations

Subject Codes:RR100. RR300
Supplementary Info:30 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effect of selective consumption on voluntary intake and digestibility of sorghum (Sorghum bicolor L. Moench) stover, cowpea (Vigna unguiculata L. Walp.) and groundnut (Arachis hypogaea L.) haulms by sheep
View Article: Animal Feed Science and Technology. 2000. 84 (3/4). 265-277
CD Volume:332
Print Article: Pages: 265-277
Author(s):Savadogo M Zemmelink G Nianogo A J
Author Affiliation:Antenne Sahelienne, BP 5385 Ouagadougou, Burkina Faso
Language:English
Abstract:Three experiments with 12 Djallonke rams each (20-22 kg), were conducted to measure the effect of selective consumption on intake of organic matter (IOM), CP content and digestibility of ingested organic matter (DOM), and intake of digestible organic matter (IDOM) of sorghum (Sorghum bicolor), stover (SS), cowpea (Vigna unguiculata) (CH) haulms and groundnut (Arachis hypogaea) haulms (GH) by sheep. On an organic matter (OM) basis, SS contained 70.6% stems, 15.5% leaf sheaths, 6.5% leaf blades, 6.0% leaf central nerves and 1.4% ears; CH contained 64.2% stems and 35.8% leaves, and GH 50.1% stems and 49.9% leaves. Forages were not chopped and a wide range of feeding levels (amount of offered organic matter, OOM) was applied. The lowest and highest OOM (g/kg0.75 per day) were: 30-110 for SS, 37-189 for CH and 30-194 for GH. Maximum IOM values (estimated by non-linear regression analysis) were 47.3, 85.9 and 81.6 g/kg0.75 per day for SS, CH and GH, respectively. Selective consumption of leaves caused significant increases in the CP content of ingested OM for CH and GH, and increased DOM for SS and CH. The amount of digestible OM for production (IDOM - maintenance requirements) per unit of feed OM offered (value for animal production (VAP)) was used as the criterion for optimum feeding levels. For CH and GH, the maximum value (VAPmax) (0.32 and 0.26, respectively) was reached at feeding levels of 96 and 91 g OM kg0.75 per day, respectively. At these levels of OOM, 80 and 84% of the offered OM was eaten. Corresponding IDOM values were 54.3 and 48.0 g/kg0.75 per day. In the case of SS, a very high feeding level (OOM = 87 g/kg0.75 per day) where only 53% was eaten, was required to reach the maintenance level of IDOM
Descriptors:feeds. feed-intake. feeding-preferences. composition. digestibility. stover. animal-production. crude-protein. feeding. nutrition-programmes. forage. intake. leaves. crop-residues. groundnuts. cowpeas
Organism Descriptors:Arachis. Arachis-hypogaea. sheep. Sorghum. Sorghum-bicolor. Vigna. Vigna-unguiculata
Supplemental Descriptors:Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Arachis. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. Sorghum. Vigna
Subject Codes:LL500. LL510. RR300. LL300
Supplementary Info:31 ref
ISSN:0377-8401
Year:2000

Journal Title:Animal Feed Science and Technology

Title:Microbial protein supply from the rumen
View Article: Animal Feed Science and Technology. 2000. 85 (1/2). 1-21
CD Volume:332
Print Article: Pages: 1-21
Author(s):Dewhurst R J Davies D R Merry R J
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Language:English
Abstract:This review considers the theory, assessment and prediction of microbial protein synthesis in the rumen. The difficulties of techniques for assessing microbial protein synthesis, as well as the complexity of the rumen ecosystem, have limited progress. Inconsistencies in the literature undermine the value of incorporating advanced rumen models into rationing schemes and limit the exploitation of microbial protein as an important protein resource for ruminants. The paper gives examples of situations in which particular factors have significant effects on microbial protein synthesis, but moves on to discuss the development of new less-invasive approaches for estimating microbial protein synthesis. The latter approaches have the attraction of offering in-built technology transfer through the development of diagnostic tests, based on samples of milk or urine. Some of these techniques offer a description of rumen function that is less rigorously quantitative (in terms of microbial protein synthesis), but more usefully qualitative (in terms of microbial populations, substrates and interactions)
Descriptors:amino-acids. concentrates. diagnosis. interactions. microbial-proteins. milk. models. protein-synthesis. qualitative-analysis. quantitative-analysis. rumen. synthesis. techniques. urine. reviews. rumen-microorganisms
Organism Descriptors:ruminants. sheep. cattle
Supplemental Descriptors:Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. ruminants. Bos
Subject Codes:LL110. LL510. ZZ394. ZZ900
Supplementary Info:159 ref
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Year:2000
Journal Title:Animal Feed Science and Technology
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Title:Comparative evaluation of the effects of coconut oil, oilseeds and crystalline fat on methane release, digestion and energy balance in lambs
View Article: Animal Feed Science and Technology. 2000. 85 (1/2). 41-60
CD Volume:332
Print Article: Pages: 41-60
Author(s):Machmuller A Ossowski D A Kreuzer M
Author Affiliation:Institute of Animal Sciences, Animal Nutrition, Swiss Federal Institute of Technology (ETH), ETH Zentrum/LFW, CH-8092 Zurich, Switzerland
Language:English
Abstract:The effects of coconut oil, crushed whole oilseeds (rapeseed, sunflower seed and linseed) and rumen-protected crystalline fat on methane release, digestion and energy balance in growing lambs were evaluated in relation to an unsupplemented control diet. The diets consisted of maize silage, grass hay and concentrate

which was supplemented with the respective lipid source. On average, the five lipid-supplemented diets contained 56 g ether extract per kg dry matter, whereas the unsupplemented control diet had 31 g kg-1 dry matter. The experiment was carried out with 12 lambs in an incomplete 6x6 Latin square with each lamb being fed, subsequently, three different diets for 3 weeks. Feed was allocated according to calculated requirements of metabolizable protein and energy. Gaseous exchange was measured in open-circuit respiratory chambers. Coconut oil supplementation reduced ($p<0.1$) methane release per kg live weight by 26% compared to control, and with the use of rapeseed, sunflower seed and linseed the relative reduction was 19%, 27% and 10%, respectively. The effects of the lipid supplementations on methane release were significant when related to gross energy intake ($p<0.05$), CO2 release ($p<0.05$) and total energy loss ($p<0.01$). A persistence of the methane suppression seems to be given at least partially. Supplementing the oilseeds, particularly sunflower seed, reduced ($p<0.05$) the apparent digestibilities of NDF and ADF. This suggests that the reduced fermentation of fibre was also important for the methane suppression by oilseeds whereas with coconut oil treatment the direct inhibitory effects on rumen methanogens might have been predominant. Lipid supplementation, except of rumen-protected fat, reduced rumen fluid ciliate count ($p<0.1$) and total VFA concentration ($p<0.05$), and depressed the concentration of acetate ($p<0.05$) and butyrate ($p<0.001$). This diminished ($p<0.05$) the ratio of acetate to propionate. The apparent digestibilities of individual fatty acids were relatively high in all groups unless supplied in minute amounts. C18:0 excretion exceeded intake in all groups presumably due to endogenous excretion or microbial synthesis and, with the oilseeds, possibly also from an enhanced excretion of hydrogenated unsaturated fatty acids of dietary origin. Energy balance remained quite similar in control, crystalline fat and coconut oil groups; whereas with the oilseeds, metabolizability of gross energy and the efficiencies of metabolizable energy utilization tended to be lower
Descriptors:coconut-oil. diets. digestion. energy-balance. energy-intake. excretion. fatty-acids. fermentation. fibre. hay. inhibition. lambs. linseed. metabolizable-energy. methane. oilseeds. rapeseed. rumen. rumen-fluid. sunflower-seeds. supplementary-feeding. triacylglycerols. unsaturated-fatty-acids. utilization. volatile-fatty-acids. weight. methane-production. protected-fat
Organism Descriptors:sheep. Linum-usitatissimum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Linum. Linaceae. Linales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. LL500
Supplementary Info:69 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Chemical composition and nutritive value of some tropical by-product feedstuffs for small ruminants - in vivo and in vitro digestibility
View Article: Animal Feed Science and Technology. 2000. 85 (1/2). 99-109
CD Volume:332
Print Article: Pages: 99-109
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Language:English
Abstract:Chemical composition and nutritive values of by-product feedstuffs (BPF) used for small ruminants were evaluated. Four BPF from groundnut shells (GNS), maize cobs (MC), cassava peels (CaP), and citrus pulp/peels waste (CPPW) were used to prepare complete diets fed to goats and sheep in separate trials. Twelve goats and 16 sheep 16-18 months old weighing on average 12.96 plus or minus 0.28 and 14.05 plus or minus 0.18 kg, respectively, were divided into three and four groups, and used in two separate growth and digestibility studies. An in vitro digestibility trial was also carried out and in vivo and in vitro data were compared. Chemical composition of BPF differed in nutrient contents: MC had the least crude protein content (3.4%), CaP and CPPW had low NDF and ADF, and GNS and MC were higher in cell wall constituents than in the other by-products. Voluntary DMI ranged between 58.0-62.0 g/kg LW per day in goats and 70.0-83.0 g/kg LW per day in sheep. DM,CP, organic matter, NDF and gross energy digestibility were higher (P<0.05) in goats fed CaP diet compared to the GNS and MC diets. Nutrient digestibility was better (P<0.05)for the CPPW diet than the GNS, MC and CaP diets. Net gas production, and in vitro-determined DM, NDF and OM digestibility and metabolizable energy (ME, MJ/kg of DM) were significantly different among the BPF (P<0.05). GNS had the lowest net gas production with the highest gas productionin CPPW followed by CaP. The low NDF values in CaP and CPWM indicated that they contain more soluble materials which ruminants can benefit from. In in vivo trials, goats and sheep performed better with rations formulated from CaP and CPPW compared to other BPF such as MC and GNS. However, the high gas production observed shows that care has to be exercised in feeding them to animals at high levels to avoid accumulation of gases and fermentation products which could lead to displaced abomasum and acidosis. The results indicate that estimates of digestibility are of use for BPF evaluation and these estimates can be readily accomplished by the in vitro techniques available. In conclusion, in vitro OM digestibility for GNS, MC, CaP and CPPW were higher than the in vivo digestibility
Descriptors:cassava. cell-walls. composition. crude-protein. diets. digestibility. feeds. fermentation. gas-production. in-vitro. in-vitro-digestibility. maize. maize-cobs. maize-byproducts. metabolizable-energy. nutritive-value. protein-content. groundnuts. byproducts. sheep-feeding. goat-feeding
Organism Descriptors:Citrus. goats. ruminants. sheep. Zea-mays. Manihot-esculenta. Arachis-hypogaea
Supplemental Descriptors:Rutaceae. Sapindales. dicotyledons. angiosperms. Spermatophyta. plants. Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Zea. Poaceae. Cyperales. monocotyledons. Manihot. Euphorbiaceae. Euphorbiales. Arachis. Papilionoideae. Fabaceae. Fabales
Subject Codes:LL520. RR300. LL500
Supplementary Info:28 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Chemical changes and influences of rapeseed antinutritional factors on lamb physiology and performance. 3. Antinutritional factors in plasma and organs

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CD Volume:332
Print Article: Pages: 111-120
Author(s):Mabon N Mandiki S N M Derycke G Bister J L Wathelet J P Marlier M Paquay R
Author Affiliation:Faculte universitaire des Sciences agronomiques de Gembloux, 2, Passage des Deportes, B-5030 Gembloux, Belgium
Language:English
Abstract:The impact of a high level of rapeseed meal in the diet on the concentration of antinutritional factors in plasma and organs was studied in a total of 66 Texel, Suffolk and crossbred lambs. From 1 month of age till slaughter (132 plus or minus 21 days), they were fed ad libitum with concentrates containing 0% or 25% of rapeseed meal from either Samourai or Honk rapeseed varieties. Lambs were weaned at 88 plus or minus 8 days of age and 24 plus or minus 5 kg live weight. Blood and organ samples were taken fortnightly for the determination of antinutritional factors. In plasma and organs, the thiocyanate concentrations were systematically higher in the Samourai and Honk lots than in the control. After weaning, the SCN- concentration in plasma increased up to 490 micro mol l-1 in the Samourai lot. The goitrogen 5-vinyl-1,3-oxazolidine-2-thione (5-VOT) was determined in muscle, organs (thyroid, liver, kidney and lung) and biological fluid (plasma). The 5-VOT was present only after the ingestion of rapeseed meal but not to the same extent for the two varieties. The Honk rapeseed meal induced a 5-VOT level significantly ($p<0.05$) higher in the target organs such as lung and thyroid than Samourai. Very low levels were found in muscle, liver, kidney, plasma and lung
Descriptors:antinutritional-factors. diet. lambs. liver. lungs. muscles. plasma. rapeseed-oilmeal. Suffolk-(sheep-breed). Texel. thyroid-gland. toxic-substances. cultivars. thiocyanates. thyroid-antagonists
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. RR300. LL950
Supplementary Info:22 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Evaluation of Bengal gram (Cicer arietinum) husk as a source of tannin and its interference in rumen and post-rumen nutrient digestion in sheep
View Article: Animal Feed Science and Technology. 2000. 85 (1/2). 131-138
CD Volume:332
Print Article: Pages: 131-138
Author(s):Sreerangaraju G Krishnamoorthy U Kailas M M
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Language:English
Abstract:Bengal gram (Cicer arietinum) husk (BGH) was evaluated for the content of tannin and its interference in digestion. The BGH contained (% DM) 76.0 NDF, 65.2 ADF, 6.1 ADL and 8.4 tannin. The gas production (ml/200 mg DM/24 h) from BGH incubated with rumen inoculum was 45.0, which increased to 61.3 when polyethylene glycol (PEG 6000) was added. The magnitude of the increase in gas production was not

explained by the quantity of tannin-bound protein (acid detergent insoluble nitrogenx6.25) or the total protein. This suggested that carbohydrate could be the main substrate bound by tannin in BGH. The availability of tannin-bound substrate in the post-rumen digestive tract was assessed through a metabolic trial. Twelve male lambs aged between 6 and 8 months were divided into three groups of four animals in each group. BGH was incorporated in the diet at 0, 6.8 and 14% by replacing deoiled rice bran (DORB). Incorporation of BGH in the diet increased OM digestibility (P<0.002) from 63.3% (Group I) to 68.1% (Group II) and 72.4% (Group III). The observed differences among the diets was quantitatively explainable by the difference in ME content (8.5 MJ) of BGH and DORB after PEG addition. The faecal excretion (g/day) of organic neutral detergent solubles (54.5, 55.3 and 46.7), and neutral detergent soluble nitrogen (4.4, 4.4 and 3.9) for the three groups were similar. Therefore, it is speculated that the tannin-bound substrate in BGH is carbohydrate, protected from rumen fermentation but digested in the small intestine
Descriptors:diets. digestibility. digestion. excretion. faeces. fermentation. gas-production. lambs. polyethylene-glycol. rice-bran. rumen. rumen-fermentation. small-intestine. starch. tannins. composition. chickpeas
Organism Descriptors:Cicer-arietinum. sheep
Supplemental Descriptors:Cicer. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL500. RR300
Supplementary Info:16 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Supplementation of graded levels of Desmodium intortum hay to sheep feeding on maize stover harvested at three stages of maturity 1. Feed intake, digestibility and body weight change
View Article: Animal Feed Science and Technology. 2000. 85 (3/4). 239-257
CD Volume:332
Print Article: Pages: 239-257
Author(s):Tolera A Sundstol F
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Language:English
Abstract:Feed intake, digestibility and body weight change of lambs fed basal diets of maize stover harvested at three stages of maturity and supplemented with graded levels (0, 150, 300 and 450 g per head per day) of desmodium (Desmodium intortum cv. Greenleaf) hay were studied. The maize stovers were harvested at 30, 22 and 12% grain moisture content which were designated as stages I, II and III, respectively. The crude protein (CP) content of the stovers showed a decreasing trend whereas the fibre contents showed an increase from stages I to III. The desmodium hay had higher CP, phenolic compounds, calcium, sulphur and manganese contents and lower fibre (neutral and acid detergent fibres, cellulose and hemicellulose) contents than the stovers. Maize stover, total dry matter (DM) and organic matter (OM) intake showed a decreasing trend (p>0.05) with increasing stage of maturity of the stover. The CP intake was higher (p<0.05) in sheep fed maize stover harvested at stage I than at stages II and III. Total DM, OM and CP intake increased whereas maize stover DM intake

showed a decrease (p<0.05) with increasing level of supplementation. Desmodium hay constituted about 28, 47 and 66% of the total DM intake and, on average, there was a substitution of about 12, 21 and 37% of the stover by the desmodium hay at 150, 300 and 450 g of supplementation, respectively. Dry matter, OM and NDF digestibilities showed a decreasing trend (p>0.05) with increasing stage of maturity. CP digestibility and the intakes of digestible OM and metabolizable energy (ME) were higher (p<0.05) in sheep feeding on maize stover harvested at stage I than stage III and showed a general declining trend with increasing stage of maturity of the stover. Supplementation resulted in improved digestibility of the diet. There was an increase (p<0.05) in CP digestibility, digestible OM intake, digestible organic matter in the DM (DOMD), ME concentration of the diet and ME intake with increasing level of supplementation. The body weight gain showed an increase (p<0.05) with increasing level of supplementation whereas all sheep without supplement lost body weight. The weight loss increased with increasing stage of maturity of the stover. Considering DM intake and digestibility, 300 g of desmodium hay appears to be an optimum level of supplementation, under similar conditions to the current study
Descriptors:body-weight. digestibility. feed-intake. feeding. hay. maize. maize-stover. sheep-feeding. stover. calcium. cellulose. crude-protein. diets. dry-matter. fibre. intake. manganese. metabolizable-energy. moisture-content. phenolic-compounds. protein-digestibility. sulfur. supplementary-feeding. supplements. liveweight-gain. weight-losses. maturity-stage
Organism Descriptors:Desmodium. Desmodium-intortum. sheep. Zea-mays
Supplemental Descriptors:Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Desmodium. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae. Cyperales. monocotyledons
Subject Codes:LL520. LL500. LL120
Supplementary Info:3 pp. of ref
ISSN:0377-8401
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Journal Title:Animal Feed Science and Technology

Title:An approach to screening potential pasture species for condensed tannin activity
View Article: Animal Feed Science and Technology. 2000. 85 (3/4). 269-277
CD Volume:332
Print Article: Pages: 269-277
Author(s):Jones R J Meyer J H F Bechaz M Stoltz M A
Author Affiliation:CSIRO Tropical Agriculture, Davies Laboratory, PMB Post Office, Aitkenvale, Qld 4814, Australia
Language:English
Abstract:Freeze-dried samples of leaves of six tropical leguminous shrubs were studied. Digestibilities of DM (IVDMD) and nitrogen (IVND) were determined in vitro using rumen fluid from sheep in the presence and absence of polyethylene glycol 4000 (PEG). The difference due to PEG, the tannin effect, was more marked for IVND than for IVDMD and varied with species. The improvement for Acacia boliviana, Calliandra calothyrsus and Leucaena trichandra was large, intermediate with L. leucocephala and L. pallida and small with Gliricidia sepium (range 5.5-33.8 digestibility units). The tannin effect was poorly correlated with previously published data on the butanol CT levels in these samples: extractable CT (r2=0.0007); protein bound (r2=0.485); fibre-bound (r2=0.566); and total CT (r2=0.1473). The bound CT and total CT were negatively related to the

PEG effect. Vanillin CT was positively correlated with the PEG effect (r2=0.578). Two species, A. boliviana and C. calothyrsus, behaved differently to the others. Omitting these from the regressions improved the relationships with both butanol extractable CT and total butanol CT and with vanillin CT (r2more than or equal to 0.9). For new pasture species, screening by using this modified in vitro digestion technique would avoid the problems of using a known CT standard or of isolating CT standards for each species. It would also provide some information on digestibility
Descriptors:leaves. browse. in-vitro-digestibility. antinutritional-factors. tannins. pastures. screening. digestibility. digestion. dry-matter. fibre. analytical-methods. in-vitro. polyethylene. polyethylene-glycol. rumen. rumen-fluid. shrubs. standards
Geographic Locator:Australia
Identifiers:Acacia boliviana. Leucaena trichandra
Organism Descriptors:Acacia. Calliandra. Calliandra-calothyrsus. Gliricidia. Gliricidia-sepium. Leucaena. sheep
Supplemental Descriptors:Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Calliandra. Papilionoideae. Gliricidia. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Acacia. Leucaena
Subject Codes:RR300. ZZ900
Supplementary Info:15 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effect of source of betaine on growth performance and carcass traits in lambs
View Article: Animal Feed Science and Technology. 2000. 86 (1/2). 71-82
CD Volume:332
Print Article: Pages: 71-82
Author(s):Fernandez C Lopez Saez A Gallego L Fuente J M de la
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Author Affiliation:Departamento Tecnologia Agroalimentaria, Div. Produccion Animal, Universidad Miguel Hernandez, EPSO, 03312-Orihuela, Alicante, Spain
Language:English
Abstract:An experiment was conducted to determine the effect of the source of betaine and sex on growth performance and carcass characteristics of growing lambs. A factorial structure 3 x 2 with dietary betaine and sex as main effects were made. A total of 60 Manchego breed lambs with an initial weight of 13 kg were randomly distributed into 12 pens. Weaned males and females were fed on a starter diet until 20 kg live weight (LW) and then were changed to a finisher diet up to the slaughter live weight (approx. 28 kg). Within each feeding period, starter and finisher diets containing 0 or 2 g kg-1 betaine (betaine anhydrous or rumen escape betaine) were used to feed each group of male and female lambs. Effect of sex was observed on daily gain, feed conversion rate, fat thickness (FT), and carcass characteristics ($p<0.001$); faster growth and less lipid deposition were found in males versus females. No effect of source of betaine was found on growth performance and carcass traits in male lambs. Females took 12 more days than males to reach the slaughter live weight and more lipid depositions was observed. Reduction in fat thickness, perirenal fat and intramuscular content of lipids were found in female lambs when they were fed the diet enriched in

anhydrous betaine (p<0.05). The same effect for diet with added rumen escape betaine and control were observed in male and female lambs
Descriptors:betaine. carcass-quality. diets. feed-conversion. sheep-feeding. growth-rate. lambs. lipids. rumen-digestion. body-weight. protection. sex-differences. fat-thickness. carcass-composition. sources
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL520. QQ030. QQ500. LL120
Supplementary Info:27 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology
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Title:Protection of conjugated linoleic acids from ruminal hydrogenation and their incorporation into milk fat
View Article: Animal Feed Science and Technology. 2000. 86 (3/4). 139-148
CD Volume:332
Print Article: Pages: 139-148
Author(s):Gulati S K Kitessa S M Ashes J R Fleck E Byers E B Byers Y G Scott T W
Author Affiliation:Commonwealth Scientific and Industrial Research Organisation (CSIRO), Animal Production, Locked Bag 1, Delivery Centre, Blacktown, NSW 2148, Australia
Language:English
Abstract:In vitro incubations were used to assess the hydrogenation of conjugated linoleic acid (CLA) isomers 9-cis 11-trans and 10-trans 12-cis present in synthetically produced CLA-60. About 80-90% of the unprotected CLA was hydrogenated when incubated at 38 deg C for 24 h anaerobically with sheep rumen fluid, the main end product of hydrogenation being trans-octadecaenoic acid (C18:1). Encapsulation of the CLA in a matrix of protein provided protection of 70% with 30% hydrogenation of the CLA isomers, resulting in no significant change in the trans-C18:1 but an increase in the level of stearic acid (C18:0). Feeding sheep with unprotected CLA or protected CLA increased the proportion of isomers 9-cis 11-trans and 10-trans 12-cis in abomasal digesta. The concentration of the CLA isomers leaving the abomasum and available for absorption at the small intestine was about 3.5-4% higher for the protected CLA, confirming protection imparted by encapsulation. Feeding lactating goats with protected CLA increased the proportion of isomers 9-cis 11-trans and 10-trans 12-cis in milk fat. Total CLA levels were enhanced about 10-fold above the control levels present in milk fat with an efficiency of transfer into milk fat of 36-41% and 21-30%, respectively, for the two isomers
Descriptors:protected-fat. trans-fatty-acids. fatty-acids. absorption. abomasum. ewe-milk. goat-milk. milk-fat. milk-composition. rumen. hydrogenation. isomers. in-vitro
Identifiers:conjugated linoleic acid
Organism Descriptors:sheep. goats
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Capra
Subject Codes:QQ500. LL510. QQ010
Supplementary Info:14 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology
Copyright:Copyright CAB International

Title:The potential of forage-maize intercrops in ruminant nutrition
View Article: Animal Feed Science and Technology. 2000. 86 (3/4). 157-164
CD Volume:332
Print Article: Pages: 157-164
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Language:English
Abstract:Studies at the University of Reading (UK) compared silage quality, feed intake and digestibility of maize silage with maize-sunflower (MS), maize-kale (MK) and maize-runner bean (MRB) silage, when sunflowers, kale and runner beans represented 26, 7 and 16% of total silage dry matter (DM). All intercrop silages had higher crude protein values (MS, 137 g kg-1, MRB, 120 g kg-1, MK, 105 g kg-1) than maize (81 g kg-1). NDF and ADF contents were higher and the neutral cellulase gamminase digestibility (NCGD) values lower for MRB and MS compared with maize and MS silage. All silages fermented well with pH ranging from 3.9 to 4.2 and ammonia-N content of less than 100 g kg-1 total nitrogen (TN). An in vivo digestibility study with sheep showed no significant difference in voluntary feed intake between the four silages, with the highest and lowest values of 68 and 62 g DM (kg BW0.75)-1 per day being recorded for MK and MS silage. The highest and lowest values for in vivo DM digestibility (DMD) and organic matter digestibility (OMD) were recorded for MK and MS silages, with intermediate values for maize and MRB silage. The inclusion of all three intercrops significantly increased nitrogen digestibility when compared with maize silage. ME values for maize and MK silage were both substantially higher than those for MRB and MS silage
Descriptors:feed-intake. digestibility. silage-quality. maize-silage. composition. feeds. silage. forage. silage-fermentation. metabolizable-energy. maize
Organism Descriptors:sheep. Zea-mays
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR100. RR300. LL510. LL500
Supplementary Info:14 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Feed intake, sperm output and seminal characteristics of Ethiopian highland sheep supplemented with different levels of leucaena (Leucaena leucocephala) leaf hay
View Article: Animal Feed Science and Technology. 2000. 86 (3/4). 239-249
CD Volume:332
Print Article: Pages: 239-249
Author(s):Dana N Tegegne A Shenkoru T
Author Affiliation:Debre Zeit Agricultural Research Center, P.O. Box 32, Debre Zeit, Ethiopia
Language:English
Abstract:The effect of feeding increasing levels of L. leucocephala leaf hay on the potential fertility and feed intake of male highland (Arsi) sheep maintained on roughage diet was studied. In treatment 1 (NS), animals received only chickpea haulm. Treatments 2 (L100), 3 (L200) and 4 (L300) consisted of 100, 200 and 300 g per head per day of sun dried leucaena leaf hay while sheep under treatment 5 (C300)

received 300 g per head per day of concentrate supplement. Chickpea haulm was offered ad-libitum to all groups and water and mineral licks were freely available. Addition of leucaena improved total DM and CP intake significantly without reducing the intake of the basal diet. Supplementation increased the percentage of motile cells (10 vs. 76% for L300) and mass activity/motility score (1.5 vs. 3.2 for L300) of spermatozoa while reducing the incidence of total morphologically defective sperm cells (34 vs. 5% for L200). Volume of ejaculate (0.36 vs. 1.1 ml for L200), sperm concentration (2.8 vs. 7.1x109 ml-1 for L300), and total number of spermatozoa per ejaculate (1.96 vs. 5.92x109 per ejaculate for L300), increased significantly as a result of supplementation. Testicular size showed significant differences among treatment groups and generally increased with supplementation. It is concluded that supplementation of up to 300 g per head per day of leucaena resulted in improved feed intake, testicular growth, sperm production and semen quality of Ethiopian highland sheep offered chickpea haulm basal diet
Descriptors:feed-intake. spermatozoa. hay. testes. browse. leaves. reproduction. motility. intake. seminal-plasma. semen-characters. semen-production. semen. semen-production
Organism Descriptors:sheep. Leucaena-leucocephala
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Leucaena. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:KK540. LL520. LL250. RR000. KK600
Supplementary Info:31 ref
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Year:2000
Journal Title:Animal Feed Science and Technology

Title:Growth performance of faunated and defaunated Malpura weaner lambs
View Article: Animal Feed Science and Technology. 2000. 86 (3/4). 251-260
CD Volume:332
Print Article: Pages: 251-260
Author(s):Santra A Karim S A
Author Affiliation:Division of Animal Nutrition, Central Sheep and Wool Research Institute, Avikanagar - 304 501, Rajasthan, India
Language:English
Abstract:An experiment was conducted to study the effect of presence or absence of rumen ciliate protozoa on nutrient intake and utilization, rate of liveweight gain and feed conversion efficiency of lambs in post-weaning phase of growth. 45 weaned Malpura lambs, in three equal groups (G1, G2 and G3) were either defaunated by periodic dosing of sodium lauryl sulfate at 8 g/100 kg body weight (G1), defaunated and refaunated (G2), or maintained faunated (G3). Lambs were fed for 90 days on 50:50 pala (Zizyphus nummularia) leaf and concentrate based complete feed. With care and segregation the defaunated lambs were maintained free of rumen protozoa for 47 days after which Entodinomorphids appeared while Holotrichs were not detected. Total and differential protozoa count was similar in refaunated and faunated lambs and the residual toxic effect of sodium lauryl sulfate if any was not detected. Even with similar DM intake in the three groups, liveweight gain and feed conversion efficiency were higher in defaunated lambs. The digestibilities of cell and cell wall contents were generally poor in defaunated lambs while intake of digestible protein and energy were similar in the three groups. The lambs in the three groups were in positive nitrogen balance while

percentage N retention was higher in defaunated than in refaunated and faunated lambs. It is concluded that with similar DM intake and plane of nutrition, growth performance and feed conversion efficiency were better in defaunated than refaunated and faunated lambs. In spite of reduced digestibility of NDF, ADF and cellulose, ME availability for body synthetic activity was probably higher in defaunated lambs as evident from the observed production traits
Descriptors:rumen-microorganisms. rumen-protozoa. rumen. sheep-feeding. liveweight-gain. feed-conversion-efficiency. feeding. feed-intake. digestibility
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL520. LL500
Supplementary Info:34 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:A review of the potential of Lathyrus sativus L. and L. cicera L. grain for use as animal feed
View Article: Animal Feed Science and Technology. 2000. 87 (1/2). 1-27
CD Volume:332
Print Article: Pages: 1-27
Author(s):Hanbury C D White C L Mullan B P Siddique K H M
Author Affiliation:Centre for Legumes in Mediterranean Agriculture (CLIMA), University of Western Australia, Nedlands 6907, Australia
Language:English
Abstract:The use of two closely related species, Lathyrus cicera and L. sativus, as grain legumes for human and animal consumption, dates to the Neolithic period. Due to its tolerance to harsh environmental conditions L. sativus is still used widely for human food in Ethiopia and the Indian sub-continent, although cultivation has diminished in many other regions. The grain of both L. cicera and L. sativus contains a neurotoxin, 3-(-N-oxalyl)-L-2,3-diamino propionic acid (ODAP), which can cause a paralysis of the lower limbs (lathyrism). Due to the occurrence of lathyrism in humans recent plant breeding has produced cultivars with low ODAP concentrations. The susceptibility of animal species to lathyrism is poorly understood, although horses and young animals are more susceptible. Older published animal feeding studies are of limited use, since the presence and role of ODAP was unknown until the 1960s. More recent feeding studies indicate that low ODAP lines of L. cicera or L. sativus can be safely incorporated at inclusion rates up to 40, 30 and 70% of the diet of poultry, pigs and sheep, respectively, without growth reductions. The compositions of both L. cicera and L. sativus are similar to other commonly used feed grain legumes, respective protein contents are 25 and 27%. Antinutritional factors (ANFs), other than ODAP, are present in both L. cicera and L. sativus at concentrations similar to those found in other grain legumes; including trypsin inhibitors, chymotrypsin inhibitors, amylase inhibitors, lectins, tannins, phytate and oligosaccharides. The effect of ANFs in L. cicera and L. sativus on animal performance is not well understood and sometimes confounded with ODAP effects. Heating of grain will reduce levels of the proteinaceous ANFs and in some cases ODAP as well. Variation recorded in the germplasm of L. cicera and L. sativus has not been greatly utilized in plant breeding to lower levels of ANFs, with the exception of ODAP, leaving considerable potential for rapid improvement of cultivars. L. cicera

and L. sativus are low production cost legumes adapted to low rainfall environments and have considerable potential as good quality, cheap protein sources. As world demand for legume feed protein is likely to increase, due to increasing demand for animal food products, both L. cicera and L. sativus are crops that should be considered in regions with suitable environments
Descriptors:amylases. antinutritional-factors. chymotrypsin-inhibitors. enzyme-inhibitors. feeds. heating. lathyrism. lectins. neurotoxins. nutritive-value. oligosaccharides. paralysis. phytic-acid. poisonous-plants. poultry. propionic-acid. proteins. reviews. tannins. trypsin-inhibitors
Geographic Locator:Ethiopia. India
Organism Descriptors:fowls. horses. Lathyrus-cicera. Lathyrus-sativus. pigs. sheep. plants
Supplemental Descriptors:East-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries. Gallus-gallus. Gallus. Phasianidae. Galliformes. birds. vertebrates. Chordata. animals. poultry. Equus. Equidae. Perissodactyla. mammals. ungulates. South-Asia. Asia. Commonwealth-of-Nations. Lathyrus. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Sus-scrofa. Sus. Suidae. Suiformes. Artiodactyla. Ovis. Bovidae. ruminants
Subject Codes:FF020. LL950. RR100. RR300
Supplementary Info:105 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Cowpea (Vigna unguiculata L. Walp) and groundnut (Arachys hypogea L.) haulms as supplements to sorghum (Sorghum bicolor L. Moench) stover: intake, digestibility and optimum feeding levels
View Article: Animal Feed Science and Technology. 2000. 87 (1/2). 57-69
CD Volume:332
Print Article: Pages: 57-69
Author(s):Savadogo M Zemmelink G Nianogo A J Keulen H van
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Language:English
Abstract:Two feeding trials were conducted to study the combined effects of (i) varying degrees of selective consumption and (ii) supplementation with cowpea (Trail 1) or groundnut haulms (Trial 2), on intake of organic matter (IOM) from sorghum stover, and total intake of digestible organic matter (IDOM). In both trials, 36 rams were allocated to 36 different treatments: six levels of feeding sorghum stover (25, 40, 60, 90, 120 and 160 g organic matter (OM) kg-0.75 per day) combined with six levels of supplementation (0, 5, 12.5, 20, 40, and 60 g OM kg-0.75 per day). Each diet was offered for a 21 day period; intake and digestibility were recorded during the last 9 days. Non-linear regression models were used to describe the combined effects of varying amounts of stover (x) and supplements (s) offered. All animals ate the full amount of supplement offered, but not the sorghum stover. For animals without supplement, maximum intake (m) of stover (i.e. IOM at high levels of x) was estimated at 50.7 g kg-0.75 per day in Trial 1 and 45.7 g kg-0.75 per day in Trial 2. In both trials, m decreased linearly with s at the rate 0.4 g g-1. Also, the shape of the curve relating intake of stover to x was affected by level of supplementation. Digestibility of whole stover (0.47 in Trial 1; 0.40 in Trial 2) was much lower than that of cowpea

haulms (0.70) and groundnut haulms (0.62), but in both trials animals selected material of higher digestibility when excess stover was offered. Thus, the negative effect of supplementation on intake of stover was partly compensated by higher digestibility of consumed stover. For rations without cowpea in Trial 1, the maintenance level of IDOM was reached by offering 61 g sorghum OM (kg-0.75 per day) of which 47 g was consumed. With the same amount of offered sorghum 9, 18, 28, 38 and 48 g cowpea OM were needed to attain intake levels equivalent to 1.2, 1.4, 1.6, 1.8 and 2.0 times maintenance, respectively. In the trial with groundnut, maintenance was not reached with sorghum alone and larger amounts of supplement were required for the levels of intake mentioned above. Iso-production curves describing which amounts of stover and supplement gave the same IDOM, were not linear with constant slope corresponding to the comparative digestibility of whole stover and supplements, but strongly curved. Such curves can be used to derive optimum combinations of stover and higher quality feeds, depending on feed prices, desired production level and taking into account the effects of selective consumption. With prices of cowpea and groundnut haulms 4 times higher than that of stover, the results of Trial 1 indicate that least cost rations for feeding at 1.2 M (maintenance) would consist of 72 g sorghum OM (kg-0.75 per day) combined with 7 g cowpea haulms. For feeding at 1.6 M this would be 70 + 26 g, and at 2 M, 54 + 50 g. Similarly, with the feeds used in Trial 2, optimum combinations of sorghum stover and groundnut haulms for the same levels of feeding would be 58 + 24, 51 + 47, and 11 + 78 g OM kg-0.75 per day
Descriptors:cowpeas. digestibility. feed-intake. feed-supplements. groundnuts. haulms. organic-matter. rams. stover. supplementary-feeding
Organism Descriptors:sheep. Sorghum. Vigna-unguiculata. Arachis-hypogaea
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Vigna. Papilionoideae. Fabaceae. Fabales. dicotyledons. Arachis
Subject Codes:LL500. RR000. RR300
Supplementary Info:31 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effect of regrowth age on intake and digestion of Digitaria decumbens consumed by Black-belly sheep
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 153-162
CD Volume:332
Print Article: Pages: 153-162
Author(s):Archimede H Boval M Alexandre G Xande A Aumont G Poncet C
Author Affiliation:Institut National de la Recherche Agronomique, Unite de Recherches Zootechniques, Prise d'eau, 97170 Petit-bourg, Guadeloupe, France
Language:English
Abstract:The intake and digestion of fresh D. decumbens grass were studied following the stage of regrowth. Six rams (mean liveweight: 40.8 plus or minus 0.6 kg) received successively a 14, 28, 42 and 56-day old forage during four 4-week periods. The range of variation of crude protein and acid detergent fibre content (g/kg) of the forages was 57-130 and 380-442, respectively. The DM intake (g/kg W0.75) and the organic matter total tract digestibility decreased from 83 to 56

and from 0.728 to 0.628, respectively, between 14 and 56 days of regrowth. The fractional degradation rate (h-1) of dry matter in the rumen, estimated by the nylon bag method, decreased curvilinearly with a mean daily rate of 0.0010. A curvilinear relationship was recorded between the rumen turnover rate and forage regrowth stage. The mean daily decrease (per hour per day) was 0.0005. The total nitrogen duodenal flow (g per day) decreased from 22.7 to 11.6 between 14 and 56 days. The mean efficiency of microbial protein synthesis was similar with the four diets (31.8, S.E. 2.2 g microbial nitrogen/kg organic matter apparently digested in the rumen). In conclusion, intake, digestibility and duodenal nitrogen flow are high with the 14-day D. decumbens. As a consequence, the nutritive value of the latter is similar to that of a good temperate grass forage. Good nutritive value of a 14-day old D. decumbens and fast maturation and lignification in C4 forage before the first month of regrowth suggest the need to investigate ruminant feeding strategies with forages younger (<28 days) than those classically used when the aim is the increase in animal individual performances in humid tropical area
Descriptors:Barbados-Blackbelly. digestibility. feed-intake. humid-tropics. nitrogen-retention. nutritive-value. rams. regrowth. sheep-feeding
Geographic Locator:Guadeloupe
Organism Descriptors:Digitaria-decumbens. sheep
Supplemental Descriptors:Digitaria. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Leeward-Islands. Lesser-Antilles. Caribbean. America. Developing-Countries. French-West-Indies. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:FF007. LL510. RR300
Supplementary Info:20 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Associative effects of supplementing barley straw diets with alfalfa hay on rumen environment and nutrient intake and digestibility for ewes
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 163-171
CD Volume:332
Print Article: Pages: 163-171
Author(s):Haddad S G
Author Affiliation:Faculty of Agriculture, Department of Animal Production, Jordan University of Science and Technology, P.O. Box 3030, Irbid 22110, Jordan
Language:English
Abstract:The objectives of these experiments were to study the positive associative effects of supplementing barley straw-based diets with different levels of alfalfa hay on nutrient intake, rumen environment, and nutrient digestibility and to evaluate the minimal amount of alfalfa hay needed to produce such an effect in ewes. In experiment one, 15 Awassi ewes (5 ruminally fistulated; body weight=54 kg plus or minus 1.5) were fed 5 barley straw-based diets in a 5 x 5 Latin square design with 3-week periods. Dietary treatments were as follows: diet 1, barley straw (no supplement), diet 2, barley straw supplemented with 1% urea (dry matter basis), diets 3, 4, and 5 barley straw supplemented with 150, 300, and 450 g of alfalfa hay, respectively. In experiment 2, the same experimental diets were fed to 50 ewes (10 ewes/diet) for 50 days in a complete

randomized design. In experiment 1, dry matter intake (DMI) was increased (P<0.05) by the addition of alfalfa hay compared with diets that had no alfalfa. Metabolizable energy intake (MEI) increased linearly (P<0.05) with the increasing amounts of alfalfa hay, being highest (P<0.05) for diet 5. Diets that contained alfalfa hay had greater (P<0.05) dry matter (DM), organic matter (OM), neutral detergent fibre (NDF) and crude protein (CP) digestibilities. The extent of barley straw NDF digestibility was also increased (P<0.05) with the alfalfa addition (67 vs. 60.5%). Rumen ammonia and VFA concentrations were higher (P<0.05) in diets that contained alfalfa, however, rumen pH was not affected by the diet (avg. 6.64). In experiment 2, the effect of alfalfa hay addition to barley straw-based diets had similar effects on DMI as observed in experiment 1. Straw intake increased (P<0.05) with the 150 g addition of alfalfa hay compared with unsupplemented diet (725 vs. 650 g-d per day) with no further improvement with the higher amounts of alfalfa. It seems that the minimal amount of alfalfa hay needed to produce the positive associative effect on barley straw is 150 g per day for maintenance diets of ewes
Descriptors:ammonia. Awassi. barley-straw. digestibility. dry-matter. ewes. fibre. lucerne-hay. metabolizable-energy. organic-matter. protein-digestibility. rumen-microorganisms. volatile-fatty-acids
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:FF007. LL510. RR300
Supplementary Info:23 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Predicting the nutritive value of the olive leaf (Olea europaea): digestibility and chemical composition and in vitro studies
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 187-201
CD Volume:332
Print Article: Pages: 187-201
Author(s):Delgado Pertinez M Gomez Cabrera A Garrido A
Author Affiliation:Dpto. Ciencias Agroforestales, Universidad de Sevilla, Ctra. Utrera Km. 1, 41013 Sevilla, Spain
Language:English
Abstract:Eight tests of olive leaf digestibility were carried out with sheep. The olive leaves were collected using different procedures (4 samples of leaves from dried branches and another 4 of leaves removed from chopped branches and dried) and stored for varying times. Marked differences in OMD were observed between the 2 types of procedures and between different times of storage. The greatest loss of nutritive value was in the chopped samples. In the leaves from dried branches, with storage periods longer than 9 months, the digestible organic matter content ranged between 431 and 448 g kg-1 OM, while in the chopped samples, the value ranged between 360 g kg-1 OM (in a sample stored for only 1 month) and 177 g kg-1 OM (in a sample with obvious signs of fermentation). The sample set was used together with another, evaluated prior to this work, to study the prediction of in vivo digestibility (OMD, DMD and CPD) from chemical and biological (dry matter disappearance after in vitro incubation with rumen liquor-pepsin or pepsin-cellulase solutions) parameters. In the case of OMD, the best predictions were obtained

with the pepsin-cellulase method (r=0.91, RSD=4.6) and NDF (r=-0.91, RSD=4.6)
Descriptors:chemical-composition. digestibility. dry-matter. in-vitro-digestibility. leaves. nutritive-value. organic-matter. protein-digestibility. storage. olives
Organism Descriptors:Olea-europaea. sheep
Supplemental Descriptors:Olea. Oleaceae. Scrophulariales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. RR300
Supplementary Info:31 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Nutritional evaluation of cardoon (Cynara cardunculus) seed for ruminants
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 203-213
CD Volume:332
Print Article: Pages: 203-213
Author(s):Cajarville C Gonzalez J Repetto J L Alvir M R Rodriguez C A
Author Affiliation:Departamento de Produccion Animal, Escuela Tecnica Superior de Ingenieros Agronomos, Universidad Politecnica de Madrid, Ciudad Universitaria, 28040 Madrid, Spain
Language:English
Abstract:Chemical composition, rumen degradability and digestibility coefficients of whole cardoon (C. cardunculus L.) seed were studied on 2 different samples. Ruminal degradability of whole seed was determined by using the nylon bag technique in 3 rumen fistulated wethers. Four wethers were used to perform digestibility studies on a basal diet (0.5 hay and 0.5 concentrate) and 3 diets more where cardoon seed was included at rates of 0.1, 0.2 and 0.3 at the expense of the basal diet in a 4 x 4 Latin-square design. Additionally, the effects of 3 substitution rates (0, 0.1 and 0.25) on rumen fermentation patterns and fibrolytic activity, measured by the in sacco degradation of the lucerne hay included in the diets, were established using a 3 x 3 Latin-square design with 3 rumen fistulated wethers. Crude protein (CP), ether extract (EE) and neutral detergent fibre (NDF) contents of whole cardoon seed were 225, 250 and 338 g kg-1 DM, respectively, the last being highly lignified (acid detergent lignin (ADF)=104 g kg-1 DM) as consequence of its high hull proportion (45%). Rumen DM degradability of whole seed was 56.8%, while CP degradability was 82.9%. Diet digestibility coefficients were maximum for 0.1 substitution rate, except for EE, that showed a linear and quadratic increase through all diets. The estimates of seed digestibility obtained by the substitution and extrapolation methods were only similar for the 0.3 substitution rate. Digestibility coefficients (%) obtained by substitution at this level were 83.8 for CP, 82.8 for EE, 20.3 for NDF, 56.1 for OM, and 59.2 for energy. Seed inclusion in diets up to a 25% had no effect on rumen fermentation patterns or on ruminal fibrolytic activity, in spite of the high content of fat rich in unsaturated fatty acids (85.5% of total fatty acids) of this seed
Descriptors:cardoons. crude-protein. digestibility. ether-extracts. fibre. nutritive-value. organic-matter. pH. rumen-fermentation. rumen-metabolism. seeds. unsaturated-fatty-acids. wethers
Organism Descriptors:sheep. Cynara-cardunculus

Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Cynara. Asteraceae. Asterales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. RR300
Supplementary Info:22 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Supplementation of graded levels of Desmodium intortum hay to sheep feeding on maize stover harvested at three stages of maturity. 2. Rumen fermentation and nitrogen metabolism
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 215-229
CD Volume:332
Print Article: Pages: 215-229
Author(s):Tolera A Sundstol F
Author Affiliation:Department of Animal Production and Rangeland Management, Awassa College of Agriculture, P.O. Box 5, Awassa, Ethiopia
Language:English
Abstract:The utilization of cereal crop residues as animal feed is limited by deficiencies of protein, fermentable energy and other nutrients. In this study, rumen fermentation and nitrogen metabolism of lambs fed basal diets of maize stover harvested at 3 stages of maturity and supplemented with graded levels (0, 150, 300 and 450 g per head per day) of desmodium (D. intortum cv Greenleaf) hay were investigated. The maize stovers were harvested at 30, 22 and 12% grain moisture content which were designated as stages I, II and III, respectively. Rumen ammonia and volatile fatty acids (VFA), nitrogen (N) balance and microbial N supply, based on urinary excretion of purine derivatives, were determined. The concentration of ammonia-N in rumen fluid was significantly lower ($P<0.05$) in sheep fed maize stover harvested at stage III than at stages I and II and increased significantly ($P<0.001$) with increasing level of supplementation. The total VFA concentration and the molar proportions of acetate and butyrate in rumen fluid were not significantly influenced ($P>0.05$) by the stage of maturity of the stover. The total VFA content increased with increasing level of supplementation and varied from 64.1 to 113.6 mmol/l of rumen fluid. The N intake, N absorbed and N retained decreased with increasing stage of maturity of the stover and showed a significant linear increase ($P<0.05$) with increasing level of supplementation. However, use of maize stover as a sole diet resulted in negative N balance at all stages of maturity due to the low N content of the stover. Microbial N supply was not affected by stage of maturity of the stover while microbial efficiency (g/kg digestible organic matter fermented in the rumen) was significantly lower ($P<0.05$) in sheep fed maize stover harvested at stage III than at stages I and II. The microbial N supply increased with increasing level of supplementation, presumably due to improved degradation of the diet and increased supply of N, fermentable carbohydrates, sulfur and probably other essential nutrients
Descriptors:acetates. ammonium-nitrogen. butyrates. lambs. maize-stover. nitrogen-balance. nitrogen-metabolism. nitrogen-retention. rumen-fermentation. volatile-fatty-acids
Organism Descriptors:Desmodium-intortum. sheep
Supplemental Descriptors:Desmodium. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis.

Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. RR300
Supplementary Info:33 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:The influence of diet of the donor animal on the initial bacterial concentration of ruminal fluid and in vitro gas production degradability parameters
View Article: Animal Feed Science and Technology. 2000. 87 (3/4). 231-239
CD Volume:332
Print Article: Pages: 231-239
Author(s):Nagadi S Herrero M Jessop N S
Author Affiliation:Institute of Ecology and Resource Management, The University of Edinburgh, West Mains Road, Edinburgh EH9 3JG, UK
Language:English
Abstract:Six sheep were fed twice a day on a different ratio of sheep pellets and hay (20:80 (diet 1), 40:60 (diet 2) and 80:20 (diet 3)) in a replicated Latin square design to study the effect of the host diet on the bacterial concentration of ruminal liquor and in vitro gas production degradability parameters of cellulose, glucose and hay. Bacterial DM, bacterial absorbance and the volume of gas produced in the absence of substrate increased as the ratio of sheep pellet to hay increased. The gas production degradability parameters obtained from fitting data to the model Gas=B(1 - exp-C(t-Lag)) were also affected by changing the ratio of sheep pellets to hay in the diet of donor animals. For each substrate, incubation with ruminal fluid taken from sheep fed on diet 2 or 3 gave higher ($P<0.05$) asymptotic values 'B' (except for hay), rates 'C' of gas production and lower Lag times (cellulose and hay only) than when incubated in the ruminal fluid taken from sheep fed on diet 1. The digestibility of NDF from cellulose and hay was not affected by diet. Bacterial DM was strongly related to the absorbance of ruminal fluid and the volume of gas produced in the absence of substrate ($R2=0.99$, $P<0.001$). Results suggest that changing the ratio of concentrate to hay reduces the initial bacterial concentration and affects the gas production degradability parameters but the estimation of bacterial DM either from bacterial absorbance or volume of gas produced without substrate was not affected by changing the diet of donor animal
Descriptors:bacterial-count. cellulose. concentrates. diet. fibre. gas-production. glucose. hay. rumen-bacteria. rumen-fermentation. rumen-microorganisms
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:21 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Heat treatment of rapeseed meal increases phytate flow into the duodenum of sheep
View Article: Animal Feed Science and Technology. 2000. 88 (1/2). 31-37
CD Volume:332

Print Article: Pages: 31-37
Author(s):Park W Y Matsui T Yano F Yano H
Author Affiliation:Division of Applied Biosciences, Graduate School of Agriculture, Kyoto University, Sakyo-ku, Kyoto 606-8502, Japan
Language:English
Abstract:The effect of heat treatment on duodenal flow of phytate, i.e., inositol hexaphosphate, from rapeseed meal was studied in four sheep (50 kg) fitted with duodenal cannula. The rapeseed meal was fed untreated, heated at 133 deg C (H133) or heated at 143 deg (H143) for 3 h. Levels of phytate and its hydrolysis products, i.e., inositol tri-, tetra- and pentaphosphates were measured in duodenal digesta. Phytate was the major form of inositol phosphate (IP) in the duodenal digesta. Heat treatment increased daily flow of inositol hexaphosphate, inositol pentaphosphate, and inositol tetraphosphate into the duodenum. Approximately 22, 37 and 55% of dietary phosphorus in the form of IPs was recovered at the duodenum of sheep fed untreated, H133- and H143-treated rapeseed meals, respectively. Results suggest that heat treatment of rapeseed meal increases flow of phytate into the duodenum, decreasing the digestibility of dietary phytate phosphorus for sheep
Descriptors:processing. heat-treatment. rapeseed-oilmeal. phytates. hydrolysis. digesta. phosphorus. treatment. duodenum. small-intestine. inositol-phosphates. digestibility. flow
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:RR100. LL510
Supplementary Info:19 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Performance of lambs fed expeller pressed and solvent extracted karanj (Pongamia pinnata) oil cake
View Article: Animal Feed Science and Technology. 2000. 88 (1/2). 121-128
CD Volume:332
Print Article: Pages: 121-128
Author(s):Ravi U Singh P Garg A K Agrawal D K
Author Affiliation:Animal Nutrition Division, Indian Veterinary Research Institute, Izatnagar 243 122, India
Language:English
Abstract:In order to assess the growth and nutrient utilization in lambs fed processed karanj cake, 15 apparently healthy non-descript growing male lambs (mean body weight 10.6 plus or minus 0.50 kg, 6-7 months old) were equally divided into three groups (1, 2 and 3) in a completely randomized design. Animals in group 1 were fed conventional concentrate mixture containing de-oiled groundnut cake (DGNC) as a major protein source, whereas, in groups 2 and 3, DGNC was replaced at 50% level with expeller pressed karanj cake and solvent extracted karanj cake, respectively. Oat hay was fed ad libitum as sole roughage to all animals. The experimental feeding was continued for 98 days and a metabolism trial of 6 days was conducted after 45 days of experimental feeding. The digestibility (%) of dry matter, organic matter, crude protein, total carbohydrate, neutral detergent fibre and acid detergent fibre were comparable between groups 1 and 3, but were ($P<0.05$) lower in group 2. The digestibility of ether extract and hemicellulose was comparable among all the three groups. All the animals were in positive balances of nitrogen, calcium and phosphorus in which nitrogen and calcium balances were

lower (P<0.05) in group 2 compared to groups 1 and 3, but the P balance was comparable among all the groups. The crude protein and digestible crude protein content of three diets was comparable; however, total digestible nutrients content was lower (P<0.05) in the diet of group 2. The dry matter and crude protein intakes (g kg W-0.75) were similar in 3 groups but the DCP and TDN intakes (g kg W-0.75) were significantly (P<0.05) lower in group 2 as compared to groups 1 and 3. The average daily gain was also significantly (P<0.05) lower in group 2 as compared to groups 1 and 3. Moreover, feed conversion efficiency was similar among all the three groups. Thus, it may be concluded that solvent extracted karanj cake (at 20%) can be fed to the lambs without affecting performance for 98 days. However, feeding of expeller pressed karanj cake (24%) may not be recommended for growing lambs as it adversely affected intake and digestibility of nutrients
Descriptors:oilseed-cakes. digestibility. liveweight-gain. feed-conversion-efficiency. sheep-feeding. feeding. feed-intake
Organism Descriptors:sheep. Pongamia-pinnata
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Pongamia. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL500. LL520
Supplementary Info:22 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Influence of an anaerobic fungal culture administration on in vivo ruminal fermentation and nutrient digestion
View Article: Animal Feed Science and Technology. 2000. 88 (3/4). 201-217
CD Volume:332
Print Article: Pages: 201-217
Author(s):Lee S S Ha J K Cheng K J
Author Affiliation:National Livestock Research Institute, Rural Development Administration, Suweon 441-350, Korea Republic
Language:English
Abstract:Experiments were conducted to study the effect of administration of anaerobic fungal cultures or their enzymes on ruminal fermentation, microbial populations and enzyme activities in the rumen and general nutrient digestion in sheep. 12 mature sheep receiving 560 g of orchard grass hay and 240 g of concentrate per day were randomly assigned to 3 different treatments with 4 sheep per treatment. Control (FM) animals received 200 ml of the defined medium for fungal growth through rumen cannulae at 08.00 h each day (as a control treatment without added fungal enzymes and viable cells). The second group of animals (FE) were given 200 ml of supernatant from fungal culture incubated with an anaerobic ruminal fungus for 7 days (as a treatment for fungal enzymes in cultures without viable fungus). The third group (FC) was administered with an anaerobic fungal culture incubated for 7 days (as a direct-fed microbials (DFM) treatment with fungal enzymes and viable cells). Animals were exposed to each treatment for 15 days before rumen collection and digestion trials began. Direct administration of cultures of a polycentric fungal strain, Orpinomyces strain KNGF-2 isolated from a Korean native goat, to the rumen of sheep (FC) generally increased nutrient digestibility and nitrogen (N) retention resulting from an increase in numbers of bacteria and fungi in the rumen and by altering the patterns of volatile fatty acids (VFA) production.

However, administration of fungal enzyme (FE) failed to improve nutrient digestibility and N retention and ruminal fermentation parameters. Results indicate that these proteins may be rapidly degraded by ruminal microbes or that these enzymes could reduce the growth or activity of ruminal microbes. This is the first report of the effect of DFM originating from an anaerobic fungal culture. Such a development is particularly significant because this study demonstrates that the introduction of a microorganism with superior fibrolytic activity into the rumen can improve nutrient utilization in ruminants
Descriptors:anaerobes. digestibility. enzymes. nitrogen-retention. pH. rumen-bacteria. rumen-fermentation. rumen-fungi. volatile-fatty-acids. rumen-digestion
Identifiers:in vivo. Orpinomyces
Organism Descriptors:sheep. Chytridiales
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Mastigomycotina. Eumycota. fungi
Subject Codes:LL500. LL510. RR130
Supplementary Info:58 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Effects of multinutrient blocks and polyethylene glycol 4000 supplies on intake and digestion by sheep fed Acacia cyanophylla Lindl. foliage-based diets
View Article: Animal Feed Science and Technology. 2000. 88 (3/4). 219-238
CD Volume:332
Print Article: Pages: 219-238
Author(s):Moujahed N Kayouli C Thewis A Beckers Y Rezgui S
Author Affiliation:Ecole Superieure d'Agriculture de Mograne, 1121 Mograne, Tunisia
Language:English
Abstract:The effect of multinutrient block supply and polyethylene glycol 4000 (PEG) on intake, digestion and rumen fermentation was studied in sheep fed with air-dried Acacia cyanophylla foliage (acacia)-based diet. In Experiment I, 6 Noire de Thibar breed sheep (BW = 46 kg) were used in double 3 x 3 Latin square design. All diets included about 360 g of dry matter (DM) of oat-vetch hay and acacia ad libitum. Diet D0 was without a block supplement. Diet D1 included a urea-molasses-mineral block (B1). While D2 included another type of block (B2) that differed from B1 essentially by adding polyethylene glycol 4000. Each experimental period lasted 33 days (21 days for adaptation and 2 periods of 5 days for measurement separated by 2 days for rest). Feed intake, apparent digestibility of organic matter (OM), crude protein (CP) and crude fibre (CF) and retained nitrogen (Nr) were measured by total faecal collection. In Experiment II, 4 Noire de Thibar sheep (BW = 53 kg) fitted with rumen cannulae were fed sequentially D0, D1 and D2, respectively, to 90% of intake levels as measured in Experiment I on metabolic weight (MW) base. Fermentation parameters in rumen liquid (pH, NH3-N and volatile fatty acid (VFA)) were measured at 0, 2, 5, 8, 10, 13, 16 and 21 h after the morning meal. Protozoal number and composition in rumen fluid were determined at 2 h sampling time. Solid digesta kinetics through the rumen was measured using chromium (Cr) mordanced acacia. The DM and CP degradation of acacia was determined using the nylon bag technique. Acacia had a relatively high content of condensed tannins (41 g kg-1 of DM) and acid detergent lignin (176 g

kg-1 of DM). B1 and B2 were high in CP (381 and 369 g kg-1 of DM, respectively) compared to acacia (127 g kg-1 of DM, 20% bound to fibre) and hay (75 g kg-1 of DM). The 2 kinds of blocks improved similarly (P<0.001) acacia DM intake by 195 g. Block 1 increased (P<0.001) only diet CP digestibility and Nr. Block 2 increased (P<0.05) by a low extent DM and OM digestibility compared to D1, and remarkably (P<0.001) CP digestibility and Nr compared to D0 and D1. Block supplies considerably increased water intake. Both B1 and B2 increased (P<0.001) NH3-N and VFA concentrations in the rumen liquid with a positive specific effect of B2 (PEG). VFA molar proportion was significantly modified by B1 and B2. B1 and B2 decreased acetate proportion and increased propionate and butyrate proportions as compared to D0 (P<0.001). Protozoal number in rumen fluid was increased significantly by B1 and B2 (P<0.001). PEG-containing block (B2) increased protozoal number as compared to B1. Both B1 and B2 increased (P<0.001) solid outflow rate, with a specific increasing effect of B2 (D2) when compared to B1 (D1). Blocks supply did not modify in situ DM degradability of acacia, but B2 improved (P<0.05) effective degradability of CP when compared to D0 and D1 which were similar. It is concluded that both B1 and B2 improved the nutritive value of acacia-based diet. A further positive effect was noted in D2 (PEG), especially for N metabolism
Descriptors:acetates. ammonium-nitrogen. butyrates. digestibility. dry-matter. feed-supplements. feed-intake. fibre-content. hay. lignin. nitrogen. nutritive-value. organic-matter. pH. polyethylene-glycol. propionates. protein. rumen-fermentation. rumen-fluid. rumen-protozoa. tannins. volatile-fatty-acids. water-intake. urea. molasses. mineral-supplements. vitamin-supplements
Geographic Locator:Tunisia
Organism Descriptors:Acacia-saligna. sheep
Supplemental Descriptors:Acacia. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Maghreb. North-Africa. Africa. Mediterranean-Region. Developing-Countries. Threshold-Countries. Francophone-Africa
Subject Codes:LL500. LL510. RR000. RR130. RR300. KK540
Supplementary Info:61 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Feed selection and dietary preferences of forage by small ruminants grazing natural pastures in the Sahelian zone of Cameroon
View Article: Animal Feed Science and Technology. 2000. 88 (3/4). 253-266
CD Volume:332
Print Article: Pages: 253-266
Author(s):Ngwa A T Pone D K Mafeni J M
Author Affiliation:Institute of Agricultural Research for Development (IRAD), Mankon, Cameroon
Language:English
Abstract:The grazing behaviour of 2 mixed flocks of sheep and goats on a Sahelian rangeland was observed in the Far North Province of Cameroon. The area was dominated by thorn shrubs and a herbaceous layer made up of annual grasses. The study ran for 9 months, covering the rainy (June-September), post-rainy (October-December) and cold dry (January-March) seasons. A simple method was adapted for estimating the dietary preference of goats and sheep, and variation in plant biomass. Observation on the vegetative cycles of some browse species was also done to see whether this influenced dietary

preference. It was noticed that sheep and goats possess a certain degree of nutritional wisdom and that contrary to what most people might think, no amount of feed scarcity could force them to feed on some undesirable forage species. Browse species with high preference indices were Acacia seyal, A. senegal, Pterocarpus lucens and Ziziphus mauritiana. Goats spent 75% of their grazing time browsing, while the reverse was true for sheep. Maximum plant biomass was noticed in the month of September and high preference indices in the rainy season were seen to correspond to stages of maximum foliation of the browse species. The fruits, blossoms and pods produced by some of the browse species made a reasonable contribution to the diet of both goats and sheep, particularly in the dry season. Given the reputation of goats as highly-selective feeders, range management programmes should aim at preserving plant communities that are highly diversified in botanical structure as well as ensuring the survival of the tree species that are highly browsed by herbivores
Descriptors:biomass. browse-plants. browsing. dry-season. feeding-behaviour. forage. grazing-time. natural-grasslands. selective-grazing. wet-season. seasons. browse. grasslands
Geographic Locator:Cameroon. Sahel
Identifiers:grazing behaviour. Pterocarpus lucens
Organism Descriptors:Acacia-senegal. Acacia-seyal. goats. sheep. Ziziphus-mauritiana. Pterocarpus. plants
Supplemental Descriptors:Acacia. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Central-Africa. Africa-South-of-Sahara. Africa. Developing-Countries. ACP-Countries. Francophone-Africa. Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Pterocarpus. Ovis. Ziziphus. Rhamnaceae. Rhamnales. Papilionoideae
Subject Codes:FF007. KK100. LL180. LL300. PP350
Supplementary Info:35 ref
ISSN:0377-8401
Year:2000
Journal Title:Animal Feed Science and Technology

Title:Suppressing spread of alfalfa mosaic virus in grazed legume pasture swards using insecticides and admixture with grass, and effects of insecticides on numbers of aphids and three other pasture pests
View Article: Annals of Applied Biology. 137 (3). December, 2000. 259-271
CD Volume:356
Print Article: Pages: 259-271
Author(s):Jones R A C Ferris D G
Author Affiliation:Plant Pathology Group, Agriculture Western Australia, Bentley, WA, 6983: rjones@agric.wa.gov.au
Language:English
Language of Summary:English (EN)
Abstract:Field experiments were sown with alfalfa mosaic virus (AMV)-infected or healthy seed of burr medic (Medicago polymorpha) and grazed by sheep. Seed-infected plants acted as primary sources for virus spread by naturally occurring aphids. Admixture with annual ryegrass (Lolium rigidum), a non-host of AMV, and different insecticides were used in attempts to suppress virus spread. Sowing swards to provide the ratios 1:4 and 1:13 of medic:ryegrass plants diminished AMV spread in medic plants by 23% and 45% respectively. Applications of organophosphorus (demeton-s-methyl), carbamate (pirimicarb) and newer generation synthetic pyrethroid (alpha-cypermethrin) insecticides, all significantly decreased final AMV incidence. Alpha-cypermethrin was the most effective, suppressing AMV

incidence by 87% (two sprays), 79% (one late spray) and 65% (one early spray). Two sprays of demeton-s-methyl decreased incidence by only 36%, while two and 2 weekly applications of pirimicarb diminished it by 29-65% and 35-70% respectively. AMV infection of medic seed harvested decreased by up to 76% in sprayed plots. Insecticide treatment did not prevent winged aphids from landing but numbers of wingless Acyrthosiphon kondoi colonising swards were suppressed by up to 92% by spraying with pirimicarb and up to 96% by alpha-cypermethrin. A. kondoi were much slower to recover with alpha-cypermethrin than with pirimicarb, the former still significantly diminishing its numbers 35 days after spraying. Alpha-cypermethrin was also very effective at suppressing Halotydeus destructor and Penthaleus major but not Sminthurus viridis. Greater effectiveness of insecticides in controlling spread of AMV in pasture than has been found previously with non- persistently aphid-transmitted viruses in annual crops seems due to the key role played by wingless aphids as virus vectors
Descriptors:disease incidence; grazed pasture sward; pasture pest control; seed transmission. Agronomy (Agriculture); Economic Entomology; Infection; Pest Assessment Control and Management; Pesticides; Vector Biology. alpha-cypermethrin [synthetic pyrethroid]: insecticide; demeton-s- methyl [organophosphorus]: insecticide; pirimicarb [carbamate]: insecticide
Organism Descriptors:Acyrthosiphon onio (Homoptera): pest, vector; Halotydeus destructor (Acarina): pest, vector; Lolium rigidum [annual ryegrass] (Gramineae): admixture component, forage, non-host; Medicago polymorpha [burr medic] (Leguminosae): forage, host; Penthaleus major (Acarina): pest, vector; Sminthurus viridis (Collembola): pest, vector; alfalfa mosaic virus (Alfalfa Mosaic Virus Group): phytopathogen; aphids (Homoptera): pest, vector; sheep (Bovidae): grazer
Supplemental Descriptors:Acarina: Chelicerata, Arthropoda, Invertebrata, Animalia; Alfalfa Mosaic Virus Group: Plant Viruses, Viruses, Microorganisms; Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Collembola: Insecta, Arthropoda, Invertebrata, Animalia; Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae; Homoptera: Insecta, Arthropoda, Invertebrata, Animalia; Leguminosae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Animals; Arthropods; Artiodactyls; Chelicerates; Chordates; Dicots; Insects; Invertebrates; Mammals; Microorganisms; Monocots; Nonhuman Mammals; Nonhuman Vertebrates; Plant Viruses; Plants; Spermatophytes; Vascular Plants; Vertebrates; Viruses
Subject Codes:Agronomy (Agriculture); Economic Entomology; Infection; Pest Assessment Control and Management; Pesticides; Vector Biology
ISSN:0003-4746
Year:2000
Journal Title:Annals of Applied Biology

Title:The formation of stable fatty acid substrate complexes in prostaglandin H(2) synthase-1
View Article: Arch Biochem Biophys 2000 Aug 1;380(1):39-45
CD Volume:333
Print Article: Pages: 39-45
Author(s):Malkowski MG Theisen MJ Scharmen A Garavito RM
Author Affiliation:Department of Biochemistry, Michigan State University, Room 522, Biochemistry Building, East Lansing, Michigan 48824-1319, USA
Abstract:We have developed a protocol to purify apo-ovine (o) prostaglandin endoperoxide H(2) synthase-1 (PGHS-1) to homogeneity from ram seminal vesicles. The resulting apo enzyme can then be

reconstituted with Co(3+)-protoporphyrin IX instead of Fe(3+)-protoporphyrin IX to produce a native-like, but functionally inert, enzyme suitable for the production of enzyme:fatty acid substrate complexes for biophysical characterization. Co(3+)-protoporphyrin IX reconstituted oPGHS-1 (Co(3+)-oPGHS-1) displays a Soret band at 426 nm that shifts to 406 nm upon reduction. This behavior is similar to that of cobalt-reconstituted horseradish peroxidase and myoglobin and suggests, along with resonance Raman spectroscopy, that the Co(3+)-protoporphyrin IX group is one in a six-coordinate, cobalt(III) state. However, Co(3+)-oPGHS-1 does not display cyclooxygenase or peroxidase activity, nor does the enzyme produce prostaglandin products when incubated with [1-(14)C]arachidonic acid. The cocrystallization of Co(3+)-oPGHS-1 and the substrate arachidonic acid (AA) has been achieved using sodium citrate as the precipitant in the presence of the nonionic detergent N-octyl-beta-d-glucopyranoside. Crystals are hexagonal, belonging to the space group P6(5)22, with cell dimensions of a = b = 181.69 A and c = 103.74 A, and a monomer in the asymmetric unit. GC-MS analysis of dissolved crystals indicates that unoxidized AA is bound within the crystals
Descriptors:Animal. Apoenzymes. Cobalt. Crystallization. Electrophoresis, Polyacrylamide Gel. Fatty Acids. Iron. Isoenzymes. Male. Mass Fragmentography. Microsomes. Peroxidase. Prostaglandin-Endoperoxide Synthase. Protein Binding. Protoporphyrins. Seminal Vesicles. Sheep. Spectrum Analysis, Raman. Support, U.S. Gov't, P.H.S.
Geographic Locator:UNITED STATES
ISSN:0003-9861
Year:2000
Journal Title:Archives of Biochemistry and Biophysics

Title:Endogenous nitrogen losses in monogastrics and ruminants as affected by nutritional factors
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (Special iss.). 210-218
CD Volume:297
Print Article: Pages: 210-218
Author(s):Zebrowska T Kowalczyk J
Author Affiliation:The Kielanowski Institute of Animal Physiology and Nutrition, Polish Academy of Sciences, 05-110 Jablonna, Poland
Document Editor:Aumaitre-A. Lee-B-D. Ha-J-K
Conference Title:Proceedings of 2000 International Symposium Recent Advances in Animal Nutrition, Seoul, Korea, 20-22 April 2000
Language:English
Abstract:Endogenous secretion of nitrogen originate from various sources including saliva, pancreatic secretion, bile and shedding of epithelial cells. Contributions of particular sections of the digestive tract of the pig and sheep to endogenous nitrogen secretion, reabsorption and losses are affected by both animal and dietary factors such as feed intake, protein and fibre content, presence of antinutritive factors and others. Measurements of endogenous nitrogen secretion are important for improving the efficiency of nitrogen and energy utilization in animals. Endogenous nitrogen passing the ileum represents only a fraction of the total endogenous nitrogen secreted into the gut. Secretion and reabsorption of nitrogen compounds in the particular segments of the digestive tract were estimated using a 15N dilution technique and digesta exchange between 15N-labelled and unlabelled animals. Results obtained with such techniques indicate that in a pig of 30 kg BW, total secretion of nitrogen compounds into the whole gut amounted to 23.5 g N/day; of that 14.4 g N/day was reabsorbed in the small intestine, and ileal endogenous nitrogen losses were 4.6 g N/day. In

sheep of 25 kg body weight fed isonitrogenous diets with low or high fibre content, endogenous nitrogen secreted into the entire digestive tract was about 114 and 136% of nitrogen ingested, respectively; of that 86 and 80% was reabsorbed and about 14% was lost in faeces. The foregoing data demonstrate that endogenous nitrogen compounds secreted into the gut of both pigs and sheep play a significant role in the metabolism and economy of nitrogen utilization
Descriptors:bile. diets. digesta. faeces. feed-intake. fibre. ileum. intestines. saliva. small-intestine. techniques. nitrogen-metabolism. excretion
Organism Descriptors:pigs. sheep
Supplemental Descriptors:Sus-scrofa. Sus. Suidae. Suiformes. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. ruminants
Subject Codes:LL510
Supplementary Info:37 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Effect of grass lipids and long chain fatty acids on cellulose digestion by pure cultures of rumen anaerobic fungi, Piromyces rhizinflata B157 and Orpinomyces joyonii SG4
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (1). 23-30
CD Volume:297
Print Article: Pages: 23-30
Author(s):Lee S S Ha J K Kim K H Cheng K J
Author Affiliation:National Livestock Research Institute, Rural Development Administration, Suweon 441-350, Korea Republic
Language:English
Abstract:The effects of grass lipids and long chain fatty acids (LCFA; palmitic, stearic and oleic acids), at low concentrations (0.001-0.02%), on the growth and enzyme activity of 2 strains of anaerobic fungi, the monocentric strain, P. rhizinflata B157, and the polycentric strain, O. joyonii SG4, isolated from bison and sheep, respectively, were investigated. The addition of grass lipids to the medium decreased ($P<0.05$) filter paper (FP) cellulose digestion, cellulase activity and fungal growth compared with the control treatment. However, LCFA did not have any significant inhibitory effects on fungal growth and enzyme activity, which, however, were stimulated ($P<0.05$) by the addition of oleic acid as in rumen bacteria and protozoa. This is the first report known on the effects of LCFA on rumen anaerobic fungi
Descriptors:rumen-microorganisms. in-vitro. cellulose. cultures. digestion. fatty-acids. lipids. long-chain-fatty-acids. rumen. rumen-fungi. cellulase. enzyme-activity. inhibition. microorganisms. oleic-acid. rumen-bacteria. saturated-fatty-acids. artificial-rumen. unsaturated-fatty-acids. cellulose-digestion. cellulolytic-microorganisms
Organism Descriptors:fungi. Bison. sheep
Supplemental Descriptors:Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis
Subject Codes:LL500. LL510
Supplementary Info:43 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Cellularity of adipose tissue obtained from different sex and growth stages of Hanwoo cattle and sheep
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (2). 155-160
CD Volume:297
Print Article: Pages: 155-160
Author(s):Lee H J Lee S C Kim D W Park J G Han In K
Author Affiliation:National Livestock Research Institute, RDA, 564 Omokchun-dong, Suweon 441-350, Korea Republic
Language:English
Abstract:Adipocyte samples were obtained from omental, subcutaneous, intermuscular and intramuscular adipose tissue depots of Hanwoo [Korean Native] bulls, steers, heifers and cows (n = 8 per group), and perirenal, omental and subcutaneous adipose tissues of Finn-Dorset fetuses, suckling lambs and wethers (number not given). Bulls had less subcutaneous and kidney fat than steers even though their slaughter and carcass weights were greater. Cows had a greater amount of subcutaneous fat and fat in internal organs than heifers. Steers had larger adipocytes in subcutaneous, intermuscular and intramuscular adipose tissues than bulls, although the differences were only significant for the subcutaneous adipose tissue depots. Adipocytes appeared to be largest in omental and smallest in intramuscular adipose tissue, although the differences were not significant. In heifers and cows, significant site effects ($P<0.05$) were found in adipocyte diameter, surface area and volume, and adipocytes were largest in omental tissue. Cell volume of intramuscular tissue was greater in cows than heifers ($P<0.05$). Intramuscular adipose tissue tended to have a greater numbers of cells per gram tissue and was less mature than other adipose tissues. In sheep, regardless of adipose tissue depots, wethers had greater adipocyte diameters than any other group. Within adipose depots, cell size was greatest in the omental tissue of wethers and lowest in the renal and subcutaneous adipose tissue depots of fetal lambs. The cell size of adipocytes increased with age, especially between fetal and suckling lambs due to a rapid hypertrophy of both perirenal and subcutaneous adipocytes during the suckling period
Descriptors:adipose-tissue. adipocytes. bulls. carcass-weight. cows. fetus. heifers. lambs. omentum. kidneys. steers. suckling. sex-differences. age. fat. cells. volume. diameter. size. Korean-Native
Identifiers:finn-dorset
Organism Descriptors:cattle. sheep
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis
Subject Codes:LL210. LL600
Supplementary Info:29 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:The effect of superovulation of Javanese thin-tail ewes prior to mating on lamb birth weight and preweaning growth
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (3). 292-299
CD Volume:297
Print Article: Pages: 292-299
Author(s):Manalu W Sumaryadi M Y Sudjatmogo Satyaningtijas A S
Author Affiliation:Department of Physiology and Pharmacology, Faculty of Veterinary Medicine, Bogor Agricultural University, Bogor 16151, Indonesia
Language:English

Abstract:80 Javanese Thin-tailed ewes were given 2 injections of PGF2 alpha (7.5 mg), 11 days apart. Ewes were also injected with 700 IU PMSG (Folligon) or saline (controls, nonsuperovulated) at the time of the 2nd prostaglandin injection and were mated 2 days later. Birth weight was recorded for all lambs and preweaning growth was recorded for lambs born to 22 of the ewes. During pregnancy and lactation, the experimental ewes were fed on a low (12% CP and 65% TDN) or a high (15% CP and 75% TDN) quality ration. During lactation, milk was collected twice a day and was refed to the lambs immediately after collection. Superovulation or ration quality did not affect lamb birth weight. Litter size significantly affected lamb birth weight ($P<0.05$), and there was an interaction of superovulation and litter size. Nonsuperovulated ewes giving birth to multiple lambs had lower ($P<0.05$) average lamb birth weight (1.34 kg) than those giving birth to a single lamb (1.97 kg). However, for superovulated ewes there was no difference in birth weight between multiple lambs (1.68 kg) and singles (1.91 kg). Birth weight of multiple lambs born to superovulated ewes was greater than that of multiple lambs born to nonsuperovulated ewes ($P = 0.07$). Superovulation and ration quality did not effect lamb preweaning gain which ranged from 69.52-91.31 g/day. Mean milk yield of superovulated ewes was higher than that of controls ($P<0.01$)
Descriptors:birth-weight. ewes. superovulation. liveweight-gain. lambs. litter-size. milk-yield. PMSG. prostaglandins. protein-intake. nutrition
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. WW000. LL110
Supplementary Info:25 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Protected (bypass) protein and feed value of hazelnut kernel oil meal
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (3). 317-322
CD Volume:297
Print Article: Pages: 317-322
Author(s):Saricicek B Z
Author Affiliation:Department of Animal Nutrition, Faculty of Agriculture, Ondokuz Mayis University, 55139 Samsun, Turkey
Language:English
Abstract:In situ and in vivo digestion trials were conducted to determine the nutritive value of hazelnut kernel oilmeal (HKOM), and the effects of HKOM on nitrogen balance. In the in situ study, nylon bags were suspended in the rumen of 3 Karayaka rams to estimate protein degradation. Soyabean meal (SBM) and corn [maize] gluten meal (CGM) were analysed for pepsin soluble protein (PSP) using a pepsin digestion method. In the digestion trials, 4 Karayaka rams (36 months of age) were used in a 4x4 Latin square and were given diets containing HKOM, SBM or CGM. The degradability of DM and CP, and PSP content of HKOM were lower than that of SBM, but higher ($P<0.01$) than that of CGM. EPD of HKOM was higher ($P<0.01$) than that of SBM or CGM. The apparent digestion coefficients of organic matter and CP for HKOM were lower than for SBM, but higher than for CGM. N retention of HKOM was higher than that of SBM and lower than that of CGM
Descriptors:maize-gluten-meal. crude-protein. diets. digestibility. nutrients. pepsin. protected-protein. protein-sources. rams.

nitrogen-retention. rumen. soyabean-oilmeal. nutritive-value. hazelnuts. oilmeals
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL500
Supplementary Info:36 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences
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Title:Mammary gland indices at the end of lactation in the superovulated Javanese thin-tail ewes
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (4). 440-445
CD Volume:297
Print Article: Pages: 440-445
Author(s):Manalu W Sumaryadi M Y Sudjatmogo Satyaningtijas A S
Author Affiliation:Department of Physiology and Pharmacology, Faculty of Veterinary Medicine Bogor Agricultural University, Bogor 16151, Indonesia
Language:English
Abstract:30 lactating Javanese thin-tail ewes (12 ewes had been injected, prior to mating, with 700 IU pregnant mare serum gonadotropin, and 18 ewes with saline as a control) were used to evaluate the effect of superovulation on milk yield during lactation and mammary chemical indices at the end of lactation. 13 ewes (9 control and 4 superovulated) were fed a low-quality ration and the other 17 ewes (9 control and 8 superovulated) were fed a high-quality ration. Superovulated ewes, on either plane of nutrition, had higher milk yields (57%) than controls. At the end of lactation, superovulated ewes had higher mammary DM tissue, mammary DNA concentration, total mammary DNA and RNA contents than control. Superovulation did not affect total collagen content. Feed quality did not significantly increase milk yield during lactation and mammary chemical indices at the end of lactation. It is concluded that the increase in milk yield in superovulated ewes was due to the increased mammary secretory cell numbers and their synthetic activities during lactation as a result of the increased endogenous hormonal stimulation of mammary growth and development during pregnancy
Descriptors:ewes. lactation. collagen. ewe-milk. milk-yield. pregnancy. RNA. mammary-glands. mammary-development. superovulation. plane-of-nutrition. mammary-tissue. DNA
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL110. LL250. LL600
Supplementary Info:17 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences
Copyright:Copyright CAB International

Title:Effects of protein and carbohydrate supplements on feed digestion in indigenous Malaysian goats and sheep
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (4). 464-469
CD Volume:297
Print Article: Pages: 464-469

Author(s):Darlis Abdullah N Halim R A Jalaludin S Ho Y W
Author Affiliation:Institute of Bioscience, Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor, Malaysia
Language:English
Abstract:Experiments were conducted to determine the effects of soyabean meal (SBM) as a source of protein and sago meal (SM) as a source of carbohydrate on in situ and in vivo digestibility of dietary components in 4 male goats (Kambing Katjang) and 4 male sheep (Malin) weighing 25-35 kg. Rumen volume, as well as rumen fluid dilution rate were also determined. The animals were housed in single pens with individual feeding and drinking troughs and each animal was fitted with a rumen fistula. They were fed two diets: chopped rice straw+200 g soyabean meal (SBM), and chopped rice straw+190 g soyabean meal+300 g sago meal (SBM+SM). Rice straw was offered ad libitum. The supplements were isonitrogenous (80 g CP/animal daily), but the proportions of DM, organic matter (OM), crude fibre (CF), NDF and ADF were lower in the SBM supplement (191, 165, 11, 40, 15 g/animal daily for DM, OM, CF, NDF and ADF, respectively) than in the SBM+SM supplement (445, 423, 25, 102, 38 g/animal daily for DM, OM, CF, NDF and ADF, respectively). Two animals from each species were fed either supplement in a cross-over design in two periods. Each period lasted for 4 weeks. In situ and in vivo digestibility studies were carried out, followed by the determination of rumen volume and rumen fluid dilution rate. The results showed that straw DM and total DM intakes of goats (average of 48.7 g/kg0.75, 72.7 g/kg0.75, respectively) were higher (P<0.01) than sheep (average of 35.6 g/kg0.75, 61.6 g/kg0.75, respectively), but OM, N and GE intakes were not significantly different between the 2 species. When the effect of supplements was compared, animals fed SBM+SM supplement had higher (P<0.001) DM, OM and GE intakes than animals fed the SBM supplement. Potential degradability of rice straw DM was higher(P<0.01) in goats (average of 48.8%) than in sheep (average 46.1%). The supplements had no significant effect on the potential degradability of DM, OM and NDF, but they had an effect (P<0.05) on the degradation rates of DM and NDF. The addition of sago meal in the diet reduced the degradation rates of DM and NDF of rice straw in the rumen. Potential degradability of DM of soyabean meal did not differ between species or supplements. Sago meal was highly degradable; at 24 h of incubation in the rumen, 90-95% of DM loss was observed. There was a significant interaction between animal species and supplements in the in vivo digestibility of ADF and GE. In animals fed SBM supplement, the in vivo digestibility of ADF was higher (P<0.05) in goats (50.6 plus or minus 4.22%) than in sheep (44.4 plus or minus 3.21%), but digestibility of GE was higher (P<0.05) in sheep (70.2 plus or minus 1.93%) than in goats (63.0 plus or minus 3.07%). The digestibility values of CP and OM were higher (P<0.05) in sheep when compared with goats. Animals fed SBM+SM supplement showed higher (P<0.05) DM and OM digestibility values than animals fed SBM supplement, but digestibility values of CP were higher (P<0.05) in animals fed SBM supplement. Differences in in vivo digestibility values of CF and NDF were not significantly different between animal species or supplements. Water intake, rumen volume (1/kg0.75), rumen fluid dilution rate and mean retention time were similar between the two animal species. However, rumen fluid dilution rate and mean retention time were affected (P<0.01) by supplements. Animals fed SBM+SM had faster rumen fluid dilution rate and consequently shorter mean retention time
Descriptors:genetics. species-differences. carbohydrates. proteins. rumen-digestion. rumen-fluid. digestibility. digestion. supplements. diets. dry-matter. feeding. fibre. intake.

interactions. retention. rice-straw. crop-residues. rumen. soyabeans. soyabean-oilmeal. straw. effects. water-intake. sago
Geographic Locator:Malaysia
Organism Descriptors:goats. sheep. Metroxylon-sagu. Glycine-(Fabaceae)
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Metroxylon. Arecaceae. Arecales. monocotyledons. angiosperms. Spermatophyta. plants. Papilionoideae. Fabaceae. Fabales. dicotyledons. South-East-Asia. Asia. Developing-Countries. Threshold-Countries. ASEAN-Countries. Commonwealth-of-Nations
Subject Codes:LL240. LL510. LL500. RR000
Supplementary Info:20 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Feeding value of ammoniated rice straw supplemented with rice bran in sheep: I. Effects on digestibility, nitrogen retention and microbial protein yield
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (4). 490-496
CD Volume:297
Print Article: Pages: 490-496
Author(s):Orden E A Yamaki K Ichinohe T Fujihara T
Author Affiliation:Faculty of Life and Environmental Science, Shimane University, Matsue City 690 8504, Shimane, Japan
Language:English
Abstract:In vivo digestibility, nitrogen retention and microbial protein yield from diets of 100% ammonia-treated rice straw (ARS) (D1); 65% untreated rice straw (URS)+30% rice bran (RB)+5% SBM (D2) and 85% ARS+15% RB (D3) were determined using three Japanese Corriedale wethers in a 3 x 3 Latin square design. Results showed that DM consumption and organic matter digestibility were highest in D3; high N digestibility was observed when SBM was included in the RB-supplemented URS diet. DM intake and OM digestibility were the same for D1 and D3. Solubility of fibre bonds was increased by ammoniation, resulting in higher NDF digestibility. N retention and microbial protein yield of rice bran-supplemented groups was higher than ARS, but supplementation did not significantly increase efficiency of microbial protein synthesis from ARS which did occur when RB+SBM was added to untreated straw. The quality of ammoniated rice straw could be improved through RB supplementation because of its positive effects on DM digestibility, N retention and microbial protein yield. However, the addition of RB+SBM to URS resulted in more efficient N utilization
Descriptors:processing. ammonia-treatment. ammonia. nitrogen-balance. microbial-proteins. digestibility. nitrogen-retention. retention. rice. rice-bran. rice-straw. crop-residues. straw. supplements. dry-matter. fibre. protein-digestibility. protein-synthesis. quality. supplementary-feeding. synthesis. utilization
Organism Descriptors:sheep. Oryza
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL500. LL510. RR100
Supplementary Info:47 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Nutritional requirements and management strategies for farmed deer
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (4). 561-573
CD Volume:297
Print Article: Pages: 561-573
Author(s):Shin H T Hudson R J Gao X H Suttie J M
Author Affiliation:College of Life Science and Natural Resources, Sung Kyun Kwan University, Suwon 440-746, Korea Republic
Language:English
Abstract:Aspects of current knowledge on the energy, protein, mineral, vitamin and water requirements of der are reviewed. Nutritional problems of farmed deer are described with recommendations for prevention or control. A comparison of production efficiency of deer, lamb, beef cattle and dairy cattle is also presented
Descriptors:reviews. nutrient-requirements. nutrition. energy. proteins. minerals. vitamins. water. requirements. protein-requirement. energy-requirements
Organism Descriptors:deer. sheep. cattle
Supplemental Descriptors:Cervidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. Bos
Subject Codes:LL500. LL520
Supplementary Info:56 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Effect of superovulatory regimens on ovarian response and embryo production in fine wool sheep in tropics
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (5). 595-599
CD Volume:297
Print Article: Pages: 595-599
Author(s):Naqvi S M K Gulyani R Pareek S R
Author Affiliation:Division of Physiology, Central Sheep & Wool Research Institute, Avikanagar, Via-Jaipur, Rajasthan 304-501, India
Language:English
Abstract:Fine wool sheep (n=18, Rambouillet and Bharat Merino) maintained in a tropical environment (Avikanagar, India) were allocated to three treatment groups. Oestrus was induced with two injections of PGF2 alpha (10 mg im) given 10 days apart. Superovulation treatment started 2 days prior to the second injection of PGF2 alpha . Each ewe was treated with a total dose of 25 units FSH (Super-OV) i.m. every 12 h over 3 days; Group 2 were also injected i.m. with 200 IU PMSG at the first injection of FSH; Group 3 was treated as in Group 2 and also with GnRH (4 micro g Buserelin) at the onset of oestrus. The ewes in oestrus were mated with a fertile ram. Ovarian examination and recovery of embryos and ova were performed at laparoscopy and laparotomy on day 3 or 4 after mating. Data for onset of oestrus, duration of oestrus, number of corpora lutea (CL), number of unovulated large follicle (LF), embryo recovery rate, embryo quality and fertilization were recorded for the 3 groups. Ewes in Group 1 came into oestrus later ($P<0.05$; 50.0 plus or minus 7.29 h) than the ewes in Groups 2 (24.5 plus or minus 3.58 h) and 3 (32.5 plus or minus 3.58 h). The duration of oestrus, ovarian size and ovarian response (number of CL and LF) did not differ significantly among the 3 groups. The proportion of ewes with a

superovulatory response (more than or equal to 2 CL) was the lowest (50%) in Group 1 treated with FSH alone but ova/embryo recovery (100%) and fertilization (100%) was significantly (P<0.05) higher than in Group 2 (58.3 and 85.7%, respectively) and Group 3 (48.6 and 50%, respectively). It is concluded that in tropical fine wool sheep, there is no difference in the 3 treatments for yield of good quality embryos but ovarian response and ovulation rate increased on additional use of PMSG and GnRH respectively to FSH alone
Descriptors:embryos. ovaries. tropics. oestrus. ewes. fertilization. FSH. GnRH. ova. ovulation. ovulation-rate. PMSG. superovulation. biotechnology
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. WW000
Supplementary Info:21 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Heat production and thermoregulatory responses of sheep fed different roughage proportion diets and intake levels when exposed to a high ambient temperature
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (5). 625-629
CD Volume:297
Print Article: Pages: 625-629
Author(s):Sudarman A Ito T
Author Affiliation:Faculty of Applied Biological Science, Hiroshima University, Kagamiyama 1-4-4 Higashihiroshima 739-8528, Japan
Language:English
Abstract:Six yearling Suffolk ewes, exposed to ambient temperatures of 20 or 30 deg C, were used to study the effect of diets containing different proportions of roughage (30% LR, and 70% HR) and different intake levels (0.7 M and 1.3 M) on heat production and thermoregulatory responses. Sheep fed HR had higher heat production (HP) and time spent eating (TSE) and lower time spent standing (TSS) than those fed LR. But effect of roughage proportion on vaginal temperature (Tv) was obvious only at high intake and at 30 deg C. Sheep fed at the high intake level had higher Tv, HP, TSS, and TSE than those fed low intake level. Respiration rate (RR) was not affected by roughage proportion or intake level but was affected by ambient temperature. Ambient temperature did not have an effect on HP, TSS and TSE. At 30 deg C sheep had higher Tv and RR than those at 20 deg C. There were interactions between intake level and ambient temperature in TSS, between intake level and roughage proportion in TSE, and between roughage proportion and ambient temperature in HP. Results indicated that high roughage diet imposes a greater potential heat load on animals than low roughage diet when given at high ambient temperature, but not at low ambient temperature
Descriptors:diets. roughage. ewes. heat-production. respiration-rate. body-temperature. environmental-temperature. feed-intake. fibre. feeding-behaviour. animal-behaviour
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:24 ref
ISSN:1011-2367
Year:2000

Journal Title:Asian-Australasian Journal of Animal Sciences

Title:The effect of formaldehyde treatment of solvent and mechanical extracted cottonseed meal on the performance, digestibility and nitrogen balance in lambs
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (6). 785-790
CD Volume:297
Print Article: Pages: 785-790
Author(s):Khan A G Azim A Nadeem M A Ayaz M
Author Affiliation:Animal Nutrition Institute, National Agricultural Research Centre, Islamabad, Pakistan
Language:English
Abstract:The effect of formaldehyde treatment of solvent and mechanically extracted cottonseed meal on the performance, digestibility and nitrogen balance was assessed in lambs. Four total mixed rations, A, B, C and D containing 40% untreated and treated solvent and mechanically extracted meal were prepared. Sixteen male lambs, mean body weight of 20-22 kg, were randomly allocated to experimental rations and fed individually during a 90-day growth trial. The treatment of solvent-extracted cottonseed meal resulted in a linear decrease in ruminal protein degradation. Maximum decrease (64%) in protein degradation was observed at 4 h incubation time with 0.3% formaldehyde treatment. Highest daily weight gain was observed in lambs fed on rations B and D compared with lambs fed on rations A and C. Daily BW gain was higher on rations having 0.3% formaldehyde treated cottonseed meals. Higher DM digestibility was observed with ration D compared with other rations. Higher ($P<0.05$) CP and crude fibre digestibility was observed with rations B and D compared with rations A and C. Nitrogen retention as a percentage of nitrogen intake was ($P<0.05$) higher for lambs fed on rations B and D compared with rations A and C. A similar pattern was observed for nitrogen retention as percentage of nitrogen absorbed. The present study suggested that oil extraction methods of cottonseed did not alter their meal utilization in lambs, however, formaldehyde (0.3%) treatment of meals enhanced its efficiency for growth, digestibility and nitrogen balance in lambs
Descriptors:processing. chemical-treatment. formaldehyde. sheep-feeding. liveweight-gain. rumen-digestion. protein-degradation. treatment. cottonseed. cottonseed-oilmeal. digestibility. lambs. nitrogen-balance. nitrogen-retention. rumen. retention. utilization
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:RR100. LL500. LL520
Supplementary Info:21 ref
ISSN:1011-2367
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Journal Title:Asian-Australasian Journal of Animal Sciences
Copyright:Copyright CAB International

Title:The use of lupins in feeding systems - review
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (6). 861-882
CD Volume:297
Print Article: Pages: 861-882
Author(s):Petterson D S
Author Affiliation:98 Stanley Street, Nedlands, WA 6009, Australia
Language:English

Abstract:This review examines the composition of the major lupin species (Lupinus albus, L. angustifolius and L. luteus) under the headings: protein and amino acids, carbohydrates and lipids, minerals and vitamins, and biologically active compounds. The nutritive value of lupins for intensive animal industries is discussed under the headings: beef and dairy cattle, sheep, pigs, poultry, finfish and crustaceans, and other species
Descriptors:feeds. reviews. lupins. feeding. nutrition-programmes. acidosis. carbohydrates. cellulose. crude-protein. cultivars. dairy-cattle. nutritive-value. composition. diet. diets. digestibility. digestible-energy. inhibitors. lectins. legumes. lysine. methionine. peas. polysaccharides. poultry. seeds. soyabeans. soyabean-oilmeal. starch. storage. trypsin. trypsin-inhibitors
Geographic Locator:Asia. Australia. Europe. Japan
Organism Descriptors:Lupinus-albus. Lupinus-luteus. cattle. Lupinus. Lupinus-angustifolius. pigs. sheep. Glycine-(Fabaceae)
Supplemental Descriptors:Lupinus. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Sus-scrofa. Sus. Suidae. Suiformes. Ovis. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. East-Asia. Asia
Subject Codes:RR300
Supplementary Info:7 pp. of ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Feeding value of ammoniated rice straw supplemented with rice bran in sheep: II. In situ rumen degradation of untreated and ammonia treated rice straw
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (7). 906-912
CD Volume:297
Print Article: Pages: 906-912
Author(s):Orden E A Yamaki K Ichinohe T Fujihara T
Author Affiliation:Laboratory of Animal Science, Faculty of Life and Environmental Science, Shimane University, Matsue-shi 690-8504, Shimane, Japan
Language:English
Abstract:The effect of ammonia treatment and rice bran supplementation on the in situ rumen degradation of rice straw was determined using three Japanese Corriedale wethers fitted with a permanent rumen cannula. About 4-g samples of diets containing 100% untreated rice straw (URS); 100% ammonia treated rice straw (ARS); 65% URS+30% rice bran (RB)+5% soyabean meal (SBM) (T1); and 85% ARS+15% RB (T2) were incubated at 0, 4, 8, 16, 24, 48, 72 and 96 h in the rumen of sheep to measure DM, CP and NDF degradability. The DM disappearance of ARS based diets was about 20% higher than that of URS based diets. Rice bran supplementation improved DM disappearance of URS but not of ARS. Degradation parameters showed that ammoniation increased rate (c) of straw degradation resulting in higher DM and fibre degradability but RB supplementation did not. ARS gave similar DM and CP solubility and effective rumen degradability (ED) with that of the supplemented groups indicating that ammoniation alone can give the same effect on rumen degradability of sheep receiving low quality roughage. All degradation parameters for NDF were consistently higher in ARS based-diets indicating improved fibre solubility. Rice bran supplementation did not affect degradation characteristics of the diets except of soluble DM and CP fraction (A) of URS but not of ARS

Descriptors:ammonia. rice-bran. rice-straw. crop-residues. rumen. straw. supplements. ammonia-treatment. crude-protein. diets. dry-matter. fibre. quality. roughage. supplementary-feeding. rumen-digestion. degradation
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:RR100. RR300. LL500. LL510
Supplementary Info:47 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Rumen parameters and urea kinetics in goats and sheep
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (7). 922-928
CD Volume:297
Print Article: Pages: 922-928
Author(s):Darlis Abdullah N Halim R A Jalaludin S Ho Y W
Author Affiliation:Institute of Bioscience, Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor, Malaysia
Language:English
Abstract:The effects of animal species and supplements on rumen fluid characteristics, plasma urea-N (PUN) concentration, plasma urea-N pool size, urea-N degradation in the gut and urea-N net flux (urea-N synthesis rate) were studied in goats and sheep, with some minor differences detected. The animals were fed chopped rice straw ad libitum + 200 g soyabean meal (SBM), or chopped rice straw ad libitum + 190 g soyabean meal + 300 g sago meal (SBM+SM) for 14 days. The supplements were isonitrogenous (80 g crude protein animal-1 day-1). [14C]-urea was used as the marker for urea metabolism studies. Two animals from each species were fed either supplement in a cross-over design in two periods. The results showed that rumen pH was lower ($p<0.001$) in animals fed SBM+SM than those fed SBM supplement. The ammonia concentrations of rumen fluid were higher ($p<0.01$) in sheep (382.9 mg N litre-1) than goats (363.1 mg N litre-1) when fed SBM supplement but lower (282.5 mg N litre-1) than that of goats (311.0 mg N litre-1) when fed SBM+SM supplement. Total VFA concentrations were higher ($p<0.05$) in animals fed SBM+SM supplement than those fed SBM supplement. Goats had higher ($p<0.01$) molar proportions of acetate (79.1, 77.7%, respectively) than sheep (75.8, 74.0%, respectively) for both supplements. The molar proportion of acetate was higher ($p<0.05$), while that of butyrate lower in animals fed SBM supplement than those fed SBM+SM supplement. In animals fed SBM supplement, the molar proportion of propionate was higher ($p<0.01$) in sheep (18.0%) than in goats (15.6%), but in animals fed SBM+SM, the molar proportion of butyrate was higher ($p<0.01$) (9.6%) in sheep than in goats (7.2%). PUN concentration, plasma urea-N pool size, urea-N degradation in the gut, urea-N net flux and the fraction of urea-C from the blood entering the rumen were not significantly different between goats and sheep fed either supplement. However, PUN concentration was lower ($p<0.05$) in animals fed SBM+SM supplement (average of 13.8 mg N 100 ml-1) than in those fed SBM supplement (average of 16.5 mg N 100 ml-1). The urea net flux was higher ($p<0.05$) in goats (average of 14.5 g N day-1) than sheep (average of 12.9 g N day-1), and animals fed SBM supplement showed higher (average of 14.9 g N day-1) urea net flux than animals fed SBM+SM supplement (average of 12.9 g N day-1). A positive ($p<0.05$) correlation was observed between urea-N net flux and urea-N degradation; urea-N net flux and pool size; urea-N net flux and urea

excretion in the urine; and PUN and rumen ammonia in goats. While in sheep, a positive ($p<0.05$) correlation was observed between urea-N net flux and urea excretion in the urine; and PUN and rumen ammonia
Descriptors:kinetics. urea. ammonia. excretion. intestines. rice-straw. crop-residues. rumen. rumen-fluid. soyabean-oilmeal. straw. supplements. nitrogen-metabolism. protein-metabolism. sago. species-differences. comparisons
Organism Descriptors:goats. sheep
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis
Subject Codes:LL510. LL240
Supplementary Info:25 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Influence of inclusion of salicornia biomass in diets for rams on digestion and mineral balance
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (7). 967-973
CD Volume:297
Print Article: Pages: 967-973
Author(s):Abouheif M A Al Saiady M Kraidees M Eldin A T Metwally H
Author Affiliation:Animal Production Department, College of Agriculture, P.O. Box 2460 King Saud University, Riyadh 11451, Saudi Arabia
Language:English
Abstract:A metabolism trial was conducted with 28 Najdi rams allocated into seven dietary groups to evaluate the effect of dietary inclusion of Salicornia bigelovii biomass on nutrient digestibility, ruminal fluid metabolites and nitrogen and mineral balances. Either the stems (ST) or spikes (SP) of this seawater-irrigated halophyte were incorporated into complete diets at rates of 0, 10, 20 and 30%, replacing equal amounts of rhodes grass hay in a ground mixed control diet. Digestibility of DM, OM, EE, NFE and faecal and urinary nitrogen were not affected by increased level of ST in the diet. As level of ST increased from 0 to 20% in the diets, CP digestibility and nitrogen retention approached their maximum ($p<0.01$), whereas CF digestibility reached its minimum ($p<0.01$). On the other hand, except for EE, digestion of all nutrients and nitrogen retention were linearly depressed ($p<0.01$) as SP increased in the diets from 10 to 30%. Concentration of ammonia-N, total VFA and pH values in the rumen fluid were lower ($p<0.01$) with the ST or SP diets than with the control diet. Increasing level of ST or SP in the diet was associated with an increase ($p<0.01$) in the proportion of acetate and a decline ($p<0.01$) in molar percentage of propionate in ruminal fluid. Sodium absorption increased ($p<0.01$) with increased ST and SP in the diets up to 10 and 20%, respectively, followed by constant absorption values up to 30%. When the level of ST in the diet gradually increased to 30%, a concomitant increase ($p<0.01$) in Ca and P absorption were obvious; whereas, increased level of SP in the diets from 0 to 30% resulted in noticeable ($p<0.01$) depression in Ca and P apparent absorption
Descriptors:diets. digestion. absorption. digestibility. hay. metabolites. nitrogen-retention. nutrients. retention. rumen. rumen-fluid. nitrogen-balance. halophytes. plant-parts. stems. spikes. rumen-fermentation
Identifiers:salicornia bigelovii
Organism Descriptors:sheep. Salicornia

Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Chenopodiaceae. Caryophyllales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL500. LL510
Supplementary Info:23 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Response of pancreatic exocrine secretion in sheep fed different type and amount of hay
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (8). 1044-1049
CD Volume:297
Print Article: Pages: 1044-1049
Author(s):Wang X B Taniguchi K Obitsu T
Author Affiliation:Faculty of Applied Biological Science, Hiroshima University, Higashihiroshima 739-8528, Japan
Language:English
Abstract:Three wethers fitted with silastic catheters for collection of pancreatic juice, and cannulas located in the abomasum and the duodenum were used to investigate the effects of different hay and energy intake on pancreatic exocrine secretion. The wethers were fed Italian ryegrass hay or alfalfa [lucerne] hay at maintenance energy requirement and alfalfa hay ad libitum. High energy intake from alfalfa significantly increased abomasal flow of dry matter and both the concentration and daily secretion of alpha -amylase. The high energy intake also tended to increase daily secretion of lipase, trypsin and chymotrypsin through the large volume of pancreatic juice. Compared with Italian ryegrass hay, alfalfa hay at the maintenance decreased abomasal dry matter flow, but increased concentration of alpha -amylase in the pancreatic juice, and tended to increase daily secretion of alpha -amylase. The secretion of the other enzymes was not different between the two hays at maintenance intake. These results suggest that the kind of hay could change the concentration of alpha -amylase in the pancreatic juice, and that the intake level of alfalfa hay affects the alpha -amylase concentration and the juice volume secreted from the pancreas
Descriptors:hay. abomasum. dry-matter. duodenum. energy-intake. energy-requirements. pancreas. pancreatic-juice. effects. trypsin. lucerne. ryegrass-hay. triacylglycerol-lipase. chymotrypsin. sheep-feeding
Geographic Locator:Italy
Identifiers:alpha -amylase
Organism Descriptors:sheep. Lolium. Medicago
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Papilionoideae. Fabaceae. Fabales. dicotyledons. Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries
Subject Codes:LL510
Supplementary Info:27 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Daily profiles of blood insulin, insulin-like growth factor-I, thyroxine and triiodothyronine in ewes under three levels of feed intake
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (8). 1121-1126
CD Volume:297
Print Article: Pages: 1121-1126
Author(s):Caldeira R M Vasques M I Portugal A V
Author Affiliation:Centro Interdisciplinar de Investigacao em Sanidade Animal, Faculdade de Medicina Veterinaria Rua Professor Cid dos Santos, Polo Universitario, Alto da Ajuda, 1349 Lisboa, Portugal
Language:English
Abstract:Daily variation in the serum concentrations of insulin and insulin-like growth factor-I and in the plasma concentrations of thyroxine and triiodothyronine were evaluated in ewes fed 30, 100 and 200% of theoretical maintenance energy requirements. The single daily meal has had significant effects on almost all profiles. In general, serum or plasma hormone concentrations have increased after the meal, in particular at the two higher levels of energy intake. In the group submitted to the lowest level of energy intake, the consequences of the meal on circulating levels were almost imperceptible. The effects of feeding levels on serum or plasma concentrations have widely varied among hormones, not showing any objective pattern or relationship. Because these variations may affect the interpretation of these blood indicators, knowledge of daily profiles and of the effect of feed level must be considered. In order to maximize the diagnostic value of those indicators, the most suitable times for blood collection seem to be 16 h after the meal and (or) just before the meal. The collection 16 h after the meal apparently allows the characterization of a relatively steady metabolic state, intermediate between the close effects of food intake and the final phase of the intensification of body reserves mobilization. The collection just before the meal will give a good indication of the level of activity of those mobilization mechanisms
Descriptors:ewes. feed-intake. insulin. thyroxine. triiodothyronine. characterization. energy-intake. energy-requirements. feeding. hormones. effects. variation. insulin-like-growth-factor
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL600. LL510. LL500
Supplementary Info:35 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Utilization of sorghum forage, millet forage, veldt grass and buffel grass by Tswana sheep and goats when fed Lablab purpureus L. as protein supplement
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (8). 1127-1132
CD Volume:297
Print Article: Pages: 1127-1132
Author(s):Aganga A A Autlwetse M N
Author Affiliation:Department of Animal Science and Production, Botswana College of Agriculture Private Bag 0027, Gaborone, Botswana
Language:English
Abstract:40 yearling Tswana sheep and goats (20 sheep and 20 goats) of both sexes were used in a feeding trial conducted in Botswana College of Agriculture Content Farm in Gaborone for 3 months. The

animals were randomized into 4 treatment groups of 5 animals per species balancing for weight and sex such that average initial weights were not statistically different. The sheep and goats were individually housed and fed under a common roof. All the animals were fed on Lablab purpureus as a protein supplement which was 40% of the ration. In addition to L. purpureus the control groups of both species were fed on 60% Cenchrus ciliaris as basal diet. The other 3 treatment groups were fed on different forages: sorghum forage (Sorghum sudanense), millet forage (Pearl millet, Pennisetum typhoides) and veldt grass (mainly Urochloa mosambicensis) as basal diet (60%). Water was provided individually to all the animals on an ad lib. basis. Daily intakes of feed and water were recorded and animals were weighed every 2 weeks. The collected data were analysed statistically for differences. Average daily weight gain by Tswana sheep was significantly different, sheep fed on millet forage had a higher daily weight gain (120.24 plus or minus 8.91 g) compared with sheep fed on veldt grass (92.86 plus or minus 6.94 g). Treatment effects on daily total DM intake by sheep were significant, the control group (C. ciliaris) had the highest intake (705.77 plus or minus 10.22 g) and those fed on sorghum forage had the least intake (668.10 plus or minus 10.70 g). There was no significant difference in the average daily weight gain by Tswana goats and it was 84.52, 73.81, 83.33 and 78.57 g for goats fed on C. ciliaris, sorghum forage, millet forage and veldt grass, respectively. Average daily total DM intake by goats was 655.27, 652.64, 650.07 and 650.94 g for C. ciliaris, sorghum forage, millet forage and veldt grass respectively. Feed conversion efficiency was 8.00, 8.98, 7.93 and 8.34 for goats fed on C. ciliaris, sorghum forage, millet forage and veldt grass, respectively and were not significantly different
Descriptors:forage. millets. protein-supplements. feed-conversion. feed-conversion-efficiency. sheep-feeding. goat-feeding. intake. pearl-millet. liveweight-gain. feed-intake
Geographic Locator:Botswana
Organism Descriptors:goats. Lablab-purpureus. sheep. Sorghum. Cenchrus-ciliaris. Pennisetum-glaucum. Sorghum-sudanense. Urochloa-mosambicensis
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Lablab. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Poaceae. Cyperales. monocotyledons. Cenchrus. Pennisetum. Sorghum. Urochloa. Southern-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries. Commonwealth-of-Nations. SADC-Countries. Anglophone-Africa
Subject Codes:LL520. FF007
Supplementary Info:12 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Constraints to sheep farming in Nepal: development challenge for poverty alleviation
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (8). 1162-1172
CD Volume:297
Print Article: Pages: 1162-1172
Author(s):Rauniyar G P Upreti C R Gavigan R Parker W J
Author Affiliation:College of Sciences, Massey University, Palmerston North, New Zealand
Language:English

Abstract:A study was conducted to quantify farm and household characteristics of sheep farmers, evaluate farmer access to and the effectiveness of livestock services in sheep farming areas, and examine regional constraints to improving sheep productivity and profitability in Nepal. A rapid diagnostic socioeconomic survey of 200 sheep farmers was carried out in 1996 and all four ecological regions (Trans-Himalayan, Mountains, Hills and Terai), each with a distinct local sheep breed, were represented in the survey. Six major constraints were identified: (a) poor performance of local sheep breeds, (b) a serious seasonal deficit of pasture and other feed, (c) the lack of an organized market for wool and meat, (d) poor access to agricultural credit, (e) primitive shearing equipment, and (f) an inadequate supply of drinking water for sheep. Strategies to assist farmers develop their sheep management skills, improve access and quality of support services, improved technology adaptable to local conditions and effective linkages with the local carpet and meat industry are likely to overcome the constraints and alleviate persistent poverty faced by sheep farmers in Nepal
Descriptors:sheep-farming. agricultural-households. constraints. profitability. productivity. rapid-rural-appraisal. surveys. wool. meat. marketing. credit. technology. rural-development
Geographic Locator:Nepal
Identifiers:poverty alleviation
Supplemental Descriptors:South-Asia. Asia. Least-Developed-Countries. Developing-Countries
Subject Codes:LL130. LL120. EE950. EE125. EE110
Supplementary Info:10 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Characteristics of digestion dynamics of rice and oat straw relating to microbial digestion in the rumen of sheep given high-concentrate diets
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (9). 1219-1227
CD Volume:297
Print Article: Pages: 1219-1227
Author(s):Goto M Morio T Kojima E Nagano Y Yamada Y Horigane A Yamada H
Author Affiliation:Faculty of Bioresources, Mie University, 1515 Kamihama-cho, Tsu 514-8507, Japan
Language:English
Abstract:Rumination behavior, in vivo digestibility of cell wall constituents, particle size reduction in the rumen, and retention time in the digestive tract of sheep were examined using rice and oat straw as roughage sources. The in sacco digestibility, rumen fermentation, and microbial population and internal adenosine 5-triphosphate (ATP) content were also determined under feeding conditions of high-roughage and high-concentrate diets. Chewing number and time in rumination behavior were higher with rice straw than with oat straw, while the in sacco and in vivo DMD of rice straw were consistently lower than those of oat straw. Rice straw also showed higher frequency of thinner and longer particles in the rumen contents and lower retention time in the whole digestive tract as compared to those of oat straw. Rice straw was more effective in maintaining ruminal pH than oat straw, as reflected in higher internal ATP content of large-type protozoa on the high-concentrate diet. Changes in the ruminal microflora on shifting from the low- to the high-concentrate diet also differed between rice and oat straw

Descriptors:rumen-digestion. rice-straw. oats. rumen-microorganisms. rumen. concentrates. pH. rumen-protozoa. rumination. behaviour. transit-time. roughage. digestive-tract. rumen-fermentation. sources. feeding-behaviour
Organism Descriptors:sheep. Avena-sativa
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Avena. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. LL300
Supplementary Info:28 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Nutrient intake and utilization by range managed sheep in critical physiological stages maintained on grazing with concentrate supplementation in a hot semi-arid environment
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (9). 1228-1234
CD Volume:297
Print Article: Pages: 1228-1234
Author(s):Karim S A Santra A Sharma V
Author Affiliation:Division of Animal Nutrition, Central Sheep and Wool Research Institute, Avikanagar 304 501, Rajasthan, India
Language:English
Abstract:The reported study was conducted on range-managed Malpura ewes that were non-breeding empty, at an advanced stage of pregnancy, and in early lactation, under a protocol of free grazing with concentrate supplementation at 1.00, 1.25 and 1.50% of their body weight to assess their plane of nutrition and nutrient intake. The biomass yield of pasture plots was 1689, 1820 and 2912 kg/ha in pregnancy, lactation and empty phases, respectively. In addition to natural shrubs and forbs, Cenchrus ciliaris (36.4%) and dead litter (31.6%) were the major component of pasture vegetation during pregnancy. The dead litter disappeared during the lactation and empty phase with a concomitant increase in distribution of C. ciliaris to 73.0 and 87.2%, respectively. The daily dry matter consumption from supplemental concentrate and free grazing was 70.1, 57.3 and 63.5 g/kg W0.75/d with concentrate to roughage ratio of 40:60, 47:53 and 33:67 in pregnancy, lactation and empty phases respectively. Digestibility of DM and OM were similar in the three phases while CP digestibility was higher (P<0.01) during lactation than other two phases. Digestibility of NDF, ADF and cellulose were higher (P<0.01) in empty than pregnancy and lactation, while hemicellulose digestibility was similar in lactation and empty and lower in pregnancy phase. The ewes in phases of pregnancy, lactation and empty consumed 7.1, 7.7 and 6.1 g DCP and 197.2, 214.6 and 232.5 kcal DE/kg W0.75/d, respectively. It is concluded that ewes maintained on semi-arid Cenchrus dominated pasture with concentrate supplementation during pregnancy, lactation and empty phases consumed 45.2, 45.1 and 35.2 g DCP/Mcal ME, respectively
Descriptors:grazing. digestibility. feed-intake. roughage. concentrates. pastures. plane-of-nutrition
Organism Descriptors:sheep. Cenchrus-ciliaris
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Cenchrus. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. LL500
Supplementary Info:28 ref

ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Effects of dietary protein sources and levels on heat production and thermoregulatory responses of sheep exposed to a high ambient temperature
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (11). 1523-1528
CD Volume:297
Print Article: Pages: 1523-1528
Author(s):Sudarman A Ito T
Author Affiliation:Faculty of Applied Biological Science, Hiroshima University, Kagamiyama 1-4-4 Higashihiroshima 739-8528, Japan
Language:English
Abstract:Four Suffolk ewes were used in Latin Square switch over design to study the effects of varying levels and sources of protein on heat production and thermoregulatory responses at daytime high (33 deg C) temperature [Japan, date not given]. They were fed Italian ryegrass hay supplemented with fishmeal and/or urea, providing 3 different levels of crude protein (CP) (low/unsupplemented: 7.9, medium: 11.6, and high: 15.8%) at 1.5 x maintenance. Feeds were distributed at 0900 (30%) and 1700 (70%). Urea diet caused higher heat production and increased vaginal temperature compared to fishmeal and fishmeal-urea mix diets. Time spent standing, skin temperature and respiration rate of sheep fed with urea were similar with those of sheep fed with fishmeal. Sheep fed with low CP diet had higher heat production, and increased vaginal and skin temperature than sheep fed with medium CP diet. Sheep on high CP diet produced significantly more heat than sheep with medium CP diets. Their vaginal temperatures were similar with those of sheep with medium CP diet but lower than those of sheep with low CP diet. Respiration rates of sheep and time spent for standing on all diets did not differ significantly. These results suggest that urea is an inferior protein supplement for thermoregulation of animal at hot environment, as it induced higher heat production than fishmeal and fishmeal-urea mix. Thermoregulatory response on fishmeal-urea mix diet was similar to fishmeal diet. Increasing CP of the diet from low to medium gives advantage for thermoregulation of animal. Increasing CP to a high level was not beneficial as it resulted in the responses of sheep similar to those on low protein diet
Descriptors:body-temperature. body-temperature-regulation. crude-protein. dietary-protein. diets. ewes. fish-meal. heat-production. protein-intake. skin-temperature. temperature. urea. vagina
Geographic Locator:Japan
Organism Descriptors:sheep
Supplemental Descriptors:East-Asia. Asia. Developed-Countries. OECD-Countries. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL500. LL510
Supplementary Info:20 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:The role of corticotropin-releasing factor and urocortin in brain mechanisms controlling feed intake of sheep
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (11). 1529-1535

CD Volume:297
Print Article: Pages: 1529-1535
Author(s):Sunagawa K Weisiger R S McKinley M J Purcell B S Thomson C Burns P L
Author Affiliation:Howard Florey Institute of Experimental Physiology and Medicine, University of Melbourne Parkville, Victoria 3052, Australia
Language:English
Abstract:The aim of the present study was to determine whether brain corticotropin-releasing factor (CRF) and a new peptide, urocortin (UCN) have a direct action in brain mechanisms controlling feed, water and salt intake in sheep. We gave a continuous intracerebroventricular (ICV) infusion of the peptide at a small dose of 5 micro g/0.2 ml/h for 98.5 h from day 1 to day 5 in 12 crossbred Merino ewes not exposed to stress. Feed and water intake during ICV infusion of CRF or UCN decreased significantly compared to those during artificial cerebrospinal fluid (CSF) infusion. Nacl intake during infusion of CRF or UCN was the same as that during CSF infusion. Mean carotid arterial blood pressure and heart rate during ICV infusion of CRF or UCN were not significantly different from that during CSF infusion. On the other hand, the plasma glucose concentration during ICV infusion of CRF or UCN tended to be higher than that during CSF infusion. These observations indicate that decreased feed intake induced by CRF and UCN infusion is not mediated by the activation of both the pituitary-adrenal axis and the sympathetic nervous system. The results suggested that brain CRF and UCN act directly in brain mechanisms controlling ingestive behaviour to decrease feed and water intake, but do not alter salt intake in sheep
Descriptors:blood-sugar. brain. corticoliberin. ewes. feed-intake. intake. neuropeptides. water-intake
Identifiers:salt intake. urocortin
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:24 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Effects of whole crop corn ensiled with cage layer manure on nutritional quality and microbial protein synthesis in sheep
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (11). 1548-1553
CD Volume:297
Print Article: Pages: 1548-1553
Author(s):Kim S C Kim J H Kim C H Lee J C Ko Y D
Author Affiliation:Faculty of Animal Science, College of Agriculture, Gyeonsang National University, Chinju 660-701, Korea Republic
Language:English
Abstract:The nutritional quality of whole crop corn silage ensiled with cage layer manure was studied in 3 healthy Corriedale sheep. Treatments were designed as a 3 x 3 Latin square with 16-day periods. Sheep were allotted in one of the 3 diet-treatments, including whole crop corn silage, whole crop corn + 30% cage layer manure (CLM) silage (based on DM; MS) and rice straw + concentrate (SC) mixed at 8:2 ratio (on DM basis). Silage ensiled with CLM significantly increased ($P<0.05$) digestibilities of crude protein, neutral and acid detergent fibres, and total digestible nutrients over the other

treatments. Ruminal pH in sheep fed with SC was significantly (P<0.05) higher than that of the other diets at 0.5, 1, 2, 4 and 8 h after feeding. Ruminal ammonia nitrogen concentration of the MS treatment was significantly (P<0.05) higher than that of the other treatments at 0, 1, 2 h after feeding. The MS treatment greatly increased (P<0.05) feed intake, digestibility of organic matter and crude protein, nitrogen intake and retained nitrogen. The MS treatment greatly increased (P<0.05) purine derivative excretion leading to higher microbial protein synthesis
Descriptors:ammonium-nitrogen. bacterial-proteins. diets. feed-intake. maize-silage. nitrogen. pH. poultry-manure. protein-digestibility. protein-synthesis. rumen. silage-making. silage-quality
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. RR100. RR300
Supplementary Info:32 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Leucaena leucocephala and Gliricidia sepium supplementation in sheep fed with ammonia treated rice straw: effects on intake, digestibility, microbial protein yield and live-weight changes
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (12). 1659-1666
CD Volume:297
Print Article: Pages: 1659-1666
Author(s):Orden E A Abdulrazak S A Cruz E M Orden M E M Ichinohe T Fujihara T
Author Affiliation:Laboratory of Animal Science, Shimane University, Matsue-shi 690-8504, Japan
Language:English
Abstract:Two experiments were conducted to determine the effects of L. leucocephala (leucaena) and G. sepium (gliricidia) supplementation on intake, digestion, outflow rates, microbial protein yield and live-weight changes in sheep fed with ammoniated rice straw (ARS). In experiment 1, three rumen cannulated Japanese Corriedale wether (mean body weight of 35.6 kg) in 3 x 3 Latin Square Design were used. Animals were fed ad libitum ARS alone, or supplemented with 200 g of either leucaena or gliricidia. In experiment 2, twenty-four growing native Philippine sheep with average body weight of 13.5 plus or minus 0.25 kg were used in a completely randomized design (CRD) and offered similar diets to those of experiment 1. Supplementation increased total dry matter intake and nutrient digestibility except for fibre (P<0.05) without affecting ARS consumption. Nitrogen balance revealed that absorbed and retained N was significantly higher in leucaena and gliricidia. The significant improvement in N utilization and more digestible OM intake brought about by the inclusion of leucaena and gliricidia to ARS resulted in increased (P<0.05) microbial N yield. Efficiency of microbial N supply in supplemented group was not significantly different, but higher (P<0.05) than the 24.92 g N/kg DOMR for ARS group. Liquid outflow rate was 7.8 and 6.8 %/h, while the solid phase of rumen digesta was 4.4 and 3.8 %/h for the leucaena and gliricidia group respectively, which were significantly higher than 5.30 and 2.50 %/h in the control diet. The increase in total DMI resulted to higher (P<0.01) growth performance and efficient feed utilization. Average daily gain (ADG) was 19.3, 34.6 and 33.9 g/d for the ARS, leucaena and gliricidia

respectively. It is therefore concluded that addition of leucaena and gliricidia to ARS in could increase nutrient intake and digestibility, subsequently improving N utilization and livestock performance
Descriptors:ammonia-treatment. Corriedale. digesta. digestibility. feed-intake. feed-supplements. liveweight-gain. nitrogen-balance. rice-straw. rumen. single-cell-protein
Organism Descriptors:Gliricidia-sepium. Leucaena-leucocephala. sheep
Supplemental Descriptors:Gliricidia. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Leucaena. Mimosoideae. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL520. RR100. RR130
Supplementary Info:38 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Nutrient intake, its utilization, rumen fermentation pattern and blood bio-chemical constituents of sheep fed urea treated mustard (Brassica campestris) straw
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (12). 1674-1680
CD Volume:297
Print Article: Pages: 1674-1680
Author(s):Misra A K Karim S A Verma D L Mishra A S Tripathi M K
Author Affiliation:Division of Animal Nutrition, Central Sheep and Wool Research Institute, Avikanagar 304501, India
Language:English
Abstract:A study was conducted to compare the feeding value of urea treated and untreated mustard straw (MS) for sheep. Treated MS was prepared by adding urea-N at 1.84% and followed by packing in a pit silo for 21 days. Two groups of 6 Avikaline ewes were fed untreated (UTMS) and treated (TMS) mustard straw along with 200 g concentrate per head daily for 90 days. Untreated MS had 0.41% N and the urea treatment increased its N value to 1.58%. The cell wall constituents were decreased in the TMS except for cellulose which remained unaffected. Dry matter intake of TMS was consistently higher than that of UTMS. Digestibility of DM, OM and fibre fractions of MS were improved by the urea treatment. Ewes in both groups were in positive N balance while % N retention was lower in UTMS (26.30%) than in TMS (52.14%). The TMS-fed group consumed an average of 30.2 g DM, 2.9 g digestible crude protein and 0.2 MJ DE per kg BW day-1 and maintained their weight whereas, the UTMS fed ewes lost weight. The VFA concentration in rumen liquor was higher in TMS than in UTMS. Total-N, ammonia-N and TCA-precipitable-N were also higher in TMS fed ewes. Blood glucose concentrations in the two groups were similar at initiation of the study. However the glucose concentration of UTMS-fed group was significantly (P<0.01) lower than those fed UTMS at the termination of the study. Urea-N concentration was also higher in TMS fed group after 90 days of feeding period. It is concluded that urea treatment of MS improved N value of MS from 0.41% to 1.58% along with sizable improvement in nutritive value and in conjunction with 200 g concentrate, TMS can serve as maintenance ration for sheep. (MElakt/MEm=1.46)
Descriptors:ammonium-nitrogen. blood-composition. blood-sugar. digestibility. ewes. feed-intake. fibre. nitrogen-balance. nitrogen-content. nitrogen-retention. rumen-fermentation. urea
Organism Descriptors:Brassica-campestris. sheep

Supplemental Descriptors:Brassica. Brassicaceae. Capparidales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510
Supplementary Info:50 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Diurnal changes in the distribution of ruminal bacteria attached to feed particles in sheep fed hay once daily
View Article: Asian-Australasian Journal of Animal Sciences. 2000. 13 (12). 1708-1716
CD Volume:297
Print Article: Pages: 1708-1716
Author(s):Pan J Suzuki T Ueda K Tanaka K Okubo M
Author Affiliation:Division of Bioresources and Bioproduction, Graduate School of Agriculture, Hokkaido University, Sapporo-shi 060-8589, Japan
Language:English
Abstract:A study was made of diurnal changes in the ruminal bacteria associated with feed particles, i.e., non-associated (NAB), loosely associated (LAB), and tightly associated with particles (TAB), and the TAB concentration in different particle sizes from sheep fed orchardgrass (OG) or alfalfa (ALF) hay. Diaminopimelic acid (DAPA) was used to determine the TAB mass. Results showed that the bacterial masses in NAB and LAB were small, but comprised over 90% in TAB. The TAB mass in the ALF group sharply increased within 2 h after feeding and decreased afterward. The TAB mass showed the same trend in the OG group, increasing from 0 h to 2 h, but remained at the same level up to 14 h after feeding. The peak bacterial mass was, however, lower in the OG than the ALF group. The TAB concentration reflected the changes in total particulate tightly associated bacterial masses in both groups of hay fed sheep. Number of bacterial colonies per particle increased as the particulate size decreased in both groups. This difference, however, tended to decline as the postprandial period was prolonged. DAPA, however, tended to overestimate the TAB mass in the reticulo-rumen digesta of the hay fed sheep
Descriptors:diaminopimelic-acid. diurnal-variation. hay. lucerne-hay. particle-size. rumen-bacteria
Organism Descriptors:Dactylis-glomerata. sheep
Supplemental Descriptors:Dactylis. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. RR000
Supplementary Info:38 ref
ISSN:1011-2367
Year:2000
Journal Title:Asian-Australasian Journal of Animal Sciences

Title:Sapling and coppice biomass production by alley-farmed 'oil mallee' Eucalyptus species in the Western Australian wheatbelt
View Article: Australian Forestry. 2000. 63 (2). 147-157
CD Volume:324
Print Article: Pages: 147-157
Author(s):Wildy D T Bartle J R Pate J S Arthur D J

Author Affiliation:Department of Botany, University of Western Australia, Hackett Drive, Nedlands WA 6907, Australia
Language:English
Abstract:Nine promising taxa of oil mallees (lignotuberous mallee form eucalypts with high concentrations of essential oils in their foliage) were planted in twin row alley culture at 12 sites across the Western Australian wheatbelt. Some of the sites were rotationally grazed with sheep on pastures in the alleys, while in others crops were harvested [?wheat, lupins], or both or neither treatment was applied. Two harvest regimes were imposed (i) 2.5-year-old saplings cut to ground level in summer and their coppice shoot biomass harvested 12 months later, and (ii) 3-year-old saplings cut in winter and coppice shoots harvested 12 months later. The 8 northwestern sites were generally more favourable and mostly comprised acidic subsoils with deep non-saline groundwater, while the 4 southeastern sites had alkaline and saline subsoils and shallow, saline groundwater. Species native to the northern wheatbelt (Eucalyptus horistes, E. kochii subsp. kochii and E. kochii subsp. plenissima) performed strongly in northern sites but grew and survived poorly in the south. E. vegrandis (2 provenances) and E. angustissima subsp. angustissima grew well initially but survived and regenerated unsatisfactorily after first cutting at most sites. E. polybractea (a species from New South Wales and Victoria), and the central Western Australian wheatbelt species, E. gratiae and E. loxophleba subsp. lissophloia, (smooth barked York gums) performed well as saplings and in coppice format at virtually all sites. Biomass production of saplings at first cut was strongly correlated with water availability as assessed by rainfall, topsoil depth and pan evaporation. Survival of coppicing trees was sensitive to harsh conditions such as presence of shallow, saline groundwater and cold winter conditions during early regeneration. Coppice productivity of all species was strongly correlated with sapling size at first cutting. The study suggests that optimal management regimes in terms of age and size at first cut, and frequency of subsequent harvests, will be strongly determined by species and site conditions, with late spring/early summer harvests being most favourable for survival and coppice vigour
Descriptors:biomass-production. coppice. evaporation. groundwater. productivity. survival. water-availability. soil-water. agroforestry-systems. silvopastoral-systems. agrosilvopastoral-systems. alley-cropping. wheat. lupins. cutting-date. acid-soils. alkaline-soils. saline-soils. groundwater-level. topsoil. species-trials. provenance-trials
Geographic Locator:Australia. Western-Australia. New-South-Wales
Identifiers:Eucalyptus horistes. Eucalyptus kochii subsp. kochii. Eucalyptus kochii subsp. plenissima. Eucalyptus vegrandis. Eucalyptus angustissima. Eucalyptus gratiae. Eucalyptus loxophleba. Eucalyptus loxophleba subsp. lissophloia. Eucalyptus kochii. Eucalyptus angustissima subsp. angustissima
Organism Descriptors:Eucalyptus. Eucalyptus-polybractea. Triticum. Lupinus
Supplemental Descriptors:Myrtaceae. Myrtales. dicotyledons. angiosperms. Spermatophyta. plants. Eucalyptus. Poaceae. Cyperales. monocotyledons. Papilionoideae. Fabaceae. Fabales. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:KK110. KK600. FF150. PP350. FF005. FF007. PP200. JJ300. PP500. JJ400. FF020
Supplementary Info:42 ref
ISSN:0004-9158
Year:2000

Journal Title:Australian Forestry

Title:Effects of Neotyphodium lolii infection and sowing rate of perennial ryegrass (Lolium perenne) on the dynamics of ryegrass/subterranean clover (Trifolium subterraneum) swards
View Article: Australian Journal of Agricultural Research. 2000. 51 (1). 47-56
CD Volume:324
Print Article: Pages: 47-56
Author(s):Quigley P E
Author Affiliation:Agriculture Victoria, Pastoral and Veterinary Institute, Private Bag 105, Hamilton, Vic. 3300, Australia
Language:English
Abstract:There is no clear rationale for use of endophyte-infected or endophyte-free seed of perennial ryegrass (Lolium perenne) when sowing swards in Australia. A field experiment was conducted at Hamilton, Victoria, Australia to study the dynamics of perennial ryegrass/subterranean clover (Trifolium subterraneum) swards in response to endophyte infection in perennial ryegrass seed, the sowing rate of this seed, and the cultivar of subterranean clover. A higher density of perennial ryegrass seedlings established from seed infected with the endophyte Neotyphodium lolii (E+) than with endophyte-free (E-) seed and there was a significant interaction with the sowing rate. At the highest sowing rate of 16 kg/ha, about 25% more seedlings emerged in the E+ than the E- treatment. The size of individual ryegrass plants at establishment was reduced as sowing rate increased, but endophyte had no effect on their size. The slopes of the curves describing ryegrass tiller density relationships with sowing rate were similar for both endophyte treatments in the first 2 years but were different in the third year. Between the first and third years, tiller density in the E+ plots sown at the lowest rate increased by up to 1000/m2, whereas in E- plots the corresponding increase was only 250/m2. Such changes have not previously been demonstrated. This difference is believed to be due to the superior ability of E+ plants to recover after extended dry periods. At higher sowing rates, neither endophyte treatment led to increased tiller densities between the first and third years. The presence of N. lolii had no effect on plant density of subterranean clover during the 3 years of the experiment. In the second year, the 3 clover cultivars tested had similar patterns of reductions in plant density in response to increased sowing rate of the ryegrass in the previous year, but these patterns did not persist into the third year. Although dry matter (DM) yield of herbage in the third year was not responsive to initial sowing rate, the E+ treatment was still significantly higher than the E-. The cultivar of subterranean clover had little effect on companion ryegrass, and total DM production was insensitive to cultivar of clover. The use of endophyte-infected seed is considered desirable in order to maintain long-term density of perennial ryegrass in sheep-production systems in Australia
Descriptors:sowing-rates. cultivars. endophytes. plant-density. seedlings. tillering. crop-yield. mixtures. fodder-plants. plant-pathology
Geographic Locator:Australia. Victoria
Identifiers:Neotyphodium lolii. Neotyphodium. Hyphomycetes. mitosporic fungi
Organism Descriptors:Trifolium. Lolium. Lolium-perenne. Trifolium-subterraneum. Acremonium
Supplemental Descriptors:Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Poaceae. Cyperales. monocotyledons. Lolium. Trifolium. Deuteromycotina.

Eumycota. fungi. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:PP350. FF100. FF400
Supplementary Info:34 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:The grazing value of tall fescue (Festuca arundinacea) and phalaris (Phalaris aquatica) for sheep production in the northern tablelands of New South Wales
View Article: Australian Journal of Agricultural Research. 2000. 51 (1). 57-68
CD Volume:324
Print Article: Pages: 57-68
Author(s):Ayres J F McPhee M J Turner A D Curll M L
Author Affiliation:NSW Agriculture, Agricultural Research & Advisory Station, PMB, Glen Innes, NSW 2370, Australia
Language:English
Abstract:The grazing value of phalaris (Phalaris aquatica)-white clover (Trifolium repens) and tall fescue (Festuca arundinacea)-white clover mixtures was compared in a temperate summer-rainfall environment in the high rainfall zone of eastern Australia. The data were also simulated with the decision support system SheepO (Version 4.0) and validated by visual techniques, deviance measures, and statistical tests. The model generally simulated green biomass, liveweight gain, and clean fleece weight with acceptable accuracy. Tall fescue-white clover produced more green pasture biomass in all seasons, in all years, and at both low (10 sheep/ha) and high (15 sheep/ha) stocking rates when compared with phalaris-white clover. Sheep grazing tall fescue-white clover pasture were turned off about 5 kg heavier each year and produced about 0.6 kg/head more clean fleece weight; the wool production per head of sheep grazing tall fescue-white clover at 15 sheep/ha was similar to that for sheep grazing phalaris-white clover pasture at 10 sheep/ha. These differences in wool production were accompanied by consistent effects on wool quality; the fleeces of sheep grazing tall fescue-white clover pasture were markedly sounder in tensile strength but broader in fibre diameter. These data and the SheepO simulations highlight the potential for forage cultivars with enhanced seasonal growth and nutritive value to alleviate forage gaps and improve the feed-base for grazing animals
Descriptors:grazing. biomass. nutritive-value. mixtures. sown-grasslands. stocking-rate. wool-production. strength. fibres. tensile-strength. sheep-feeding. liveweight-gain
Geographic Locator:New-South-Wales. Australia
Organism Descriptors:Festuca. Festuca-arundinacea. Phalaris. Phalaris-aquatica. sheep. Trifolium. Trifolium-repens
Supplemental Descriptors:Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Festuca. Phalaris. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Papilionoideae. Fabaceae. Fabales. dicotyledons. Trifolium. Australia. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:LL500. PP350. LL520. FF100. RR000
Supplementary Info:24 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Isolation of a virulent bacteriophage from a Propionibacterium species in the sheep rumen
View Article: Australian Journal of Agricultural Research. 2000. 51 (1). 119-123
CD Volume:324
Print Article: Pages: 119-123
Author(s):Cheong J P E Brooker J D
Author Affiliation:Animal Science Department, University of Adelaide, Waite Campus, Private Bag, Glen Osmond, SA 5064, Australia
Language:English
Abstract:Propionibacterium is a facultative anaerobe associated with the rumen epithelium, the presence of which may influence the anaerobic environment through oxygen scavenging, as well as providing a source of propionate. Factors such as bacteriophages that influence Propionibacterium populations may therefore be important regulators of rumen function. This study describes the isolation and identification of a rumen Propionibacterium bacteriophage. Sheep rumen fluid was screened for Propionibacterium species and 3 isolates were identified and characterized. One isolate, PA1, was used as an indicator strain to screen for the presence of Propionibacterium-specific virulent bacteriophages. A virulent bacteriophage, PB2, was isolated from clear plaques on a lawn of PA1 cells and was shown by transmission electron microscopy to be a siphovirus-like particle comprising an icosahedral head 50 nm in diameter and a tail 140 nm in length. The bacteriophage was visibly attached to and within PA1 cells, and was shown to infect all 3 rumen isolates of Propionibacterium and 4 of 6 clinical isolates of P. acnes. Restriction mapping of bacteriophage PB2 demonstrated a 30.8 kb genome
Descriptors:rumen. epithelium. rumen-epithelium. rumen-fluid. rumen-bacteria
Organism Descriptors:sheep. Propionibacterium. bacteriophages
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Propionibacteriaceae. Coryneform-group-of-bacteria. Firmicutes. bacteria. prokaryotes. viruses. pathogens
Subject Codes:LL500. LL510
Supplementary Info:23 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:The timing of nutritional restriction during reproduction influences staple strength
View Article: Australian Journal of Agricultural Research. 2000. 51 (1). 125-132
CD Volume:324
Print Article: Pages: 125-132
Author(s):Robertson S M Robards G E Wolfe E C
Author Affiliation:Department of Wool and Animal Science, University of New South Wales, Sydney, NSW 2052, Australia
Language:English
Abstract:The staple strength of wool from Merino ewes (liveweight 41 kg; condition score 1.5) was assessed in response to a short-term nutritional restriction at different stages of pregnancy and lactation. Single- and twin-bearing ewes were fed to maintain maternal liveweight (control) or restricted to lose 2 kg in maternal liveweight between days 85 and 98, 113 and 126, or 141 and 154 of pregnancy, or days 169 and 182 in early lactation. Unmated control

ewes were fed to maintenance, and a group of unmated ewes was restricted between the equivalent of days 141 and 154 of pregnancy. All groups were maintained in group-feeding pens from day 8 of pregnancy to 4 weeks after weaning of lambs. The ewes were fed lucerne hay. Control ewes fed to maintain liveweight produced sound wool (unmated 52.7, or single-rearing 46.0, and twin-rearing 43.0 N/ktex). Nutritional restriction only reduced the staple strength of wool produced by unmated ewes by 2.2 N/ktex, but reduced that of reproducing ewes by 0-26.8 N/ktex. The decline in staple strength of reproducing ewes increased as the time of restriction during pregnancy advanced. Restriction during lactation did not significantly influence staple strength. The effect of restriction appeared to be mediated via changes in diameter along fibres. The results indicate that there is variation in the sensitivity of staple strength to short-term nutritional restriction, with pregnancy status and the stage of pregnancy at which the restriction is imposed influencing the impact on staple strength
Descriptors:reproduction. ewes. hay. lactation. lambs. lucerne-hay. pregnancy. weaning. wool. quality. staple. restricted-feeding. plane-of-nutrition. body-weight. physical-properties
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. LL520
Supplementary Info:31 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Simulation studies of nitrogen concentration in the diet of sheep grazing Mitchell and mulga grasslands in western Queensland
View Article: Australian Journal of Agricultural Research. 2000. 51 (2). 163-172
CD Volume:324
Print Article: Pages: 163-172
Author(s):Hall W B Rickert K G McKeon G M Carter J O
Author Affiliation:School of Natural and Rural Systems Management, University of Queensland, Gatton College, Qld 4345, Australia
Language:English
Abstract:This study examined the potential to simulate the quality, as indicated by nitrogen concentration, of the diet of sheep grazing the Mitchell (Astrebla spp.) and mulga (Acacia aneura) grasslands of western Queensland. Development of this simulation capability will allow pasture growth and animal production models to be more easily coupled. Modifications and optimization of an existing beef cattle diet selection model, in conjunction with a single sward pasture model, accounted for 69.1% (P<0.001) and 41.9% (P<0.001) of variation in sheep dietary nitrogen concentrations observed from grazing trials on Mitchell and mulga grasslands, respectively. Failure to simulate some of the higher recorded dietary nitrogen concentrations was probably associated with high forb content in the diet. Examination of the results indicated that development of pasture growth models which simulate major pasture species, or groups of species (e.g. perennial grasses, annual grasses, browse, forbs, legumes), would appear to be necessary before diet selection models will be better able to explain the variation in dietary quality observed in grazing animals
Descriptors:grasslands. grazing. browse. growth-models. legumes. optimization. pastures. nitrogen. diets. selection. models.

simulation-models. silvopastoral-systems. agroforestry-systems. woodland-grasslands
Geographic Locator:Australia
Identifiers:grazing behaviour
Organism Descriptors:Acacia-aneura. sheep. cattle. Poaceae. grasses
Supplemental Descriptors:Acacia. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Cyperales. monocotyledons. Poaceae. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:PP350. LL500. ZZ100. RR300. LL120. LL300. KK600
Supplementary Info:40 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:The effect of dietary protein source and protected methionine (Lactet) on wool growth and microbial protein synthesis in Merino wethers
View Article: Australian Journal of Agricultural Research. 2000. 51 (2). 173-183
CD Volume:324
Print Article: Pages: 173-183
Author(s):White C L Young P Phillips N Rodehutscord M
Author Affiliation:CSIRO Division of Animal Production and CRC for Premium Quality Wool, Private Bag, PO Wembley, WA 6014, Australia
Language:English
Abstract:An experiment was conducted to compare the protein quality of different diets in relation to their ability to promote wool growth. An additional aim was to compare observed responses with those predicted using feeding models based on metabolisable protein. 64 Merino weaner wethers were allocated to 8 treatment groups in a factorial design consisting of 4 diets each at 2 levels of protected methionine. The 4 roughage-based diets consisted of different protein sources: Rumentek(R)-protected rapeseed meal (at 33% of the diet), oats plus urea (oats at 46% and urea at 2.6%), Lupinus angustifolius (at 36%), and L. albus (at 36%). The 2 levels of protected methionine were 0 or 3 g/day as Lactet. The diets were formulated to be isonitrogenous and isoenergetic and were fed at 1.5xmaintenance ME. The experiment lasted 13 weeks, which included a 3-week balance collection period in which faeces and urine were collected. Wool growth in sheep fed the protected rapeseed meal diet was 37% greater than in sheep fed oats (1.37 vs. 1.0 mg/cm2 daily), and 73% greater than in sheep fed L. angustifolius (P<0.001). Wool growth from the oat diet was 26% greater than from the L. angustifolius diet (P<0.05). There was no effect of diet on rumen volatile fatty acid concentrations. Lactet increased wool growth by 18% across all diets (P<0.001), representing an additional 0.17 mg/cm2 daily or 1.7 g/head daily. There were no significant differences in liveweight gain between the diets unless Lactet was added. When Lactet was added, lupins produced a significantly higher liveweight gain than oats or protected rapeseed meal. Lactet increased mean liveweight gain by 22% across all diets (P<0.05). Lactet also increased the concentration of plasma albumin, decreased plasma alpha -amino nitrogen, and increased urinary excretion of creatinine and purine derivatives (P<0.05). The findings highlight the need to evaluate feed sources in terms of protein degradability and sulfur amino acid composition, particularly when assessing effects on wool growth. The inability of current feeding models to incorporate differences in amino acid flows,

particularly sulfur amino acids, is an impediment to evaluating supplement quality in terms of wool growth
Descriptors:wool. quality. wool-production. diets. methionine. microbial-proteins. protected-protein. rumen-fermentation. protein-synthesis. synthesis. degradation. protein-degradation. albumins. rapeseed-oilmeal. composition. protein-sources. sources. protein. creatinine. derivatives. excretion. faeces. feeding. feeds. liveweight. liveweight-gain. models. oats. protein-quality. purines. rumen. sulfur. sulfur-amino-acids. urea. volatile-fatty-acids. lupins
Organism Descriptors:Lupinus. Lupinus-angustifolius. sheep. Avena-sativa
Supplemental Descriptors:Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Lupinus. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Avena. Poaceae. Cyperales. monocotyledons
Subject Codes:LL145. LL520. LL510
Supplementary Info:33 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Quantitative genetic studies on wool yellowing in Corriedale sheep. II. Clean wool colour and wool production traits: genetic parameter estimates and economic returns
View Article: Australian Journal of Agricultural Research. 2000. 51 (2). 191-196
CD Volume:324
Print Article: Pages: 191-196
Author(s):Benavides M V Maher A P
Author Affiliation:Lincoln University, Canterbury, New Zealand
Language:English
Abstract:The potential for improvement of clean wool colour (CWC) in Corriedale sheep via selection was examined. The heritability and phenotypic and genetic correlations, of CWC, brightness (Y), greasy (GFW) and clean (CFW) fleece weights, yield percentage (Yield), mean fibre diameter (MFD) and visual colour score were estimated from 440 progeny of 19 sires of a Corriedale flock kept at the sheep breeding unit of Lincoln University (Canterbury, New Zealand) using restricted maximum likelihood (REML) procedures with average information algorithm (AIREML). The heritability of CWC was estimated at 0.27 plus or minus 0.13. Clean wool colour showed strong positive genetic correlations with CFW and MFD. Visual colour score and CWC were also positively genetically correlated. As expected, direct selection criteria against MFD, CWC or visual colour score would reduce CWC; direct selection against MFD would improve clean wool colour with negligible reductions on CFW, thus resulting in small economic gains. Several selection indices were calculated, having either CFW, MFD, and CWC or CFW and MFD as selection criteria. The b-values of an unrestricted index were estimated at I1 = +1.15 CFW, +0.13 MFD, +0.43 CWC, with positive correlated responses for all 3 breeding objective traits (CFW, MFD and CWC). A second index, where CFW was restricted to nil genetic change, was estimated at: I2 = +0.14 CFW, -0.02 MFD, +0.01 CWC. This index was expected to cause a negligible genetic gain for CWC (-0.04 Y-Z units/head.year). To avoid economic losses with the reduction of CFW, a third selection index was calculated where CWC was restricted to nil change. The index was estimated at I3 = +0.61 CFW, -0.07 MFD, +0.02 CWC with expected increases in CFW and decreases in MFD. Selection indices with (1) CFW and MFD (I4) and (2)

CFW, MFD and visual colour score (I5) as selection criteria would increase CFW, MFD and CWC at the same rates observed in I1
Descriptors:Corriedale. wool. genetic-correlation. genetic-parameters. genetic-gain. heritability. selection. selection-index. selection-responses. fleece-weight. colour. fibres. diameter
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240. LL145
Supplementary Info:17 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:The effect of grazing Lotus corniculatus during late summer-autumn on reproductive efficiency and wool production in ewes
View Article: Australian Journal of Agricultural Research. 2000. 51 (3). 385-391
CD Volume:324
Print Article: Pages: 385-391
Author(s):Luque A Barry T N McNabb W C Kemp P D McDonald M F
Author Affiliation:Institute of Food, Nutrition and Human Health, Massey University, Palmerston North, New Zealand
Language:English
Abstract:A grazing experiment was conducted at Massey University (Palmerston North, New Zealand) over 80 days in the late summer-autumn of 1998 (9 February-29 April). Reproductive performance and wool growth of ewes grazing on Lotus corniculatus (birdsfoot trefoil) were compared with those of ewes grazing perennial ryegrass-white clover pasture. A rotational grazing system with 210 mixed-age dry ewes (59.8 plus or minus 0.9 kg/ewe) was used, with 80 ewes grazing pasture [1 g of condensed tannin (CT) per kg dry matter (DM)] and 130 ewes grazing L. corniculatus (24 g CT/kg DM). Half of the ewes grazing L. corniculatus were supplemented orally, twice daily, with polyethylene glycol (PEG; MW, 3500) to inactivate the CTs. The effect of forage species and PEG supplementation on voluntary feed intake (VFI), reproductive performance (as measured by ovulation rate), and wool production was measured during 4 synchronized oestrous cycles. The ewes were restricted to maintenance feeding during the first 10 days of each oestrous cycle and then increased to ad libitum for the 6 days leading up to and including ovulation. In vitro organic matter digestibility in the selected diet was higher for lotus than for pasture (0.80 v. 0.76), with L. corniculatus containing less nitrogen than pasture (36.5 v. 40.8 g/kg organic matter). Ewes grazing on L. corniculatus produced 11% more wool and had an ovulation rate up to 14% higher than ewes grazing pasture, with neither parameter being affected by PEG supplementation. Higher mean ovulation rates of ewes grazing L. corniculatus were due to increases in fecundity (multiple ovulations/ovulating ewe; $P<0.05$), with no effect on ewes cycling/ewes mated. Three cycles of grazing on L. corniculatus were required to achieve the maximum response in multiple ovulation, but most of this was achieved after 2 cycles. As the VFI of ewes grazing on L. corniculatus was not greater than that of ewes grazing pasture, the greater wool production and higher ovulation rate of ewes grazing this forage was due to improved efficiency of feed utilization. It was concluded that feeding ewes L. corniculatus increased the efficiency of both reproduction and wool production without increasing VFI
Descriptors:ewes. grazing. wool. fecundity. feeding. forage. in-vitro. organic-matter. pastures. tannins. utilization. wool-

production. reproduction. ovulation. digestibility. intake. antinutritional-factors. polyethylene-glycol
Geographic Locator:New-Zealand
Organism Descriptors:sheep. Lotus-corniculatus. Trifolium-repens. Lolium-perenne
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Lotus. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Trifolium. Lolium. Poaceae. Cyperales. monocotyledons. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007. LL145. LL250. LL500. LL520
Supplementary Info:39 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Summer-autumn rainfall effects on wool staple strength and position of break. I. Small-scale field simulations of rainfall onto sheep grazing dry pasture in February and April
View Article: Australian Journal of Agricultural Research. 2000. 51 (4). 523-530
CD Volume:324
Print Article: Pages: 523-530
Author(s):Woodgate R G Chapman H M Robertson I D Bell K J
Author Affiliation:Division of Veterinary and Biomedical Sciences, Murdoch University, Murdoch, WA 6150, Australia
Language:English
Abstract:Despite a great deal of anecdotal evidence linking summer-autumn rainfall events to the position of break (POB) of wool from sheep grazed in a Mediterranean environment, there are no published experiments directly investigating this relationship. This trial examined the effects on staple strength (SS) and POB of simulated rainfall onto sheep (groups of 10-15 per treatment) grazing dry pasture residues during February and April in Western Australia. The simulated rainfall events had few significant effects on the wool quality parameters of the sheep in this trial. The natural rainfall associated with the 'break' of the season had a much greater influence on SS and POB. A significant effect on POB was noted in the wool from sheep that had been exposed to simulated rainfall and then grazed germinating green pasture for approximately 15-20 days. The effect on POB could be an effect of the green feed alone or a combination of the green feed and simulated rainfall. When grazing wetted dry pasture, sheep appeared to alter their grazing behaviour and showed more apparent 'selectivity'. Overall grazing times did not appear to be affected and sheep in several treatment groups were observed to graze whilst their rainfall simulations were in progress. Wetting of dry pasture also appeared to increase the 'toughness' of the plant material available
Descriptors:grazing. pastures. wool. feeding-behaviour. green-feed. residues. seasons. rain. staple. feeding-preferences
Geographic Locator:Australia
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:LL520. LL145. PP350
Supplementary Info:32 ref
ISSN:0004-9409

Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Protein metabolism in skin and muscle of sheep selected for or against staple strength
View Article: Australian Journal of Agricultural Research. 2000. 51 (5). 541-546
CD Volume:324
Print Article: Pages: 541-546
Author(s):Adams N R Liu S M Briegel J R Greeff J C
Author Affiliation:CSIRO Animal Production and CRC for Premium Quality Wool, PO Wembley, WA 6014, Australia
Language:English
Abstract:Two experiments were carried out at Agriculture Western Australia (Katanning; dates not given) to determine the mechanisms underlying the reduced effect of nutritional status on wool growth rate in Merino sheep that have been selected for high staple strength (SS). In Expt 1, each group of 6 young sheep of SS+ and SS- genotypes were fed at 0.4 or 1.1 times maintenance, and in Expt 2, groups of 8 sheep of each genotype were fed at 1.1 and 1.8 times maintenance. In both experiments, rates of protein synthesis in skin, muscle, gut, rumen and liver were determined using a flooding dose of labelled phenylalanine. Feed intake and the digestibility of feed were not affected by genotype. Neither dissection of the carcasses at slaughter, nor deuterated water analysis in Expt 1, detected any differences between the genotypes in body composition. The feeding level affected the total daily amount of protein synthesized in all the organs examined, and the fractional rate of protein synthesis was affected by feeding level in all organs except the liver. The fractional synthesis rate of protein was less responsive to feeding level in the SS+ sheep in both skin and muscle ($P<0.05$) but not in the liver, jejunum or rumen. Total protein synthesis in muscle and the estimated rate of protein degradation, were also less responsive to feeding level in the SS+ sheep ($P<0.05$). We conclude that sheep selected for high or low SS have altered local mechanisms in both skin and muscle that control the way they respond to nutrition
Descriptors:metabolism. muscles. selection. strain-differences. body-composition. carcasses. digestibility. protein-metabolism. feed-intake. genotypes. growth-rate. Merino. nutrition. nutritional-state. phenylalanine. protein-synthesis. rumen. wool. protein-degradation. plane-of-nutrition. skin
Geographic Locator:Australia
Identifiers:staple strength
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:LL145. LL120. LL520. LL510
Supplementary Info:25 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Soil audit of a long-term phosphate experiment in south-western Victoria: total phosphorus, sulfur, nitrogen, and major cations
View Article: Australian Journal of Agricultural Research. 2000. 51 (6). 737-748
CD Volume:324

Print Article: Pages: 737-748
Author(s):McCaskill M R Cayley J W D
Author Affiliation:Agriculture Victoria, Private Bag 105, Hamilton, Vic. 3300, Australia
Language:English
Abstract:A nutrient audit was conducted on a long-term grazed fertilizer experiment at Hamilton in south-western Victoria, Australia, to determine the fate of applied P and S. Single superphosphate was applied at rates averaging between 1 and 33 kg P/ha per year since the start of the experiment in 1977. Soil samples were taken in 1994 by coring to a depth of 80 cm, and analysed for total soil nutrient concentration. Most (80%) applied P was in the top 43 cm of the soil profile. A further 6.5% was transferred to sheep camp areas and 6.5% was exported as a product. It was estimated that <0.4% of applied P left the site in surface water movement. Unaccounted P (6.6%) was probably in the soil, but could not be detected because of the relatively wide confidence margin for total soil P. Only 31% of applied S was detected in the top 43 cm, 3.6% had been transferred to sheep camps, and 4.9% exported in product. Unaccounted S (60%) probably moved deeper into the soil where it could not be detected from background levels of total soil S. Bulk density in the 0-5 cm layer increased by 1% for each additional ewe per ha, but decreased by up to 0.4% for each kg/ha per year of P fertilizer. Soil N accumulated at 46 kg N/ha per year at the highest P application rate. Differences in total potassium (K) between low and high fertility treatments indicated that 20 kg K/ha per year had moved out of the 5-19 cm soil layer of the high fertility treatment. This was attributed to competition for exchange sites from calcium (Ca) in the superphosphate. It was concluded that fertilizers with a higher P:S ratio and a lower Ca content than superphosphate are more appropriate for the basalt-derived duplex soils because they would reduce problems associated with displacement of K in the soil profile
Descriptors:nitrogen. phosphate. phosphorus. sulfur. application-rates. bulk-density. soil-amendments. calcium. fertilizers. potassium. soil-profiles. superphosphate. surface-water. runoff. soil-water. soil-water-movement. movement-in-soil. land-use. soil-properties. soil-chemistry. soil-physical-properties
Geographic Locator:Australia. Victoria
Supplemental Descriptors:Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:JJ200. JJ300. JJ700. PP300
Supplementary Info:38 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Diet selection by sheep grazing Phalaris aquatica L. pastures of differing water-soluble carbohydrate content
View Article: Australian Journal of Agricultural Research. 2000. 51 (6). 757-764
CD Volume:324
Print Article: Pages: 757-764
Author(s):Ciavarella T A Dove H Leury B J Simpson R J
Author Affiliation:CSIRO Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia
Language:English
Abstract:A short-term shading treatment was used to create a Phalaris aquatica pasture with alternating strips of 'low' [62 mg/g dry matter (DM)] and 'high' (126 mg/g DM) water-soluble carbohydrate (WSC) concentration. Analyses showed that starch and all components of the

WSC were reduced in concentration by shading. The shaded and unshaded pasture strips did not differ significantly in in vitro DM digestibility (84% DM), nitrogen (3.1% DM), or neutral detergent fibre concentration (42.4% DM). Synthetic alkanes were applied to the pasture strips as markers to measure the selection of the shaded and unshaded pasture by sheep. When 12-13-month-old Merino wethers were given simultaneous access to both pasture treatments, they selected 2.6-fold more unshaded (high WSC) pasture than shaded pasture. The results indicate the involvement of herbage total WSC and its components in the process of diet selection by sheep, and suggest that in future studies, more attention should be paid to reporting data for total WSC concentration
Descriptors:feeding-preferences. feeding-behaviour. grazing. pastures. alkanes. digestibility. dry-matter. fibre. herbage. in-vitro. starch
Organism Descriptors:Phalaris. Phalaris-aquatica. sheep
Supplemental Descriptors:Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Phalaris. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL300. LL500
Supplementary Info:32 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:The nutrition of grazing ewes during pregnancy and lactation: a comparison of alkane-based and chromium/in vitro-based estimates of herbage intake
View Article: Australian Journal of Agricultural Research. 2000. 51 (6). 765-777
CD Volume:324
Print Article: Pages: 765-777
Author(s):Dove H Freer M Foot J Z
Author Affiliation:CSIRO Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia
Language:English
Abstract:The n-alkane and chromium/in vitro procedures for estimating herbage intake were compared in grazing ewes during late pregnancy, early lactation, and mid-lactation. To ensure differences in herbage intake, the ewes were grazed in 4 plots of phalaris-dominant pasture at 2 levels of stocking: 17.1 ewes/ha and 30.8 ewes/ha. To investigate whether either procedure for estimating herbage intake was influenced by supplement consumption, half of the ewes at each stocking level received 500 g/day air-dry of a pelleted supplement (1:1 milled oat grain: sunflower meal). Supplement intakes were estimated using tritiated gypsum as a marker. During intake measurement periods, ewes were dosed twice daily with both alkane capsules and capsules containing chromium sesquioxide. For the last 6 days of the 12-day dosing period, rectal faecal samples were taken twice daily, immediately before the dosing. Over these same periods, wether sheep fitted with faecal collection harnesses were similarly dosed and sampled, and their total faecal output collected to establish the faecal recovery of chromium and the alkanes. Herbage intakes were estimated using the C27/C28, C29/C28, C31/C32, and C33/C32 alkane pairs. Estimates of intake based on the shorter alkane pairs were lower than those estimated with the C33/C32 alkane pair, by amounts which differed between the periods. Evidence is presented that estimates based on the last pair of alkanes (C33/C32) are the most accurate and are also more accurate than those based on the

chromium/in vitro procedure. The relationship between these 2 methods for estimating intake was different in mid-pregnancy compared with either stage of lactation. The consumption of supplement did not interfere with any of the methods for estimating herbage intake. Estimates of faecal output based on the use of chromium, C28 alkane, or C32 as an external marker were statistically identical, indicating that the difference between the 2 methods for estimating herbage intake was not related to a failure to accommodate the incomplete recovery of any of the markers used or to the failure of rectal grab samples to be representative of total faeces. Our results indicate that herbage collected by oesophageally fistulated (OF) sheep was representative of that grazed by the ewes and could thus be used to provide the herbage alkane data needed to estimate herbage intake by the alkane method. However, the in vitro digestibility values obtained from the OF samples did not represent the digestibilities actually occurring in vivo. This was the main cause of the observed difference between the 2 methods for estimating intake. Possible reasons for the differences between the in vitro and in vivo estimates of digestibility are discussed
Descriptors:nutrition. ewes. grazing. herbage. lactation. pregnancy. alkanes. chromium. digestibility. faeces. in-vitro. in-vitro-digestibility. pastures. rectum. sunflowers. sunflower-oilmeal
Organism Descriptors:sheep. Helianthus-annuus
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Helianthus. Asteraceae. Asterales. dicotyledons. angiosperms. Spermatophyta. plants
Subject Codes:ZZ900. LL500
Supplementary Info:25 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Cysteine may play a role in the immune response to internal parasites in sheep
View Article: Australian Journal of Agricultural Research. 2000. 51 (7). 793-799
CD Volume:324
Print Article: Pages: 793-799
Author(s):Miller F M Blair H T Birtles M J Reynolds G W Gill H S Revell D K
Author Affiliation:Institute of Veterinary, Animal and Biomedical Sciences, College of Sciences, Massey University, Private Bag 11 222, Palmerston North, New Zealand
Language:English
Abstract:To investigate the role of cysteine in the increased parasite susceptibility of sheep selected for increased wool production, ten 2-year-old rams from both fleece-weight-selected (FW) and randomly selected (C) Romney lines received either 2 g of supplemental cysteine per day (+CYS) or saline (+SAL), via abomasal infusion. Following drenching to remove any pre-existing parasites, all sheep were dosed with Haemonchus contortus and Trichostrongylus colubriformis infective larvae. Sheep were also subjected to non-parasitic immune challenges: inoculation with ovalbumin and a commercial clostridial vaccine containing the tetanus toxin. Cysteine infusion elevated plasma cysteine concentrations by an average of 65% ($P<0.0001$), but no difference in cysteine levels was observed between selection lines. Off-pasture faecal egg counts (FEC) were higher in FW sheep (645 v. 200 eggs/g, $P<0.01$). FEC were unaffected by selection line or infusion treatment following experimental

infection, although FEC of +SAL sheep were at least double those of +CYS sheep. Total parasite numbers in the abomasum and small intestine at slaughter were unaffected by selection line or infusion treatment. Cysteine infusion tended to result in greater peripheral eosinophilia over the experimental period (P<0.10), and higher counts of globular leukocytes in the abomasum at slaughter (P<0.05). Anti-parasite antibody responses showed no response to experimental infection, tending to drop over time; previous parasitic infection may have confounded results. There were no effects of selection line or infusion treatment on IgG responses to tetanus toxin, although data suggested that a swifter response occurred in +CYS sheep. Anti-ovalbumin IgG responses tended to be greater in +CYS sheep (Day 52, P<0.10). It is concluded that there is a greater susceptibility of FW sheep in natural parasitic challenge, as indicated by off-pasture FEC. Cysteine appears to influence certain aspects of immunocompetency in sheep, although the exact role of cysteine in the relationship between wool production and parasite susceptibility requires further elucidation
Descriptors:helminths. immune-response. cysteine. wool-production. strain-differences. sheep-breeds. Romney
Organism Descriptors:sheep. Haemonchus-contortus. Trichostrongylus-colubriformis
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Haemonchus. Trichostrongylidae. Nematoda. invertebrates. Trichostrongylus
Subject Codes:LL822. LL650. LL145
Supplementary Info:19 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Effect of grazing intensity and cultivar on morphology, phenology, and nutritive value of subterranean clover II. Nutritive value during the growing season
View Article: Australian Journal of Agricultural Research. 2000. 51 (8). 1047-1055
CD Volume:324
Print Article: Pages: 1047-1055
Author(s):Ru Y J Fortune J A
Author Affiliation:Department of Agronomy and Farming Systems, University of Adelaide, Roseworthy Campus, Roseworthy, SA 5371, Australia
Language:English
Abstract:With the decline in pasture quality in southern Australia, the development of management strategies to improve nutrient supply for grazing animals is essential and requires a clear understanding of the interaction between animals and plants. The impact of grazing intensity on the morphology of subterranean clover was previously examined. This paper reports the effect of grazing intensity on the nutritive value of subterranean clover, and the variation in quality of cultivars during the growing season. Grazing intensity influenced nutritive value and interacted with cultivar maturity. Heavy grazing depressed dry matter digestibility (DMD) by 5 percentage units in October for early maturity cultivars but increased DMD by 3 percentage units in September for mid maturity cultivars. The influence of grazing intensity on nitrogen content was small. Heavy grazing did not affect acid detergent fibre for the early maturity group, but depressed it for the mid maturity group throughout the season. Acid detergent lignin remained comparable for all cultivars during the season. Mineral content of subterranean clover showed

variable response to grazing treatments. Nutritive value varied among cultivars within each maturity group. DMD ranged over 53-64%, 44-62%, and 45-53% for early, mid, and late maturity groups, respectively, at the end of the growing season. The cultivar rank in all nutritional parameters changed with the progress of the season. The large ranges in the decline rate of DMD within each maturity group during the last 8 weeks of growth gave an indication of the potential quality of the cultivars during late spring and early summer. Despite the variation in mineral content there were no cultivars in which the concentration of minerals was below the minimum requirements of sheep. These results indicate that there is a potential for the selection of high quality cultivars within a breeding programme, and that indicative targets of grazing intensity need to be further developed with a focus on pasture quality
Descriptors:clovers. grazing. morphology. phenology. pasture-legumes. nutritive-value. digestibility. growth-period. lignin. fibre. pastures. legumes
Geographic Locator:Australia
Organism Descriptors:Trifolium. Trifolium-subterraneum. sheep. Fabaceae
Supplemental Descriptors:Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Trifolium. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:FF020. FF007. RR300
Supplementary Info:23 ref
ISSN:0004-9409
Year:2000
Journal Title:Australian Journal of Agricultural Research

Title:Geographic distribution of C3 and C4 grasses recorded from stable carbon isotope values of bone collagen of South Australian herbivores
View Article: Australian Journal of Botany. 2000. 48 (2). 203-207
CD Volume:324
Print Article: Pages: 203-207
Author(s):Pate F D Noble A H
Author Affiliation:Department of Archaeology, Flinders University, Adelaide, SA 5001, Australia
Language:English
Abstract:Cortical bone samples were collected from marsupial and eutherian herbivores at five field sites along a 1275-km south-north transect from temperate coastal to arid interior South Australia in order to address variability in stable carbon isotope composition. Collection sites were located along the eastern border of the state, and animals examined included grey and red kangaroos (Macropus spp.), sheep and cattle. Mean annual rainfall along the transect ranges from 700-800 mm at coastal Mount Gambier to 150-175 mm at Cordillo Downs in the north-east corner of the state. Bone collagen carbon isotope values become more positive towards the arid north in relation to increasing quantities of C4 grasses. Thus, stable carbon isotope analysis of bone specimens provides a method to address dietary selection and dietary variability in Australian herbivores. In addition, isotopic analyses of archaeological and palaeontological bones and teeth can be used to address changes in Quaternary climate and vegetation distributions in Australia
Descriptors:collagen. herbivores. isotope-fractionation. carbon-pathways. diets. selection. estimation. palaeoecology. climate.

grazing. geographical-distribution. analytical-methods. phytogeography
Geographic Locator:Australia. South-Australia
Identifiers:plant distribution. grazing behaviour
Organism Descriptors:Poaceae. grasses. Macropus. sheep. cattle
Supplemental Descriptors:Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Poaceae. Macropodidae. marsupials. mammals. vertebrates. Chordata. animals. Ovis. Bovidae. ruminants. Artiodactyla. ungulates. Bos. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:PP350. YY500. LL300. LL500. BB700. PP500. ZZ900
Supplementary Info:28 ref
ISSN:0067-1924
Year:2000
Journal Title:Australian Journal of Botany

Title:Increasing lamb output by crossing commercial Merino ewes with South African Meat Merino rams
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (1). 11-16
CD Volume:324
Print Article: Pages: 11-16
Author(s):Cloete S W P Durand A
Author Affiliation:Elsenburg Agricultural Development Institute, Private Bag X1, Elsenburg 7607, South Africa
Language:English
Abstract:Commercial Merino ewes were randomly allocated to 1 of 2 groups, which were joined to commercial Merino or South African Meat Merino rams during October 1996 and 1997. Merino rams were involved in 161 joinings, and South African Meat Merino rams in 157 joinings. The proportions of ewes that lambed were independent of the breed of the sire when expressed relative to the number of ewes joined (0.809 and 0.801 in ewes joined to South African Meat Merino and Merino rams respectively). The proportion of multiple lambs was similarly not affected by the breed of the service sire. Lambs sired by South African Meat Merino rams were on average heavier (4.17 plus or minus 0.07 vs. 3.86 plus or minus 0.07 kg; P<0.01) at birth. They also tended to have a better (0.69 vs. 0.59; P<0.10) survival to weaning, and were heavier (26.9 plus or minus 0.6 vs. 22.8 plus or minus 0.6 kg; P<0.01) at weaning than purebred Merino contemporaries. The combined effect of the tendency towards an improved survival rate as well as the increased lamb weaning weight resulted in a 36% increase (P<0.01) in lamb output in Merino ewes joined to South African Meat Merino ewes compared with ewes joined to Merino rams. Higher (P<0.01) proportions of ram lambs sired by South African Meat Merino rams reached slaughter weight (approximately 40 kg) before the onset of the dry Mediterranean summer than purebred Merinos. Two-tooth ewes sired by South African Meat Merino rams were heavier (P<0.01) at 2-tooth age (53.0 plus or minus 0.6 vs. 52.0 plus or minus 0.6 kg) than purebred Merino. The 2-tooth greasy fleece weight of South African Meat Merino sired 2-tooth ewes were lower (3.85 plus or minus 0.08 vs. 4.66 plus or minus 0.09 kg; P<0.01), with a lower (66.8 plus or minus 0.6 vs. 70.5 plus or minus 0.7%; P<0.01) clean yield than that of purebred Merinos. This resulted in a marked difference in clean fleece weight between the 2 types (2.56 plus or minus 0.06 vs. 3.28 plus or minus 0.06 kg respectively). Wool produced by South African Meat Merino sired 2-tooth ewes was generally broader (21.8 plus or minus 0.3 vs. 20.3 plus or minus 0.3 micro m; P<0.01) and shorter (87.3 plus or minus 1.3 vs. 96.4 plus or minus 1.4 mm; P<0.01) than that of their purebred Merino contemporaries. The coefficient of

variation of fibre diameter as well as staple strength was independent of the breed of the sire. Liveweight of adult ewes and wool traits were independent of the breed of the service sire
Descriptors:crossbreeding. ewes. Merino. rams. fleece-weight. lambs. liveweight. survival. weaning. weaning-weight. wool. South-African-Merino. lamb-production. tropics. quality. sheep-breeds
Geographic Locator:South-Africa
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Southern-Africa. Africa-South-of-Sahara. Africa. Developing-Countries. Threshold-Countries. Anglophone-Africa. Commonwealth-of-Nations
Subject Codes:LL240. LL120. LL145
Supplementary Info:22 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Effects of grazing management on Sirosa phalaris herbage mass and persistence in a predominantly summer rainfall environment
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 155-169
CD Volume:324
Print Article: Pages: 155-169
Author(s):Lodge G M Orchard B A
Author Affiliation:NSW Agriculture, Centre for Crop Improvement, RMB 944, Tamworth, NSW 2340, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:Herbage mass, plant frequency and basal cover data collected from September 1993 to August 1996 were used to compare the effects of various seasonal closures with continuous grazing on the persistence of Sirosa phalaris (Phalaris aquatica cv. Sirosa) at 3 sites on the North West Slopes of New South Wales. Sites were on-farm and consisted of up to 10 treatments with 2 replicates and treatments were initially imposed in 2 different years. Pastures were either newly sown (3 years old) and grazed by either sheep or cattle, or degraded (14 years old) and grazed by sheep. Drought conditions prevailed in 1994-95, confounding the interpretation of the importance of treatments that involved long periods of closure, since significant effects could be attributed to both grazing exclusion and the timing of the closure in relation to plant phenology. However, across all sites and years, fitted values for phalaris herbage mass were generally significantly higher than the continuously grazed control in only 2 treatments: spring closure (at 1 site) and an extended spring closure combined with an autumn closure (at all sites). At the end of these studies phalaris herbage mass in spring-autumn closures was 4-32 times higher than the control plots. These results were confirmed by analysis of initial and final plant frequency data. At all sites, no recruitment of Sirosa seedlings occurred in any treatment. These data support the hypothesis that for increased persistence in a summer rainfall environment Sirosa phalaris requires some form of grazing management that involves the exclusion of grazing in the critical periods of spring and autumn
Descriptors:grazing. persistence. pastures. phenology. seedlings. grazing-systems. continuous-grazing
Geographic Locator:Australia. New-South-Wales
Organism Descriptors:Phalaris-aquatica. sheep. cattle

Supplemental Descriptors:Phalaris. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007
Supplementary Info:36 ref
ISSN:0816-1089
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Title:Effects of grazing management on phalaris herbage mass and persistence in summer-dry environments
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 171-184
CD Volume:324
Print Article: Pages: 171-184
Author(s):Virgona J M Avery A L Graham J F Orchard B A
Author Affiliation:NSW Agriculture, Wagga Wagga Agricultural Institute, PMB Wagga Wagga, NSW 2650, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:Grazing management strategies that included resting or intensely utilizing pasture on a seasonal basis were compared for their effects on phalaris production and plant frequency (persistence). Experiments were established at 4 on-farm sites (Cootamundra 'old', Cootamundra 'new', Springhurst and Cavendish) in southern New South Wales and Victoria that had previously been sown to phalaris (Phalaris aquatica) and were grazed by sheep. At each site, 8 core treatments and extra locally determined treatments were initially imposed in 1993-94 on 2 spatial replicates. In order to determine and describe any year of start effects, treatments were applied again in 1994-95 to plots that had been maintained as controls. The phalaris component of the pastures varied from a minor component to the dominant component depending on site (11-54%). Measurements of botanical composition, available herbage and plant frequency were made between September 1993 and September 1996. Of the core treatments, autumn closure (Cootamundra old and new), winter closure and grazing between defined levels of available herbage (mob stocking) during autumn-winter (Cootamundra old and new, Springhurst), were the most effective in either maintaining or increasing phalaris herbage mass compared to the continually grazed control treatment. In addition, the frequency of phalaris was higher than the control at each of these sites for the autumn-winter mob stocking treatment. These treatments had no effect at the Cavendish site where phalaris was a minor component of the pasture. Rotational grazing, imposed at 2 of the sites (Cavendish and Cootamundra new), led to an increase in phalaris herbage mass compared to continual grazing. A further treatment aimed at encouraging phalaris seedling recruitment by using an extended spring rest until seed fall in summer followed by a rest after the autumn break was imposed at the Cootamundra old site. This treatment increased phalaris herbage mass but did not result in seedling recruitment. The results emphasise the need for periods of rest when buds are regenerating and tillers developing over the autumn-winter period for phalaris pastures in summer-dry environments
Descriptors:grazing. persistence. botanical-composition. pastures. seedlings. tillers. population-dynamics. grazing-systems. grasslands. temperate-grasslands

Geographic Locator:Australia. New-South-Wales. Victoria
Identifiers:rest-rotation grazing
Organism Descriptors:Phalaris-aquatica. sheep
Supplemental Descriptors:Phalaris. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007
Supplementary Info:35 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Effects of sheep grazing management on cocksfoot herbage mass and persistence in temperate environments
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 185-206
CD Volume:324
Print Article: Pages: 185-206
Author(s):Avery A L Michalk D L Thompson R P Ball P Prance T Harris C A FitzGerald D W Ayres J F Orchard B A
Author Affiliation:Agriculture Victoria, Rutherglen Research Institute, RMB 1145, Rutherglen, Vic. 3685, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:Cocksfoot (Dactylis glomerata L.) is among the most important perennial grass species sown in temperate Australia. Newly sown cocksfoot pastures were established on 5 commercial farms (sites), in the temperate high-rainfall (>600 mm annual rainfall) zone of eastern Australia. Experiments were located on these commercial farms, and were measured from September 1993 to August 1996, to compare the effect of seasonal sheep grazing management strategies with continuous grazing (control treatment) on cocksfoot herbage mass and plant frequencies. Each experiment had 8 common grazing treatments and up to 5 local treatments, with 2 replicates and 2 years of start for treatments. Cocksfoot herbage mass under continuous grazing declined at 2 sites, remained stable at 2 sites and increased at 1 site. No single grazing strategy had a significant linear (time) effect on cocksfoot herbage mass across sites and at the completion of monitoring in 1996 there were few treatments with a significant increase in fitted values for cocksfoot herbage mass compared to the continuously grazed control. Under moderate grazing pressure (8-10 dry sheep equivalents) cocksfoot pastures appeared to be relatively stable and unresponsive to grazing management and therefore continuous grazing seems to be appropriate. High grazing pressure in summer (herbage mass below 1000 kg/ha) can reduce cocksfoot persistence and in drought stock should be removed from cocksfoot pastures. Summer seasonal closure increased cocksfoot frequency at all sites, except Four Mile Creek and Dundee. These studies have shown it is possible to improve cocksfoot herbage mass through the implementation of strategic grazing practices, particularly over summer and early autumn
Descriptors:grazing. persistence. pastures. grasslands. grazing-systems. continuous-grazing. grazing-intensity
Geographic Locator:Australia
Identifiers:rest-rotation grazing
Organism Descriptors:Dactylis-glomerata. sheep

Supplemental Descriptors:Dactylis. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007
Supplementary Info:61 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:The GrassGro decision support tool: its effectiveness in simulating pasture and animal production and value in determining research priorities
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 247-256
CD Volume:324
Print Article: Pages: 247-256
Author(s):Clark S G Donnelly J R Moore A D
Author Affiliation:Agriculture Victoria, Pastoral and Veterinary Institute, Private Bag 105, Hamilton, Vic. 3300, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:The GrassGro decision support tool combines animal intake and nutrition models, soil moisture and pasture growth models with management rules. GrassGro simulates pasture and animal production using a wide range of pasture species and sheep and cattle enterprises. Data from the Temperate Pasture Sustainability Key Program grazing management sites were used to validate the predictions of GrassGro. The pasture and animal production from a diverse range of sites were successfully simulated. Limitations of GrassGro were identified (parameter sets not available for some pasture species, inability to simulate clumpy swards, rudimentary interspecies competition model) and some improvements were made to its performance (improved species parameter sets and improved modelling of rooting depth). Recommendations are made on priority areas of research to improve GrassGro and on improvements in methodology which could be adopted by future programs like Temperate Pasture Sustainability Key Program
Descriptors:pastures. grazing. growth-models. methodology. sustainability. models. grasslands. temperate-grasslands. expert-systems
Organism Descriptors:cattle
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:ZZ100. FF007. LL500
Supplementary Info:7 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Quantifying the sustainability of grazed pastures on the Northern Tablelands of New South Wales
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 257-265
CD Volume:324
Print Article: Pages: 257-265

Author(s):Scott J M Hutchinson K J King K Chen W McLeod M Blair G J White A Wilkinson D Lefroy R D B Cresswell H Daniel H Harris C MacLeod D A Blair N Chamberlain G
Author Affiliation:Agronomy and Soil Science, University of New England, Armidale, NSW 2351, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:An experiment was conducted to examine the effect of deep-rooted perennial grasses on the water and nitrogen economy of 3 mature pasture communities with different botanical compositions but the same fertilizer history. One pasture was dominated by volunteer naturalised pasture grasses (Eleusine tristachya and Danthonia spp.) (termed 'degraded'), another was phalaris (Phalaris aquatica) dominant (phalaris), and a third was dominated by phalaris into which white clover (Trifolium repens) had been recently sown (phalaris-white clover). Two replicates of each pasture type were grazed continuously over 4 years with young weaner sheep changed each year. Measurements of hydrology, nutrient cycling, botanical composition and animal production were made in order to quantify the sustainability characteristics of each of the pasture types. Data are summarized as absolute measures at various points in time and also as trends over time. The ranking of standardized treatment measures was then summed to provide an index of sustainability with or without a weighting assumed to be representative of the relative importance of various layers of sustainability viewed from the perspective of a hypothetical 'typical' grazier. The results show that the phalaris-white clover treatment was substantially more sustainable, in both ecological and economic terms, than either of the other treatments. The unweighted index for the phalaris-white clover pasture was 3.61 compared to 2.08 and 1.98 for the phalaris and 'degraded' pastures, respectively
Descriptors:pastures. sustainability. botanical-composition. fertilizers. hydrology. grasslands. temperate-grasslands
Geographic Locator:Australia. New-South-Wales
Organism Descriptors:Danthonia. Eleusine. Poaceae. grasses. Phalaris. Phalaris-aquatica. sheep. Trifolium-repens
Supplemental Descriptors:Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Phalaris. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Trifolium. Papilionoideae. Fabaceae. Fabales. dicotyledons. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007
Supplementary Info:17 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Soil factors affecting the sustainability and productivity of perennial and annual pastures in the high rainfall zone of south-eastern Australia
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 267-283
CD Volume:324
Print Article: Pages: 267-283
Author(s):White R E Helyar K R Ridley A M Chen D Heng L K Evans J Fisher R Hirth J R Mele P M Morrison G R Cresswell H P Paydar Z Dunin F X Dove H Simpson R J

Author Affiliation:Department of Resource Management and Horticulture, Institute of Land and Food Resources, The University of Melbourne, Parkville, Vic. 3010, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:A field study was carried out in the high rainfall zone (HRZ, >600 mm p.a.) of southern Australia from March 1994 to August 1997 to test the hypothesis that sown perennial grasses and liming could make the existing pastures more sustainable through better use of water and nitrogen. The site, on an acid duplex soil at Book Book near Wagga Wagga in southern New South Wales, was typical of much of the HRZ grazing country in southern New South Wales and north-east Victoria. The experiment consisted of 4 replicate paddocks (each 0.135 ha) of 4 treatments: annual pasture (mainly ryegrass Lolium rigidum, silver grass Vulpia spp., subterranean clover Trifolium subterraneum and broadleaf weeds) without lime, annual pasture with lime, perennial pasture (phalaris Phalaris aquatica, cocksfoot Dactylis glomerata and subterranean clover T. subterraneum) without lime, and perennial pasture with lime. Soil pH (0-10 cm) in the limed treatments was maintained at 5.5 (0.01 mol/L CaCl2), compared to 4.1 in the unlimed treatments. The pastures were rotationally grazed with Merino ewe or wether hoggets at a stocking rate which varied with the season, but was 10-25% higher on the limed pastures [14.8-17.3 dry sheep equivalent (dse)/ha] than the unlimed pastures. One replicate set of pasture treatments was intensively monitored for surface runoff, subsurface flow (at the top of the B horizon), water potential gradients and ammonium volatilization. Other measurements of nitrogen inputs, transformations and losses were made on all paddocks. In a normal to wet year, surface runoff, subsurface flow and deep drainage (>180 cm depth) were about 40 mm less from the perennial than the annual pastures. The reduction in deep drainage under the perennials was about one-third to one-half (20-29 mm/year). The smaller loss of solution NO-3 from the perennial pastures (up to 12 kg N/ha.year) suggested soil acidification under perennials was reduced by about 1 kmol H+/ha.year. Denitrification and volatilization losses of N were small (1-12 kg N/ha.year). Nitrogen fixed by subterranean clover (above ground parts) ranged from 2-8 kg N/ha in the drought of 1994-95 to 128 kg N/ha in a normal year (1996). The soil-pasture nitrogen balance was positive for all treatments and averaged 76 kg N/ha.year over 2 years. The abundance of introduced and native earthworms increased from 85 to 250/m2 in the limed pastures between 1994 and 1997. Introduced species, such as Aporrectodea trapezoides, were especially responsive to lime. Animal production per hectare was 10-25% higher on pastures with lime. Critical gross margins per dse were lowest ($16/ha) for a long-lived perennial pasture (>15 years), and highest ($20/ha) for a short-lived perennial (5 years). Overall, there were substantial benefits in animal production, improved soil quality and water use from establishing perennial grass pastures with lime on these strongly acid soils
Descriptors:pastures. productivity. sustainability. acid-soils. acidification. denitrification. drainage. drought. ewes. grazing. introduced-species. liming. losses-from-soil. measurement. nitrogen-balance. controlled-grazing. runoff. soil-pH. soil. volatilization. water-potential. water-use. weeds. grasslands. annual-grasslands. sown-grasslands. temperate-grasslands. soil-amendments. lime. profitability. gross-margins
Geographic Locator:Australia. Victoria. New-South-Wales

Organism Descriptors:Aporrectodea-caliginosa. Trifolium. Dactylis-glomerata. sheep. grasses. Lolium-rigidum. Phalaris-aquatica. Trifolium-subterraneum. Vulpia. Poaceae
Supplemental Descriptors:Aporrectodea. Lumbricidae. Oligochaeta. Annelida. invertebrates. animals. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Dactylis. Poaceae. Cyperales. monocotyledons. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. ungulates. Lolium. Phalaris. Trifolium. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007. JJ700. EE110. JJ100. JJ300. JJ600
Supplementary Info:50 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Measuring and predicting the consequences of drought for a range of perennial grasses on the Northern Tablelands of New South Wales
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 285-297
CD Volume:324
Print Article: Pages: 285-297
Author(s):Boschma S P Scott J M
Author Affiliation:Agronomy and Soil Science, University of New England, Armidale, NSW 2351, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:An experiment was conducted at Armidale, New South Wales to evaluate the persistence and productivity of 6 perennial grasses (Phalaris aquatica, Festuca arundinacea, Dactylis glomerata, Lolium perenne, Microlaena stipoides and Danthonia richardsonii) under 2 defoliation severities (different cutting heights with a lawn mower) and a range of moisture/drought conditions created using a rain-out shelter. Defoliation was either moderate or severe whilst the moisture/drought conditions imposed included a non-stressed moisture treatment, and seasonal droughts simulated as 40-percentile (40-P) and 10-percentile rainfall (10-P). The treatments were applied over 2 experimental seasons; spring-summer and summer-autumn. A range of measurements was taken including plant mortality, basal area, foliage greenness, herbage mass, growth rate and digestibility. Some of these results were then used as inputs to the GrazFeed decision support system to predict liveweight gain and wool growth rate from pastures growing under such conditions. Plant mortality of over 40% was observed in Dactylis glomerata and Lolium perenne under moderate (40-P) drought conditions during spring-summer. In contrast, under severe drought conditions (10-P), less than 20% of plants died, suggesting that, when combined with defoliation stress, a more common drought can present a greater hazard to plant persistence than a severe drought during spring-summer. Plant mortality was reduced and non-significant when subjected to the summer-autumn drought treatments. Plant growth and predictions of animal productivity varied widely among the species challenged with drought and defoliation stresses. Predicted liveweight gains of weaner sheep under severe drought conditions (10-P) varied between species ranging from 20 to 110 g/day. Under the same conditions, predicted wool growth rates varied between species from 5 to 11 g/wether.day, while pasture growth rates varied from a low of 0 to more than 120 kg DM/ha.day. The animal effects were due largely to differences in herbage mass and the

degree to which the grass remained green. These results highlight the importance of maintaining the most productive species in pastures through drought
Descriptors:drought. defoliation. cutting-height. liveweight-gain. wool-production. water-stress
Geographic Locator:Australia. New-South-Wales
Organism Descriptors:Phalaris-aquatica. Festuca-arundinacea. Dactylis-glomerata. Lolium-perenne. Microlaena-stipoides. Danthonia-richardsonii. sheep
Supplemental Descriptors:Phalaris. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Festuca. Dactylis. Lolium. Microlaena. Danthonia. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007. LL145. LL120. RR000. LL520
Supplementary Info:23 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Effects of grazing interval on basal cover of four perennial grasses in a summer-dry environment
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 299-311
CD Volume:324
Print Article: Pages: 299-311
Author(s):Virgona J M Bowcher A
Author Affiliation:NSW Agriculture, Wagga Wagga Agricultural Institute, PMB Wagga Wagga, NSW 2650, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:The response to variation in grazing interval over the spring-autumn period in southern New South Wales was examined on 4 perennial grass species over 2 years. Plots of phalaris (Phalaris aquatica cv. Sirolan), cocksfoot (Dactylis glomerata cv. Porto), tall fescue (Festuca arundinacea cv. Demeter) and a native danthonia (Danthonia richardsonii cv. Taranna), were grazed by sheep every 2, 5 or 8 weeks, either rainfed or given supplementary irrigation. Basal cover was monitored over this period and is combined with measurements of phenological development and herbage mass to explain differences in persistence. The seasons differed with respect to rainfall, 1994-95 being dry compared to 1995-96. Over the 1994-95 season, the relative change in basal cover [RCBC, the ratio of final (May 1995) to initial (September 1994) basal cover] of the 3 introduced perennial grasses was significantly less than 1, which indicated a decline in basal cover over the measurement period. In contrast, RCBC was 1.55 for danthonia. Grazing interval treatments significantly affected RCBC in 1994-95, RCBC increasing with grazing interval. In the 8-week grazing interval, RCBC did not significantly differ from 1. Changes in density were also measured in 1994-95 and followed a similar pattern to RCBC for species effects although there was no significant effect of grazing interval. In 1995-96, there were interactions between watering and both species and grazing interval. The RCBC (September 1995-May 1996) was significantly greater than 1 for cocksfoot and tall fescue under irrigated conditions but not under rainfed conditions. The response to grazing interval depended on water supply. The 5-week grazing interval led to the highest RCBC under both rainfed and irrigated conditions. However, when rainfed,

the 5- and 8-week treatments were not significantly different, whereas under irrigation, the 2- and 5-week treatments did not significantly differ. For the 1995-96 season, a movement index (MI, ratio of newly colonized area to that occupied throughout the season) was measured. There was a strong interaction between species and watering but phalaris was the most mobile (highest MI) of the 4 species under both rainfed and irrigated conditions. The absence of any interaction between species and grazing interval in either 1994-95 or 1995-96 suggests that response to grazing of these species may be similar despite differences in survival mechanisms
Descriptors:grazing. irrigation. persistence. survival. water-supply
Geographic Locator:Australia. New-South-Wales
Organism Descriptors:Poaceae. grasses. Dactylis-glomerata. Danthonia-richardsonii. Festuca-arundinacea. Phalaris-aquatica. sheep
Supplemental Descriptors:Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Poaceae. Dactylis. Danthonia. Festuca. Phalaris. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007. JJ800
Supplementary Info:30 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:PROGRAZE - an extension package in grazing and pasture management
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (2). 325-330
CD Volume:324
Print Article: Pages: 325-330
Author(s):Bell A K Allan C J
Author Affiliation:NSW Agriculture, PMB 944, Tamworth, NSW 2340, Australia
Conference Title:Special issue: Grazing management strategies for newly-sown, degraded and native pastures
Language:English
Abstract:Grazing management decisions by beef cattle and sheep producers in south-eastern Australia have tended to be influenced more by the needs of livestock, often with little consideration given to the possible short- or long-term production impacts that the duration or intensity of grazing may have on pastures. This is partially due to inadequate knowledge of these impacts on some pasture types. Grazing decisions relating principally to livestock tend to be based on a subjective appraisal of liveweight change and pasture assessments often with inadequate understanding of critical pasture characteristics influencing livestock production or the ability to assess these characteristics. PROGRAZE is an extension package developed to assist beef cattle and sheep producers improve the quality of grazing management decision making so they more efficiently and effectively achieve their production and market targets for livestock and livestock products while maintaining or improving the productivity and sustainability of their pastures. To measure knowledge change, PROGRAZE participants were surveyed before they commenced the course and again at its conclusion. To measure on-farm adoption of the skills and knowledge contained within PROGRAZE, participants were again surveyed about 12 months after completing the course. Five focus groups were conducted as a means of obtaining direct feedback from a range of participants on issues not adequately

addressed through the surveys. The surveys showed the most significant area in knowledge change by participants was associated with pasture quality and the influence of pasture characteristics on pasture intake and livestock production. There was strong evidence of practice change by participants, particularly grazing decisions associated with pasture management. When asked whether participation in PROGRAZE had resulted in increased financial returns from their grazing enterprise, 89% replied it had and 91% indicated participation would lead to more sustainable pastures. The overall response to PROGRAZE was positive with 59% of those producers who replied to the survey indicating it exceeded or completely met their expectations and another 36% stating that it had mostly met expectations. Ninety-nine percent of respondents indicated that they would recommend PROGRAZE to fellow producers
Descriptors:grazing. pastures. grassland-management. decision-making. livestock. productivity. surveys. sustainability. grasslands. expert-systems. temperate-grasslands. management
Geographic Locator:Australia
Organism Descriptors:cattle. sheep
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007. PP350. LL120. CC200
Supplementary Info:9 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Mating Awassi rams to Merino ewes causes an initial level of fibre contamination which decreases to an insignificant level eight weeks post-mating
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (3). 363-369
CD Volume:324
Print Article: Pages: 363-369
Author(s):Hatcher S Lightfoot R J Purvis I W
Author Affiliation:NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange, NSW 2800, Australia
Language:English
Abstract:The fleeces of Merino ewes mated by Awassi rams were analysed for the presence of contaminant fibres (pigmented, urine-stained and kemp) and compared with those of ewes which were not mated (n = 12 per group). In a controlled shed mating, high numbers of contaminant fibres were found in the fleeces of the ewes, with the number of fibres transferred being proportional to the number of times the ram mounted the ewe. The number of fibres transferred during the shed mating were substantially higher than those found after paddock mating. In the latter instance, environmental conditions and contact with other sheep would have contributed to the loss of fibres from the recipients' fleeces. Each ram breed used in the paddock mating experiment, Merino, Awassi and Suffolk, transferred fibres into the fleeces of the mated ewes (n = 24). The Suffolk transferred relatively more fibres than both the Awassi or the Merino rams, in addition the fibres from the Suffolk were significantly darker than those from the other breeds thus compounding the severity of the contamination. Both mating experiments demonstrated that the number of contaminant fibres remaining in the ewe's fleece 8 weeks after mating was not different to that existing in the fleece of the ewes before mating. Therefore,

in commercial flocks, the risk of contamination can be minimized by shearing breeding ewes 8 weeks after rams have been removed from the breeding flocks
Descriptors:Awassi. contamination. ewes. Merino. rams. animal-fibres. flocks. mating. shearing. wool. breed-differences. Suffolk-(sheep-breed). fleece
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL145
Supplementary Info:14 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Transfer of contaminant lamb fibres to their dam's fleece, and loss within four weeks of weaning
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (3). 371-378
CD Volume:324
Print Article: Pages: 371-378
Author(s):Hatcher S Lightfoot R J Purvis I W
Author Affiliation:NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange, NSW 2800, Australia
Language:English
Abstract:The fleeces of Merino ewes suckled by Awassi (8 ewes), Awassi x Merino (7 ewes) or Merino (10 ewes) lambs were analysed for the presence of contaminant fibres (pigmented, urine-stained and kemp). Contaminant fibres were transferred from the fleeces of all 3 lamb genotypes into the fleeces of their dams, with direct body contact being the principle method of fibre transfer. The pattern of the transfer between birth and weaning was highly variable, although there was a general trend of increasing amount of transfer with advancing lamb age, suggesting a continual cycle of transfer of fibres to the dam's fleece and subsequent loss from that fleece. Indeed, the number of fibres transferred tended to decrease rapidly post-weaning (12 ewes at 4-weekly intervals to 16 weeks post-weaning), when the source of the contaminant fibres (i.e. the lambs) was removed. Shearing of breeding Merino ewes, regardless of the genotype of their lambs, (i.e. pure Merino or crossbred), should be delayed until 4 weeks post-weaning in order to reduce the number of contaminant fibres of lamb origin in their fleeces
Descriptors:contamination. animal-fibres. weaning. Awassi. dams. ewes. breed-differences. lambs. Merino. shearing. fleece. wool
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL145
Supplementary Info:29 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Previous Awassi grazing on a paddock or grazing in the same or adjoining paddock, does not cause fibre contamination of fleeces of Merino sheep
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (3). 379-385
CD Volume:324

Print Article: Pages: 379-385
Author(s):Hatcher S Lightfoot R J Purvis I W
Author Affiliation:NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange, NSW 2800, Australia
Language:English
Abstract:The fleeces of 63 Merino wethers grazed either in common or adjacent paddocks with Awassi rams were analysed for the presence of contaminant fibres (pigmented, urine-stained and kemp). In addition, the effect of previous grazing history of the paddock (i.e. whether or not that paddock had been previously grazed by Awassi sheep) on the level of fibre contamination was also investigated. Under extensive grazing conditions, very few Awassi contaminant fibres were transferred into the Merino fleeces. In fact, there was no significant difference between the control group, grazed outside the quarantine facility, and any of the treatment groups grazing within the quarantine area. The previous grazing history of the paddock had no effect on the number of contaminant fibres transferred, suggesting that even if contaminant fibres fall onto the paddock, they do not contaminate the fleeces of Merino sheep that subsequently graze that paddock. Up to 100% of the contaminant fibres transferred into the Merino fleeces were lost within 4 weeks after the removal of the Awassi rams from the paddocks. Therefore, withholding shearing of Merino sheep for 4 weeks after any contact with Awassi sheep would be sufficient for the level of contaminant fibres in the greasy fleece to fall to below commercially acceptable limits for dark fibres in worsted processing
Descriptors:Awassi. contamination. grazing. Merino. animal-fibres. rams. shearing. wool. fleece. pastures
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. LL180
Supplementary Info:10 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Variation in nutritive value of plant parts of subterranean clover (Trifolium subterraneum L.)
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (3). 397-403
CD Volume:324
Print Article: Pages: 397-403
Author(s):Ru Y J Fortune J A
Author Affiliation:Department of Agronomy and Farming Systems, Roseworthy Campus, The University of Adelaide, SA 5371, Australia
Language:English
Abstract:To determine the variation in nutritive value of leaf, petiole, stem and burr, an experiment with 26 cultivars of subterranean clover was conducted at Shenton Park Field Station, Perth, Western Australia. The cultivars were divided into 3 maturity groups according to flowering time and each cultivar was sown in blocks comprising 4 replicates. The plots were grazed by sheep at 2-weekly intervals. Plants were sampled at the vegetative stage before grazing and after the cessation of flowering. Dry matter digestibility (DMD) and nitrogen concentration of leaves, petioles, stems and burrs were determined. At the vegetative stage, there was no difference in DMD ($P>0.05$) among plant parts for most cultivars, and leaf had the highest ($P<0.05$) nitrogen concentration (4.8-5.4%). After the cessation of flowering, leaf had the highest DMD and

nitrogen concentration (P<0.05). The DMD of plant parts differed significantly among cultivars (P<0.05). There was a slight decrease in DMD over time for leaves and a significant decrease in DMD for stems and petioles. These results suggest the main objective of grazing management of subterranean clover swards should be to increase the proportion of leaf material in the swards and that selection of leafy varieties by breeding could improve the late season digestibility of subterranean clover. Such management and breeding strategies would have value when the cultivars are in mixed pastures or used with supplements in summer
Descriptors:nutritive-value. cultivars. grazing. maturity-groups. digestibility. plant-breeding. selection. leaves. stems. petioles
Geographic Locator:Australia. Western-Australia
Organism Descriptors:Trifolium-subterraneum
Supplemental Descriptors:Trifolium. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007. RR300. FF040. FF020
Supplementary Info:23 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:The paired-paddock model as an agent for change on grazing properties across south-east Australia
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (4). 547-556
CD Volume:324
Print Article: Pages: 547-556
Author(s):Trompf J P Sale P W G
Author Affiliation:Department of Agricultural Sciences, La Trobe University, Bundoora, Vic. 3083, Australia
Conference Title:Special issue: Improving agricultural practices and decisions
Language:English
Abstract:A study was undertaken of the pasture management practices of 146 producers across south-east Australia who participated in the Grassland's Productivity Program (GPP) for 3 years between 1993 and 1997. The GPP was an extension programme to assist wool producers to develop skills and gain confidence in their ability to manage more productive pastures. It consisted of 50 farmer groups (200 farmers participating) spread across the four states of South Australia, southern New South Wales, Victoria and Tasmania. Each farmer established paired-paddocks on their own property to compare productive pastures with existing pastures. Productive pastures involved increased rates of fertilizer on pastures containing productive species, with stocking rate adjusted to consume available pasture. After 3 years of involvement in the GPP, there was a whole-farm increase in P fertilizer use by 6.3 kg P/ha, stocking rates by 2.6 dse/ha and annual pasture resowing by 0.9% of the farm, when averaged across the 146 participants. Participants were applying the productive pasture technology to almost a third of their properties in 1997 and the intention was to increase this to over half of their properties by 2000. The widespread change in farming practice was attributed to the additive and interactive effect of the paired-paddock comparison, the guidance provided by the facilitator, the group interaction and the skills training
Descriptors:extension. innovation-adoption. farm-management. farmers. fertilizers. phosphorus-fertilizers. sheep-farming. pastures.

grassland-management. resowing. productivity. skills. stocking-rate. training. groups
Geographic Locator:Australia. New-South-Wales. South-Australia. Tasmania. Victoria
Supplemental Descriptors:Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:PP350. CC200. EE110. JJ700. FF007
Supplementary Info:8 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture
Copyright:Copyright CAB International

Title:PRO Plus: a whole-farm fodder budgeting decision support system
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (4). 621-630
CD Volume:324
Print Article: Pages: 621-630
Author(s):McPhee M J Bell A K Graham P Griffith G R Meaker G P
Author Affiliation:NSW Agriculture Beef Industry Centre, Armidale, NSW 2351, Australia
Conference Title:Special issue: Improving agricultural practices and decisions
Language:English
Abstract:This paper describes PRO Plus, a whole-farm fodder budgeting decision support system for Australian beef, sheep meat and wool producers. The program predicts the pasture mass available at the end of each month for individual paddocks based on pasture growth rates, number of stock, intake and the grazing plan where producers allocate mobs weekly to paddocks. Two case studies are presented that identify how the program can be used individually or in conjunction with other programs to make management decisions. PRO Plus is an integral component of the PROGRAZE Plus course and assists producers to improve the financial viability and sustainability of their farms through better pasture and grazing management
Descriptors:decision-making. farm-planning. farm-management. fodder. computer-software. pastures. grazing. grassland-management. beef-cattle. case-studies. stocking-rate
Geographic Locator:Australia
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007. LL500. PP350. EE110. CC300. LL120. LL145
Supplementary Info:20 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture
Copyright:Copyright CAB International

Title:Productivity and pasture intake of defaunated crossbred sheep flocks
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (5). 655-662
CD Volume:324
Print Article: Pages: 655-662
Author(s):Hegarty R S Shands C Harris C Nolan J V
Author Affiliation:NSW Agriculture Beef Industry Centre, Armidale, NSW 2351, Australia
Language:English

Abstract:From a flock of pregnant crossbred ewes, 63 were established as rumen protozoa-free by treatment with alkanate 3SL3 and 64 were maintained as controls. The controls included 20 ewes which had been defaunated and subsequently re-inoculated with protozoa. After lambing, both flocks were grazed in a 6-paddock rotation until weaning at 20 weeks of age. Defaunated ewes were heavier than control ewes throughout lactation and had a higher urinary allantoin concentration than control ewes. Intake and apparent digestibility of pasture dry matter by ewes did not differ between groups although these estimates were confounded by differences in pasture composition between the paddocks used. Both groups selected a diet with digestibility approximately 10% units higher than the bulk digestibility of pasture on offer. Control ewes selected a higher proportion of white clover in their diet than was available in the pasture (24% versus 2%) but defaunated ewes did not exhibit preferential selection for clover. Lambs from defaunated ewes were heavier at birth, remained heavier until weaning and grew more wool than lambs from control ewes. Contamination of fauna-free ewes and lambs with protozoa was first observed at weaning and protozoa were detected in 41 of 60 lambs, 4 weeks after contamination was first detected. Study of defaunated ewes returned to a flock of untreated ewes confirmed rapid spread of contamination into defaunated ewes with small entodiniomorph protozoa establishing first
Descriptors:contamination. ewes. lambing. lambs. pregnancy. domestic-animals. livestock. rumen-protozoa. body-weight. food-intake. fodder. digestibility. wool
Organism Descriptors:sheep. Trifolium-repens. ciliates. Entodiniomorphida
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Trifolium. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ciliophora. Protozoa. invertebrates
Subject Codes:LL822. LL510. LL145
Supplementary Info:36 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Grazing management of reproducing ewes affects staple strength
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (6). 783-794
CD Volume:324
Print Article: Pages: 783-794
Author(s):Robertson S M Robards G E Wolfe E C
Author Affiliation:Department of Wool and Animal Science, University of New South Wales, Sydney, NSW 2052, Australia
Language:English
Abstract:A grazing study was conducted on irrigated pastures to assess the influence of manipulating the availability of green pasture at different stages of pregnancy and lactation on the staple strength of broad-wool Merino ewes lambing in July. Sheep subjected to different treatments produced wool ranging between 14 and 48 N/ktex for single-rearing and 22 and 53 N/ktex for non-lambing ewes. Single-bearing/rearing ewes produced wool of strength +4.7 to -23 N/ktex (P>0.001) in comparison with non-lambing ewes. Reproduction was associated with a reduction in staple strength of 51, 24 and 9% for ewes grazed throughout the experiment at low, medium and high pasture levels, respectively. A staple strength greater than 40 N/ktex was achieved in single-rearing ewes which grazed high pasture mass throughout pregnancy and lactation, during late pregnancy and

early lactation, or during mid-pregnancy. Single-rearing ewes, which grazed low pasture biomass throughout mid, late or all of pregnancy, or during lactation, produced wool with staple strength less than 30 N/ktex. In comparison to grazing the medium pasture allowance throughout the experiment, manipulation of pasture availability had relatively small effects on lamb growth and average fleece measurements, compared with the effects on staple strength. The exception was ewes grazing only the low pasture allowance. The interaction between reproduction and nutritional management influenced staple strength by altering the minimum fibre diameter and the uniformity of along-staple fibre diameter and rate of wool growth. It was concluded that managing pasture availability to promote a uniform along-staple fibre diameter or rate of wool growth can prevent reductions in staple strength associated with reproduction
Descriptors:reproduction. ewes. staple. wool. fleece. grazing-trials. feeding. pregnancy. lactation-stage. sheep-breeds. Australian-Merino. pastures. interactions
Geographic Locator:Australia
Identifiers:staple strength. ewe lactation. fibre diameter
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:LL250. LL145. LL520
Supplementary Info:49 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Reproduction effects on annual fleece production, liveweight and body condition of grazing Merino ewes
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (7). 931-937
CD Volume:324
Print Article: Pages: 931-937
Author(s):Waters C M Coelli K A Lee G J Atkins K D
Author Affiliation:NSW Agriculture, Agricultural Research Centre, Trangie, NSW 2823, Australia
Language:English
Abstract:This study sought to confirm the long-term consequences of current and previous reproductive cycles on liveweight, body condition and wool growth over the lifetime of Merino ewes (2-6 years of age). Liveweights and body condition scores at 4 stages of the reproductive cycle, and annual fleece weights (greasy and clean), fibre diameter and yield were analysed to determine the effects of the previous and current reproductive performance (birth-type or rearing-type categories). Records from about 3300 Merino ewes maintained at the Trangie Agricultural Research Centre in New South Wales were collected between 1977 and 1989. The major effect of current reproduction on liveweight and wool production was associated with fertility, although both birth and rearing types also contributed. Ewes that lambed in the current year weighed 5.2 kg less at weaning and grew 0.4 kg less clean wool annually than dry ewes, while ewes that reared a lamb to weaning weighed 4.3 kg less than ewes that lost their lamb(s). The effects on condition score followed those of liveweight. The effects of previous reproduction on liveweights and condition scores were large and, although diminishing with time, lasted for at least 10 months, whereas any effects on

annual fleece weight and mean fibre diameter were small. The results suggest that many ewes may enter the next reproductive year before recovering from the reduction in either liveweight or body condition associated with the previous reproductive cycle. Since Merino ewes are required to produce both wool and replacement sheep, the changes in a ewe's production capacity associated with reproduction are important to Merino wool production enterprises as their profitability may be influenced
Descriptors:Merino. ewes. fleece-weight. body-condition. body-weight. lambing
Identifiers:wool quality
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL145
Supplementary Info:14 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:The pastoral significance, adaptive characteristics, and grazing value of white clover (Trifolium repens L.) in dryland environments in Australia: a review
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (7). 1033-1046
CD Volume:324
Print Article: Pages: 1033-1046
Author(s):Lane L A Ayres J F Lovett J V
Author Affiliation:NSW Agriculture, Agricultural Research and Advisory Station, PMB, Glen Innes, NSW 2370, Australia
Language:English
Abstract:Despite the agronomic merit and economic significance of white clover, Australia lacks white clover cultivars that possess adaptive characteristics for persistence in mixed swards under sheep and cattle grazing. The major problem with contemporary white clover cultivars is that clover biomass fluctuates widely from year to year. This lack of reliability, particularly in dryland environments, is largely due to poor survival during summer moisture stress that is common to much of the Australian white clover zone. Factors such as edaphic constraints, intolerance of grass competition and close grazing, and lack of winter growth in cold environments also influence the contribution of white clover to pasture performance. This paper considers the mechanisms of regeneration, adaptive characteristics, and significance of white clover for animal production, and reflects on breeding objectives for white clover improvement
Descriptors:reviews. cultivars. plant-breeding. adaptation
Geographic Locator:Australia
Organism Descriptors:Trifolium-repens
Supplemental Descriptors:Trifolium. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007. FF020. FF100
Supplementary Info:4 pp. of ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:A survey of farms on the Central, Southern and Monaro Tablelands of New South Wales: management practices, farmer knowledge of native grasses, and extent of native grass areas
View Article: Australian Journal of Experimental Agriculture. 2000. 40 (8). 1081-1088
CD Volume:324
Print Article: Pages: 1081-1088
Author(s):Garden D L Dowling P M Eddy D A Nicol H I
Author Affiliation:NSW Agriculture, P.O. Box 1600, Canberra, ACT 2601, Australia
Language:English
Abstract:Results are presented of a survey of pastoral properties on the Central, Southern and Monaro Tablelands of New South Wales carried out during 1991-92. Landholders were interviewed to obtain information on property size, enterprise types, grazing management, tree clearing, fertiliser history and carrying capacity. In addition, familiarity with native grass species, and knowledge of their value were determined. The main grazing enterprises were wool and beef. The most common form of livestock management was continuous grazing. Most properties had been extensively cleared of trees (average cleared area 80%), and there had been a significant amount of disturbance of the original pastures. This varied from 40% of total property area for the Central and Monaro Tablelands to 60% for the Southern Tablelands. The main form of disturbance was cultivation for pasture sowing or fodder cropping. Landholders had used 80% more fertiliser on disturbed areas than on undisturbed areas, with most fertiliser applied on the Southern Tablelands and least on the Monaro Tablelands. The average carrying capacities of undisturbed and disturbed pastures over the tablelands were 4.3 and 7.7 dry sheep equivalents per hectare, respectively. While most landholders were satisfied with the performance of their sown pastures, there was a lack of knowledge of the contribution of native perennial grasses to pasture production. Using survey data, it was estimated that pastures with native grasses as the major components covered a minimum of 1.38 million hectares or 40% of the surveyed area. With such a large contribution to production, there is a need to assist landholders to identify native perennial grasses so that their potential value can be more fully realised
Descriptors:farm-management. surveys. farm-surveys. livestock-farming. pastures. grazing-systems. carrying-capacity
Geographic Locator:Australia. New-South-Wales
Supplemental Descriptors:Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries. Australia
Subject Codes:FF007. PP350. LL000. JJ700
Supplementary Info:18 ref
ISSN:0816-1089
Year:2000
Journal Title:Australian Journal of Experimental Agriculture

Title:Nitrogen excretion by farm livestock with respect to land spreading requirements and controlling nitrogen losses to ground and surface waters. Part 1: Cattle and sheep
View Article: Bioresource Technology. 71 (2). Jan., 2000. 173-181
CD Volume:326
Print Article: Pages: 173-181
Author(s):Smith K A Frost J P
Author Affiliation:ADAS Wolverhampton, Woodthorne, Wolverhampton, WV6 8TQ
Language:English
Language of Summary:English (EN)

Abstract:In this paper, published and unpublished information on excretion by dairy cattle, beef cattle and sheep is reviewed. A number of factors are known to affect both the amount and N content of livestock excreta, most notably animal liveweight, diet and water intake and, for adults, whether in lactation or not. Relationships between liveweight and the volume and N output of excreta have been used to derive estimates for 'standard' outputs for a range of adult and young stock; in the case of breeding stock, allowing for the lactation period. An alternative approach for estimating N excretion, via nitrogen balance calculations, was undertaken for a number of livestock categories and provides some validation of the standards, increasing confidence in their application. These standards are now incorporated into the guidelines already in place for Nitrate Vulnerable Zones in England and Wales and in the recently revised Code of Good Agricultural Practice for the Protection of Water
Descriptors:bioresource technology; biotechnology; land spreading requirements; manure; water pollution. Pollution Assessment Control and Management; Waste Management (Sanitation). nitrate: leaching; nitrogen: excretion, losses
Geographic Locator:UK (Europe, Palearctic region)
Organism Descriptors:cattle (Bovidae); sheep (Bovidae). feces: digestive system; urine: excretory system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Pollution Assessment Control and Management; Waste Management (Sanitation)
ISSN:0960-8524
Year:2000
Journal Title:Bioresource Technology

Title:C and N transformations in 15N cross-labelled solid ruminant manure during anaerobic and aerobic storage
View Article: Bioresource Technology. 72 (3). May, 2000. 267-274
CD Volume:326
Print Article: Pages: 267-274
Author(s):Thomsen Ingrid K
Author Affiliation:Department of Crop Physiology and Soil Science, Danish Institute of Agricultural Sciences, Research Centre Foulum, DK- 8830, Tjele
Language:English
Language of Summary:English (EN)
Abstract:Three manures cross-labelled with 15N in the faeces, urine and straw fractions were prepared after feeding a sheep first with unlabelled hay and then with 15N-labelled hay. Half of each manure portion was stored aerobically (composted) with heat evolution and the other half anaerobically by preventing oxygen supply. The ratio between faeces-N:urine-N:straw-N was 1.0:1.5:0.2 immediately after mixing. All manures were stored for 86 days. The composted manure lost 46% and 53% of its initial N and C content, respectively. Losses from the anaerobically stored manure were not totally prevented but were significantly less at 18% (N) and 24% (C). Urine-N accounted for the highest proportion of total N losses from both the aerobically and anaerobically stored manures. However, contributions of N to gaseous losses from the faeces and straw fractions became more important as the storage progressed. Thus urine-N accounted for 79% of the total losses after the first seven days of composting but only for 64% at the end of the storage period. In the anaerobically stored manure, urine-N accounted for 94% of the total N losses after 28 days and for 68% at day 86. Because of the

high urine-N loss in the composted manure, the proportion of faeces-N in total N was similar to that of urine-N after storage. The anaerobically stored manure still contained more urine-N than faeces-N. It was estimated that 46% of faeces-N was mineralised during the composting of the manure but a great proportion of the mineralised N was lost. Less faeces-N (33%) was mineralised during the anaerobic storage and the relative losses of the mineralised N were lower. The differently stored manures ended up having the same C:N ratio and total N concentrations but the anaerobically stored manure had a significantly greater proportion of inorganic N compared with the composted manure. Differences in the forms of N may influence the fertiliser value of the manures after field application
Descriptors:composted ruminant manure: aerobically-stored, anaerobically- stored, carbon content, feces, fertilizer value, field application, gaseous emissions, microbial activity, nitrogen content, nitrogen- 15-cross labeled, nutritional value, straw, urine.
Agronomy (Agriculture); Bioprocess Engineering; Waste Management (Sanitation). carbon; nitrogen
Organism Descriptors:microorganism (Microorganisms)
Supplemental Descriptors:Microorganisms. Microorganisms
Subject Codes:Agronomy (Agriculture); Bioprocess Engineering; Waste Management (Sanitation)
ISSN:0960-8524
Year:2000
Journal Title:Bioresource Technology

Title:Functional responses of the calcareous grassland communities to agro-ecological factors in the French Pre-Alps
View Article: Canadian Journal of Botany. 78 (8). August, 2000. 1010-1020
CD Volume:298
Print Article: Pages: 1010-1020
Author(s):Barbaro Luc Corcket Emmanuel Dutoit Thierry Peltier Jean Paul
Author Affiliation:Unite de Recherche Agricultures et Milieux Montagnards, Centre d'Etudes du Machinisme Agricole, Du Genie Rural et Des Eaux et Forets (Cemagref), Grenoble, 38402, Saint-Martin-d'Heres: luc.barbaro@grenoble.cemagref.fr
Other Title:Reponses fonctionnelles des communautes de pelouses calcicoles aux facteurs agro-ecologiques dans les Prealpes francaises
Language:French
Language of Summary:English (EN); French (FR)
Abstract:The identification of functional groups in calcareous grasslands of southern Vercors (Rhone-Alpes, France) is investigated through relationships between biological traits of the species and agro- ecological factors. Community patterns are determined by (i) the level of edaphic stress (oligotrophy and xericity) and (ii) the regime and the intensity of agropastoral management (grazing and mechanical cutting). In such grasslands submitted to regular disturbance, life traits related to dispersal and regeneration processes have greater importance for the differentiation of species than morphological traits, and Grime's adaptative strategies are the best predictors of species ordination on agro- ecological gradients (e.g., stress and disturbance). A classification of species in functional groups based on the same life traits and similar responses to disturbances is proposed, and its role in defining adequate conservation management of calcareous grassland by low-intensity livestock farming is discussed. The functional role of grazing is emphasized by the relationship between species dominance or rarity and their levels of consumption and dispersion by sheeps. In

calcareous grassland communities, dominant species are the most palatable and the most dispersed by sheeps, while rarer species depend on other dispersal modes, such as seed rain or mowing machinery
Descriptors:Grime's adaptive strategies; agro-ecological factors; agro- ecological gradients; agropastoral management; agropastoral practices; calcareous grasslands; community patterns; conservation management; dispersal processes; edaphic stress: oligotrophy, xericity; grazing; live traits; livestock farming: low-intensity; mechanical cutting; regeneration processes; species ordination.
Animal Husbandry (Agriculture); Conservation; Ecology (Environmental Sciences)
Geographic Locator:Vercors (France, Europe, Palearctic region)
Organism Descriptors:sheep (Bovidae)
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Conservation; Ecology (Environmental Sciences)
ISSN:0008-4026
Year:2000
Journal Title:Canadian Journal of Botany

Title:Experimental manufacturing of kaddid, a salted dried meat product: Control of the microorganisms
View Article: European Food Research and Technology. 211 (3). 2000. 153-157
CD Volume:335
Print Article: Pages: 153-157
Author(s):Bennani L Faid M Bouseta A
Author Affiliation:Department of Food Microbiology and Biotechnology, Hassan II Institute of Agronomy and Veterinary Medicine, Rabat-Instituts, Rabat
Language:English
Language of Summary:English (EN)
Abstract:Trials of kaddid making were carried out in the laboratory by the traditional procedure. Batches of 6 kg each of sheep fresh meat were purchased directly from the slaughterhouse. The meats were sliced, salted, spiced and exposed to the sun for drying. The batches were sampled at different times to follow up the microbiological and physico-chemical properties. Determinations included the standard plate count, total and fecal coliforms, enterococci, staphylococci, Salmonella and Clostridium for the former and moisture, water activity, chlorides, total nitrogen, non protein nitrogen (NPN), total volatile nitrogen, fat content and the acid degree value (ADV) for the latter. Results indicated a considerable decrease in the moisture. The NPN increased slightly but the TVN did not show any change. The most relevant change was that of the ADV of fat. The microbiological characteristics showed a sharp increase during the first phase before salting and then a rapid decrease to low levels. Numbers were stabilized at less than 1 colony forming unit (cfu)/g for coliforms and enterococci and to around 100 cfu/g for staphylococci after 15-17 days drying. The same decreasing pattern was also observed for lipolytics and proteolytics
Descriptors:kaddid: meat product, microbiological properties, physico-chemical properties; moisture content. Foods. chlorides; fat; non protein nitrogen; total nitrogen; volatile nitrogen
Organism Descriptors:Clostridium (Endospore-forming Gram-Positives); Salmonella (Enterobacteriaceae); coliform (Enterobacteriaceae); enterococci (Gram-Positive Cocci); staphylococci (Micrococcaceae)

Supplemental Descriptors:Endospore-forming Gram-Positives: Eubacteria, Bacteria, Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram- Negative Rods, Eubacteria, Bacteria, Microorganisms; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Micrococcaceae: Gram- Positive Cocci, Eubacteria, Bacteria, Microorganisms. Bacteria; Eubacteria; Microorganisms
Subject Codes:Foods
ISSN:1438-2377
Year:2000
Journal Title:European Food Research and Technology

Title:Dietary flavonoid and isoflavone glycosides are hydrolysed by the lactase site of lactase phlorizin hydrolase
View Article: FEBS Lett 2000 Feb 25;468(2-3):166-70
CD Volume:327
Print Article: Pages: 166-170
Author(s):Day AJ Canada FJ Diaz JC Kroon PA Mclauchlan R Faulds CB Plumb GW Morgan MR Williamson G
Author Affiliation:Diet, Health and Consumer Science Division, Institute of Food Research, Norwich Research Park, Colney, Norwich, UK. andrea.day@bbsrc.ac.uk
Abstract:Lactase phlorizin hydrolase (LPH; EC 3.2.1.62) is a membrane-bound, family 1 beta-glycosidase found on the brush border of the mammalian small intestine. LPH, purified from sheep small intestine, was capable of hydrolysing a range of flavonol and isoflavone glycosides. The catalytic efficiency (k(cat)/K(m)) for the hydrolysis of quercetin-4'-glucoside, quercetin-3-glucoside, genistein-7-glucoside and daidzein-7-glucoside was 170, 137, 77 and 14 (mM(-1) s(-1)) respectively. The majority of the activity occurred at the lactase and not phlorizin hydrolase site. The ability of LPH to deglycosylate dietary (iso)flavonoid glycosides suggests a possible role for this enzyme in the metabolism of these biologically active compounds
Descriptors:Animal. Flavones. Glycosides. Glycosylceramidase. Intestinal Absorption. Intestinal Mucosa. Intestine, Small. Isoflavones. Kinetics. Lactose. Mammals. Microvilli. Phlorhizin. Quercetin. Sheep. Substrate Specificity. Support, Non-U.S. Gov't. beta-Galactosidase
Geographic Locator:NETHERLANDS
ISSN:0014-5793
Year:2000
Journal Title:FEBS Letters

Title:Identification of a novel protein complex containing annexin VI, Fyn, Pyk2, and the p120(GAP) C2 domain
View Article: FEBS Lett 2000 Mar 3;469(1):88-92
CD Volume:327
Print Article: Pages: 88-92
Author(s):Chow A Davis AJ Gawler DJ
Author Affiliation:School of Biomedical Sciences, University of Leeds, Woodhouse Lane, Leeds, UK
Abstract:p120(GAP) (RasGAP) has been proposed to function as both an inhibitor and effector of Ras. Previously we have shown that RasGAP contains a C2 domain which mediates both Ca(2+)-dependent membrane association and protein-protein interactions. Specifically, three proteins have been isolated in a complex with the C2 domain of RasGAP; these are the Ca(2+)-dependent lipid binding protein annexin VI (p70) and two previously unidentified proteins, p55 and p120. Here we provide evidence that p55 is the Src family kinase Fyn and p120 is the focal adhesion kinase family member Pyk2. In addition, in vitro

binding assays indicate that Fyn, but not Pyk2 binds directly to annexin VI. Finally, co-immunoprecipitation studies in Rat-1 fibroblasts confirm that Fyn, Pyk2, annexin VI and RasGAP can form a protein complex in mammalian cells
Descriptors:Animal. Annexin VI. Cells, Cultured. Multienzyme Complexes. Precipitin Tests. Protein Binding. Protein-Tyrosine Kinase. Proto-Oncogene Proteins. Rats. Sheep. Signal Transduction. Support, Non-U.S. Gov't. Transfection. p120 GTPase Activating Protein
Geographic Locator:NETHERLANDS
ISSN:0014-5793
Year:2000
Journal Title:FEBS Letters

Title:A Schistosoma protein, Sh-TOR, is a novel inhibitor of complement which binds human C2
View Article: FEBS Lett 2000 Mar 24;470(2):131-4
CD Volume:327
Print Article: Pages: 131-134
Author(s):Inal JM Sim RB
Author Affiliation:MRC Immunochemistry Unit, Department of Biochemistry, University of Oxford, South Parks Road, Oxford, UK. jameel.inal@unibas.ch
Abstract:Human complement regulatory (also called inhibitory) proteins control misdirected attack of complement against autologous cells. Trypanosome and schistosome parasites which survive in the host vascular system also possess regulators of human complement. We have shown Sh-TOR, a protein with three predicted transmembrane domains, located on the Schistosoma parasite surface, to be a novel complement regulatory receptor. The N-terminal extracellular domain, Sh-TOR-ed1, binds the complement protein C2 from human serum and specifically interacts with the C2a fragment. As a result Sh-TOR-ed1 pre-incubated with C2 inhibits classical pathway (CP)-mediated haemolysis of sheep erythrocytes in a dose-dependent manner. In CP-mediated complement activation, C2 normally binds to C4b to form the CP C3 convertase and Sh-TOR-ed1 has short regions of sequence identity with a segment of human C4b. We propose the more appropriate name for TOR of CRIT (complement C2 receptor inhibitory trispanning)
Descriptors:Amino Acid Sequence. Animal. Antigens, Protozoan. Blotting, Western. Chromatography, Affinity. Complement 2. Complement 3 Convertase. Complement 4b. Complement Pathway, Classical. Erythrocytes. Hemolysis. Human. Models, Immunological. Molecular Sequence Data. Molecular Weight. Peptide Fragments. Protein Binding. Receptors, Cell Surface. *Schistosoma. Sequence Alignment. Sequence Homology, Amino Acid. Sheep. Support, Non-U.S. Gov't
Geographic Locator:NETHERLANDS
ISSN:0014-5793
Year:2000
Journal Title:FEBS Letters

Title:Extraction and ESI-CID-MS/MS [electrospray-collision induced disssociation-mass spectrometry] analysis of myoglobins from different meat species
View Article: Food Chemistry. 2000. 69 (1). 81-86
CD Volume:326
Print Article: Pages: 81-86
Author(s):Ponce Alquicira E Taylor A J
Author Affiliation:Departamento de Biotecnologia, Universidad Autonoma Metropolitana, Iztapalapa. Av. Purisima y Michoacan Col. Vicentina, Mexico, D.F. 09340, Apartado, Postal 55-535, Mexico

Language:English
Abstract:Meat speciation methods for raw meats are available but are not always effective in cooked products. The globin protein from myoglobin is heat stable, shows different molecular weights for each species and electrospray mass spectrometry (ESI-MS) can partially differentiate some species. To improve the analysis, the heat stable globin protein was extracted and subjected to fragmentation by ESI-CID-MS/MS. The [M + 16H]16+ and [M + 17H]17+ ions were chosen as precursor ions and fragmented by collision-induced dissociation (CID). Fragmentation occurred at proline residues with cleavage either side of the peptide bond leading to the typical pattern of peptide ions. The patterns were dominated by a series of y"n fragments of which the fragments from cleavage of the His/Pro residues at 119/120 (y"34 and y"35) were relatively intense. A strategy for differentiating the four species by ESI-MS and ESI-CID-MS/MS is discussed
Descriptors:cleavage. myoglobin. proline. speciation. meat. beef. horse-meat. sheepmeat
Organism Descriptors:cattle. horses. sheep
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Equus. Equidae. Perissodactyla. Ovis
Subject Codes:LL600. QQ030
Supplementary Info:17 ref
ISSN:0308-8146
Year:2000
Journal Title:Food Chemistry

Title:Recombinant prolactin receptor extracellular domain of rainbow trout (Oncorhynchus mykiss): subcloning, preparation, and characterization
View Article: Gen Comp Endocrinol 2000 May;118(2):302-9
CD Volume:326
Print Article: Pages: 302-309
Author(s):Sandowski Y Cohen Y Le Rouzic P Bignon C Rentier Delrue F Djiane J Prunet P Gertler A
Author Affiliation:Institute of Biochemistry, Food Science and Nutrition, Faculty of Agricultural, Food and Environmental Quality Sciences, The Hebrew University of Jerusalem, Rehovot, Israel
Abstract:The cDNA of the extracellular domain of rainbow trout (Oncorhynchus mykiss) prolactin receptor (trPRLR-ECD) was cloned in the prokaryotic expression vector pMON to enable its expression in Escherichia coli after induction with nalidixic acid. The bacterially expressed trPRLR-ECD protein, contained within the refractile body pellet, was solubilized in 4.5 M urea, refolded, and purified on a Q-Sepharose column, pH 8, by stepwise elution with NaCl. The bioactive monomeric 26-kDa fraction was eluted in 0.2 M NaCl, yielding 20 mg/2.5 L of induced culture. The purified protein was over 98% homogeneous, as shown by SDS-PAGE in the presence or absence of reducing agent and by chromatography on a Superdex column. Binding experiments using [125I]ovine placental lactogen (oPL) as a ligand revealed that human growth hormone (hGH), oPL, and ovine prolactin (oPRL) were the most effective competitors, with respective IC50 values of 1.32, 2.27, and 2.70 nM. Chicken (ch) PRL did not compete at all, and homologous trPRL was much less effective, with a corresponding IC50 value of 1826 nM. Gel-filtration was used to determine the stoichiometry of trPRLR-ECD's interaction with oPL, hGH, and oPRL. Only oPL yielded a 2:1 complex, whereas hGH and oPRL formed only 1:1 complexes, with excess trPRLR-ECD being seen at the initial 2:1 trPRLR-ECD:hGH or trPRLR-ECD:oPRL ratios. No studies were

performed with chPRL because of its inability to compete with [125I]oPL or with trPRL because of its low affinity toward trPRLR-ECD. The present results agree with previous findings indicating, as in mammals, that homologous PRL interacts transiently with its receptor and suggest that transient homologous PRL-induced homodimerization of the receptor is sufficient to initiate a biological signal, despite the fact that, in classical binding experiments, only low specific binding can be detected
Descriptors:Animal. Binding, Competitive. Chickens. Chromatography, Gel. *Cloning, Molecular. Escherichia coli. Gene Expression. Iodine Radioisotopes. Oncorhynchus mykiss. Placental Lactogen. Prolactin. Protein Structure, Tertiary. Receptors, Prolactin. Recombinant Proteins. Sheep. Somatropin. Transfection
Geographic Locator:UNITED STATES
ISSN:0016-6480
Year:2000
Journal Title:General and Comparative Endocrinology

Title:Management of animal transhumance tracks in Molise: from a productive to a multifunctional approach
View Article: Genio Rurale. 2000. 63 (3). 23-35
CD Volume:327
Print Article: Pages: 23-35
Author(s):Mastronardi L
Author Affiliation:Economia e Politica Agraria del Dipartimento SEGES, Universita del Molise, Italy
Other Title:La gestione dei tratturi in Molise: dall'approccio produttivistico a quello multifunzionale
Language:Italian
Abstract:In southern Italy, a network of wide (circa 110 m) tracks, with associated resting areas and secondary (about 55-m wide) tracks, developed with the seasonal migration of sheep between areas of summer pasture such as the Tavioliere. These long-distance tracks survive particularly well in Molise, where they run in parallel, approximately NW-SE direction. The author discusses future landscape and land management policies for these features, which can acknowledge the historic significance of these tracks, and suggests alternative uses focused on the development of rural tourism, recreational and leisure activities
Descriptors:rural-roads. roads. tracks. landscape. management. development. rural-development. recreation. tourism. rural-tourism
Geographic Locator:Italy. Abruzzi. Molise
Supplemental Descriptors:Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries. Italy
Subject Codes:PP300. EE110. EE119. EE115. EE350. UU300. UU630. UU850
Supplementary Info:40 ref
ISSN:0016-6863
Year:2000
Journal Title:Genio Rurale

Title:Nitroblue tetrazolium reduction by sheep peripheral blood mononuclear phagocytes
View Article: Indian Veterinary Journal. 2000. 77 (1). 7-8
CD Volume:317
Print Article: Pages: 7-8
Author(s):Katoch V C Ram G C Bansal M P
Author Affiliation:Immunology Section, IVRI, Izatnagar (U.P.) - 243 112, India
Language:English

Descriptors:phagocytes. phagocytosis. nitroblue-tetrazolium. leukocytes
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL650
Supplementary Info:6 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Immunization of lambs and kids with gamma irradiated amphistome metacercariae
View Article: Indian Veterinary Journal. 2000. 77 (1). 13-15
CD Volume:317
Print Article: Pages: 13-15
Author(s):Urvashi Bali H S Kaur A
Author Affiliation:Department of Veterinary Parasitology, College of Veterinary Science, Punjab Agricultural University, Ludhiana - 141 004, India
Language:English
Abstract:Six lamb and six kids, 6- to 8-month-old, were used to study the efficacy of immunization with irradiated Paramphistomum metacercariae. Groups of 2 animals were infected with 2000 Paramphistomum spp. metacercariae which were irradiated with 3 or 4 KRad or non-irradiated. One animal from each group was killed 30 days after immunization and the other animal was challenged with 4000 Paramphistomum spp. metacercariae. Immunization of lambs and kids with irradiated Paramphistomum spp. (both at 3 and 4 KRad) resulted in complete elimination of flukes in infected animals
Descriptors:irradiation. kids. lambs. metacercariae. attenuation. vaccination. immunization. immune-response. experimental-infections. disease-control. disease-prevention. prophylaxis. live-vaccines. domestic-animals. livestock. parasites. helminths
Organism Descriptors:goats. sheep. Paramphistomum
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Paramphistomidae. Digenea. Trematoda. Platyhelminthes. invertebrates
Subject Codes:LL822. HH600
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Correlation studies of quantitative and qualitative traits of exotic and their crosses with Gaddi sheep in Himachal Pradesh
View Article: Indian Veterinary Journal. 2000. 77 (1). 28-31
CD Volume:317
Print Article: Pages: 28-31
Author(s):Umesh Singh Manuja N K
Author Variant:Singh-U
Author Affiliation:Deptt. of Animal Breeding and Genetics, College of Veterinary and Animal Sciences University, Palampur, India
Language:English
Abstract:The genetic and phenotypic correlations between wool quantity and wool quality traits were calculated for 501 lambs which were crosses between Gaddi and Rambouillet or Merino breeds. The genetic and phenotypic correlations between wool quality traits and

birth weight or yearly wool yield were highly significant (P<0.01). Significant correlations were also found among the wool quality traits (P<0.01). These results highlighted that the crossbred lambs can be effectively selected for better wool quality traits in early age
Descriptors:crossbreds. traits. birth-weight. lambs. wool. fleece. genetic-correlation. wool-production
Geographic Locator:Himachal-Pradesh. India
Identifiers:wool quality
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. India. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL240. LL145
Supplementary Info:5 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Effect of stimulation with LPS on immune phagocytosis by sheep peripheral blood mononuclear cells
View Article: Indian Veterinary Journal. 2000. 77 (2). 95-97
CD Volume:317
Print Article: Pages: 95-97
Author(s):Katoch V C Ram G C Bansal M P Meenu
Author Affiliation:Immunology Section, IVRI, Izatnagar (U.P.) 243 122, India
Language:English
Descriptors:phagocytosis. leukocytes. lipopolysaccharides
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL650. LL700
Supplementary Info:7 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Prevalence of sarcocystic infections in slaughtered domestic ruminants in Tirupati (A.P.)
View Article: Indian Veterinary Journal. 2000. 77 (2). 165-166
CD Volume:317
Print Article: Pages: 165-166
Author(s):Venu R Hafeez M
Author Affiliation:Department of Parasitology, College of Veterinary Science, Tirupati (A.P.), India
Language:English
Descriptors:diagnosis. disease-prevalence
Geographic Locator:India. Andhra-Pradesh
Organism Descriptors:Sarcocystidae. Sarcocystis. ruminants. cattle. Sarcocystis-cruzi. Sarcocystis-levinei. buffaloes. Sarcocystis-capracanis. goats. Sarcocystis-tenella. sheep
Supplemental Descriptors:Eucoccidiorida. Apicomplexa. Protozoa. invertebrates. animals. Sarcocystidae. Artiodactyla. mammals. vertebrates. Chordata. ungulates. Bos. Bovidae. ruminants. Sarcocystis. Bubalus. Capra. Ovis. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India
Subject Codes:LL822. LL886
Supplementary Info:7 ref

ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Evaluation of killed Brucella melitensis vaccine adjuvanted with bentonite clay and Mycobacterium phlei in cattle and sheep
View Article: Indian Veterinary Journal. 2000. 77 (3). 189-192
CD Volume:317
Print Article: Pages: 189-192
Author(s):Sree Ram Krishnappa G Sastry K N V Honnegowda Ramanatha K R
Author Variant:Ram-S
Author Affiliation:Department of Veterinary Microbiology, Veterinary College, Bangalore, India
Language:English
Abstract:A vaccine prepared from a killed, whole cell suspension of Brucella melitensis was given without adjuvant or with added Mycobacterium phlei or bentonite clay to a total of 80 cattle and 40 sheep. Serum samples taken at 15-day intervals up to 90 days were screened by a rapid plate test, followed by agglutination tests; titres ranging from 1.2 to 6.4 and 1.0 to 6.0 were recorded in the cattle and sheep, respectively. Levels of both humoral and cell mediated immunity were higher with the adjuvanted vaccines, and the vaccine with bentonite clay performed better than that with M. phlei with or without the clay
Descriptors:vaccines. vaccination. adjuvants. immune-response. bentonite. bacterial-diseases
Organism Descriptors:Brucella-melitensis. cattle. sheep. Mycobacterium-phlei
Supplemental Descriptors:Brucella. Brucellaceae. Gracilicutes. bacteria. prokaryotes. Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Mycobacterium. Mycobacteriaceae. Firmicutes
Subject Codes:HH600. LL821
Supplementary Info:5 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Pulmonary subpleural lymph nodes in lambs
View Article: Indian Veterinary Journal. 2000. 77 (3). 199-201
CD Volume:317
Print Article: Pages: 199-201
Author(s):Kiran M M Erer H
Author Affiliation:Department of Pathology, Faculty of Veterinary Science, Selcuk University, Konya, Turkey
Language:English
Abstract:Subpleural lymph nodes were found in the lungs of 7 of 4437 lambs, aged 4-5 months, that were examined at an abattoir in Turkey. Histological examination of tissue sections of the lymph nodes showed changes consistent with atypical pneumonia. The nodes were firm, greyish-white nodules, 3-6 mm in diameter, and had a typical structure, with capsule, cortex and medulla. The possibility of lymphoid hyperplasia being associated with the presence of pathogens was discussed, but the specific cause was not found. Parasites were not thought to be involved; bacteriological examinations were negative and virological studies were not performed
Descriptors:lambs. lymph-nodes. lungs. respiratory-diseases. pathology. histopathology
Geographic Locator:Turkey

Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Mediterranean-Region. Developing-Countries. OECD-Countries
Subject Codes:LL821
Supplementary Info:9 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Genetic studies on greasy fleece yield in Rambouillet sheep in the arid region of Rajasthan
View Article: Indian Veterinary Journal. 2000. 77 (4). 317-320
CD Volume:317
Print Article: Pages: 317-320
Author(s):Jain R D Qureshi M I Shrikant Joshi
Author Variant:Joshi-S
Author Affiliation:Department of Animal Production and Management, College of Veterinary Science & A.H., Mhow (M.P.), India
Language:English
Descriptors:Rambouillet. fleece. imported-breeds. wool-production. fleece-weight. heritability. tropics. sheep-breeds
Geographic Locator:Rajasthan. India
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. India. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL240. LL145
Supplementary Info:13 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Morphometry of sporocysts of sarcocystis spp. developing in the dog
View Article: Indian Veterinary Journal. 2000. 77 (4). 354-356
CD Volume:317
Print Article: Pages: 354-356
Author(s):Venu R Hafeez M Reddy P R
Author Affiliation:Department of Parasitology, College of Veterinary Science, Tirupati - 517 502, India
Language:English
Abstract:The presence of Sarcocystis was confirmed in muscle tissue from cattle (S. cruzi), buffaloes (S. levinei), goats (S. capracanis), and sheep (S. tenella), and infected meat from these animals was fed to 4 groups of 6 puppies, with a fifth group being kept as uninfected controls. Biometrical studies were made on 25 sporocysts and sporozoites collected from faeces of each of the 6 dogs in the groups (a total of 150 Sarcocystis specimens of each of the 4 species). The length, width and shape index of the sarcocysts and the length and width of the sporozoites are recorded in a table. The results are discussed in relation to measurements made by other workers
Descriptors:protozoan-sporocysts. biometry. zoonoses. morphometrics
Geographic Locator:India
Organism Descriptors:dogs. Sarcocystis. cattle. buffaloes. sheep. goats
Supplemental Descriptors:Canis. Canidae. Fissipeda. carnivores. mammals. vertebrates. Chordata. animals. Sarcocystidae.

Eucoccidiorida. Apicomplexa. Protozoa. invertebrates. Bos. Bovidae. ruminants. Artiodactyla. ungulates. Bubalus. Ovis. Capra. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL822. LL070
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:PPR [pest of small ruminants virus] in small ruminants in Andhra Pradesh
View Article: Indian Veterinary Journal. 2000. 77 (5). 373-375
CD Volume:317
Print Article: Pages: 373-375
Author(s):Rajeswari K R Sastry P R Rao M R
Author Affiliation:Veterinary Biologicals and Research Institute, Shantinagar, Hyderabad, India
Language:English
Abstract:The prevalence of PPR was studied in 754 sheep and 81 goats from 18 districts in Andhra Pradesh between February 1997 to January 1999. PPR antibodies were detected in 371 sheep (49.2%) and in 45 goats (55.55%). The prevalence of PPR was higher in young animals (63.58%) than in adult animals (45.92%)
Descriptors:diagnosis. disease-prevalence. age-differences
Geographic Locator:India. Andhra-Pradesh
Organism Descriptors:goats. sheep. pest-of-small-ruminants-virus
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Morbillivirus. Paramyxoviridae. viruses. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India
Subject Codes:LL821. LL886
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Probable peste des petits ruminants among migratory sheep and goats in the sub Himalayan region of India
View Article: Indian Veterinary Journal. 2000. 77 (5). 435-437
CD Volume:317
Print Article: Pages: 435-437
Author(s):Jithendran K P Sharma A K Kurade N P Katoch V C
Author Affiliation:Indian Veterinary Research Institute, Regional Station, Palampur, (H.P.) 176 061, India
Language:English
Descriptors:diagnosis. outbreaks
Geographic Locator:India. Himachal-Pradesh
Organism Descriptors:goats. sheep. pest-of-small-ruminants-virus
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Morbillivirus. Paramyxoviridae. viruses. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India
Subject Codes:LL821. LL886
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Genetic polymorphism of hemoglobin, transferrin and arylesterase of Konya Merino sheep in Turkey
View Article: Indian Veterinary Journal. 2000. 77 (5). 440-442
CD Volume:317
Print Article: Pages: 440-442
Author(s):Boztepe S Tozluca A Dogrul F Balcioglu M S Aktas A H Gurkan M
Author Affiliation:Department of Animal Science, Faculty of Agriculture, Selcuk University, Campus, 42031, Konya, Turkey
Language:English
Descriptors:arylesterase. haemoglobin. Merino. polymorphism. transferrin. alleles
Geographic Locator:Turkey
Identifiers:Central Anatolian Merino
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Mediterranean-Region. Developing-Countries. OECD-Countries
Subject Codes:LL240
Supplementary Info:14 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Association of enterotoxigenic Escherichia coli with haemorrhagic enteritis in Najdi lambs
View Article: Indian Veterinary Journal. 2000. 77 (6). 468-471
CD Volume:317
Print Article: Pages: 468-471
Author(s):Elfaki M G
Author Affiliation:Gassim Branch, Department of Veterinary Medicine, King Saud University, P.O. Box. 1482, Buraidah, Saudi Arabia
Language:English
Abstract:Enterotoxigenic Escherichia coli (ETEC) were isolated from faecal samples and mucosal scrapings, and were collected aseptically from the large intestine of 50 lambs that died or were killed with symptoms of bloody diarrhoea [in Saudi Arabia; date not given]. The isolates shared most of the features of enterobacteria and their cultural characteristics. Since the intestine contains a complex of microbial flora, the pathogenic E. coli in faecal and mucosal scraping could therefore have been the cause of diarrhoea in the lambs. Analysis of E. coli serotyping by the tube agglutination method indicated that most isolates with somatic antigen corresponded to O78 while those with the capsular antigen corresponded to K99 serovars. Based on these results, it is evident that most strains of faecal origin expressed detectable somatic (O) antigen while those isolated from mucosal scrapes carried the capsular (K) antigen. It is concluded that these results may be helpful in future epidemiological surveys regarding the prevalence and transmission of ETEC in Saudi Arabia
Descriptors:agglutination. diarrhoea. epidemiological-surveys. faeces. haemorrhagic-enteritis. lambs. large-intestine. microbial-flora. Najdi. pathogenicity. serotypes. somatic-antigens. strains. disease-surveys. symptoms. disease-transmission. intestinal-diseases. enterotoxaemia. sheep-diseases
Geographic Locator:Saudi-Arabia
Organism Descriptors:Escherichia-coli. sheep
Supplemental Descriptors:Escherichia. Enterobacteriaceae. Gracilicutes. bacteria. prokaryotes. Ovis. Bovidae. ruminants.

Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Middle-East. Developing-Countries
Subject Codes:LL821. LL886. WW000
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Seroprevalence of a new species of Mycoplasma in sheep and goats
View Article: Indian Veterinary Journal. 2000. 77 (6). 539
CD Volume:317
Print Article: Pages: 539
Author(s):Chaturvedi V K Singh P P
Author Affiliation:Department of Microbiology, College of Veterinary Science and Animal Husbandry, Mathura, India
Language:English
Abstract:103 blood samples were collected from sheep and goats to investigate the prevalence of antibodies against a new species of Mycoplasma. Sheep were 19.4% while goats were 16.6% seropositive against Mycoplasma (G109)
Descriptors:respiratory-diseases. seroprevalence. new-species
Geographic Locator:India
Organism Descriptors:goats. Mycoplasma. sheep
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Mycoplasmataceae. Mycoplasmatales. Mollicutes. Tenericutes. bacteria. prokaryotes. Ovis. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL821
Supplementary Info:1 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Epidemiological studies on lamb mortality in certain sheep farms in Andhra Pradesh
View Article: Indian Veterinary Journal. 2000. 77 (6). 542-543
CD Volume:317
Print Article: Pages: 542-543
Author(s):Reddy M P Choudhuri P C
Author Affiliation:Department of Medicine, College of Veterinary Science, Tirupati - 517 502 (A.P.), India
Language:English
Abstract:Lamb mortality records from 11 sheep farms (17 157 lambs) in 3 regions of Andhra Pradesh from 1985 to 1994 were obtained to examine various factors responsible for lamb mortality. Mortality rates based on region, body weight, sex, breed, season, period and causative agents are presented
Descriptors:body-weight. breed-differences. causes-of-death. epidemiology. geographical-distribution. mortality. regions. seasons. sex-differences. lambs
Geographic Locator:Andhra-Pradesh. India
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. India. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations
Subject Codes:LL145. LL120. LL860. LL821
Supplementary Info:8 ref

ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:The effect of Misoprostol and Valethamate bromide administered before insemination with frozen-thawed semen on cervix dilatation and fertility in sheep
View Article: Indian Veterinary Journal. 2000. 77 (7). 600-602
CD Volume:317
Print Article: Pages: 600-602
Author(s):Ataman M B Kaya A Yildiz C Duzgun H
Author Affiliation:Department of Reproduction and Artificial Insemination, College of Veterinary Medicine, University of Selcuk, Konya, Turkey
Language:English
Abstract:The aim of this study was to evaluate the efficacy of Misoprostol and Valethamate bromide administered before insemination with frozen semen on fertility in sheep. Two rams and 60 ewes were used as materials. Animals were randomly divided into 4 groups. A 400- micro g Misoprostol tablet was inserted to the orificium uteri externa 45 minutes before insemination in the first group. Ewes in group I (n=15) were inseminated cervically. Valethamate bromide (200 mg) was injected intramuscularly 45 minutes before insemination in the second group. Ewes were inseminated cervically in group II (n=15). Group III consisted of 15 ewes for laparoscopic insemination. Group IV (n=15) served as control and was inseminated cervically only. All ewes were inseminated with frozen thawed semen. Pregnancy rates in group I, II, III and IV, were 40, 33, 66.6 and 20%, respectively.There is a significant difference (P<0.05) between groups III and IV. On the other hand, no significant difference (P>0.05) was observed among other groups. It is concluded that there was no beneficial effect of Misoprostol and Valethamate bromide administered before insemination with frozen-thawed semen
Descriptors:artificial-insemination. cervix. conception-rate. ewes. fertility. frozen-semen. sympatholytics. synthetic-prostaglandins
Identifiers:misoprostol. valethamate
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. WW000
Supplementary Info:19 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:The effect of live ewe weight at mating on some reproduction traits in Konya Merino sheep
View Article: Indian Veterinary Journal. 2000. 77 (8). 683-685
CD Volume:317
Print Article: Pages: 683-685
Author(s):Ozturk A
Author Affiliation:Faculty of Agriculture, Department of Animal Science, Selcuk University, 42031 Konya, Turkey
Language:English
Abstract:Weights of 258 Konya Merino ewes during September 1998 - May 1999 (Animal Research Institute, Konya, Turkey) were recorded before mating. Ewes were allocated to 6 liveweight categories (<44, 45-49, 50-54, 55-59, 60-64 and >65 kg), where the litter size and the birth weight of their lambs were recorded within 12 hours of lambing. The

average conception rate, fertility and weaning weight were 88.7 plus or minus 0.025%, 84.9 plus or minus 0.029% and 19.75 plus or minus 0.407 kg, respectively, and were not influenced by liveweight of the ewes. However, litter size, fecundity and litter weight were affected by liveweight of ewes at mating. For 60-64 and >65 liveweight categories, the litter size were higher than the other categories (P<0.01). Fecundity and lambs litter weight were higher in the >65 kg ewes (127.2 plus or minus 0.149% and 5.58 plus or minus 0.293 kg) than others
Descriptors:birth-weight. body-weight. conception-rate. ewes. fecundity. fertility. lambs. litter-size. litter-weight. liveweight. Merino
Geographic Locator:Turkey
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Mediterranean-Region. Developing-Countries. OECD-Countries
Subject Codes:LL250
Supplementary Info:11 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:The effect of body weight at service on gestation length and birth weight in Akkaraman and Awassi ewes
View Article: Indian Veterinary Journal. 2000. 77 (8). 686-688
CD Volume:317
Print Article: Pages: 686-688
Author(s):Ozturk A Gurkan M
Author Affiliation:Faculty of Agriculture, Department of Animal Science, Selcuk University, 42031 Konya, Turkey
Language:English
Abstract:Weights of 33 Awassi and 38 Akkarman ewes maintained at the Animal Research Institute in Konya, Turkey, between September 1998 and May 1999, were recorded at the beginning of mating. The least-squares means of gestation length was 149.9 plus or minus 0.276 days for the flock. The gestation length of Awassi was longer than Akkaraman (P<0.01), while birth weight of Akkarman lambs was greater than Awassi lambs(P<0.01). Gestation length was not influenced by the ewes' weight at service and sex of the lamb. However, it was affected by birth weight of lambs. Birth weight of the lamb was highly dependent on the ewes' weight at service
Descriptors:Awassi. birth-weight. body-weight. ewes. gestation-period. sheep-breeds
Geographic Locator:Turkey
Identifiers:Akkarman
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Mediterranean-Region. Developing-Countries. OECD-Countries
Subject Codes:LL240. LL250
Supplementary Info:10 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:A note on seroprevalence of subclinical leptospirosis in organised farms in Andhra Pradesh
View Article: Indian Veterinary Journal. 2000. 77 (8). 713-714

CD Volume:317
Print Article: Pages: 713-714
Author(s):Mrunalini N Ramasastry P
Author Affiliation:Veterinary Biological and Research Institute, Hyderabad, India
Language:English
Abstract:In a study of serum samples from 558 animals (285 cattle, 166 buffaloes and 107 sheep) on organized farms in Andhra Pradesh, India [date not given], 10.58% (59) were positive for subclinical leptospirosis. The percentage seropositivity of subclinical leptospirosis among organized herds was highest (28.94%) in Adilabad district and lowest (3.5%) in Prakasam district. Subclinical leptospirosis was 10.52% in cattle, 11.44% in buffaloes and 9.34% in sheep. The most common serovars encountered were hardjo and andamana
Descriptors:disease-surveys. leptospirosis. molecular-epidemiology. seroprevalence. serovars
Geographic Locator:Andhra-Pradesh. India
Identifiers:andamana. australis. grippotyphosa. hardjo. pomona. pyrogenes
Organism Descriptors:buffaloes. cattle. Leptospira-interrogans. sheep
Supplemental Descriptors:India. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. Bubalus. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Leptospira. Leptospiraceae. Spirochaetales. Gracilicutes. bacteria. prokaryotes. Ovis
Subject Codes:LL821
Supplementary Info:5 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Development of co-agglutination test for the detection of epsilon toxin of Cl. Perfringens type D
View Article: Indian Veterinary Journal. 2000. 77 (9). 748-750
CD Volume:317
Print Article: Pages: 748-750
Author(s):Subramanayam K V Rao V P Vijayakrishna S Rao M V S
Author Affiliation:Department of Microbiology, College of Veterinary Science, Acharya N. G. Ranga Agricultural University, Tirupati - 517 502, India
Language:English
Abstract:102 sheep intestinal samples were tested for the presence of epsilon toxin of Clostridium perfringens, by co-agglutination test [India; date not given]. The positive samples by co-agglutination test were again tested by mouse neutralization test. 11 of 102 samples showed agglutination reaction, 5 of which showed mortality in mice by intravenous injection. The mortality in mice due to toxin in these 5 samples was also confirmed by mouse neutralization test. The epsilon toxin was also detected in these 5 samples by both co-agglutination and mouse neutralization tests. It is concluded that the co-agglutination test is more sensitive as shown by the rapid detection of the toxin, but the mouse neutralization test is more specific. The co-agglutination test requires minimum number and amounts of reagents, which could be presented and used in the form of portable diagnostic kit for use in farm premises
Descriptors:agglutination. bacterial-toxins. coagglutination-tests. diagnosis. intestines. neutralization. neutralization-tests
Geographic Locator:India
Organism Descriptors:Clostridium-perfringens. sheep

Supplemental Descriptors:Clostridium. Clostridiaceae. Firmicutes. bacteria. prokaryotes. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL821. LL886
Supplementary Info:6 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Prevelance of snail borne fluke infections in ruminants of Marathwada region
View Article: Indian Veterinary Journal. 2000. 77 (9). 751-754
CD Volume:317
Print Article: Pages: 751-754
Author(s):Bedarkar S N Narladkar B W Deshpande P D
Author Affiliation:Department of Parasitology, College of Veterinary and Animal Sciences, MAU, Parbhani - 431 402, India
Language:English
Abstract:Between April 1997 and March 1998, faecal samples from cattle (n=805), buffaloes (n=863), sheep (n=822) and goats (855) were collected in 7 sites in the Marathwada region, Maharashtra, India. Prevalence was also determined according to district, sex, age and breed. Results showed the prevalence of fascioliasis and schistosomiasis, which was highest in sheep and buffaloes, respectively. Amphistomiasis and other mixed fluke infections were also observed in the region. All districts were equally prone to fluke infections. Females of all ruminant species had higher incidence than males. Age-wise analysis indicated peak infection during maturity age. It was also observed that local breeds were less affected than crossbreds
Descriptors:age. crossbreds. epidemiology. faeces. fascioliasis. schistosomiasis. sex-differences
Geographic Locator:India. Maharashtra
Identifiers:amphistomiasis. prevalence
Organism Descriptors:cattle. Fasciola-gigantica. goats. Schistosoma-spindale. sheep. snails
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Fasciola. Fasciolidae. Digenea. Trematoda. Platyhelminthes. invertebrates. Capra. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India. Schistosoma. Schistosomatidae. Ovis. Gastropoda. Mollusca
Subject Codes:LL822
Supplementary Info:13 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Artificial insemination in village sheep by fresh chilled Awassi ram semen
View Article: Indian Veterinary Journal. 2000. 77 (9). 773-775
CD Volume:317
Print Article: Pages: 773-775
Author(s):Naqvi S M K Maurya V P Joshi A Mittal J P
Author Affiliation:Division of Physiology, Central Sheep and Wool Research Institute, Avikanagar, via Jaipur (Rajasthan), India
Language:English

Abstract:Artificial insemination enables sheep farmers to introduce superior germplasm and upgrade the potential of low producing native animals. A fertility trial, using diluted Awassi rams semen, was conducted during July 1996 in two flocks of Malpura and Kheri breeds under field condition. The animals were from a village located within a 4-5 km range from the semen laboratory of the Central Sheep and Wool Research Institute in Rajasthan, India. Out of 84 ewes inseminated for one cycle, the conception and lambing rates were 85.8 and 69.1%, respectively. The lambing rates were >70% in ewes between 2 to 6 years of age. The maximum lambing was achieved when insemination was done at mid oestrus
Descriptors:artificial-insemination. Awassi. conception-rate. ewes. lambing-rate. Malpura. semen
Geographic Locator:India. Rajasthan
Organism Descriptors:sheep
Supplemental Descriptors:South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. WW000
Supplementary Info:13 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Epidemiological observations on an outbreak of peste des petits ruminants (PPR) in an organised sheep farm in Andhra Pradesh
View Article: Indian Veterinary Journal. 77 (10). October, 2000. 840-842
CD Volume:318
Print Article: Pages: 840-842
Author(s):Sreeramulu Piedy
Author Affiliation:Indo-Swiss Project, Hyderabad, 500028
Language:English
Language of Summary:English (EN)
Abstract:An outbreak of PPR in an organised sheep farm is reported. The overall morbidity, mortality and case fatality rates were 30.56, 13.20 and 43.20 per cent respectively. The infection entered the farm by 15th day of introduction of new stock purchased from sheep shandy and surrounding villages. Eighty eight per cent of sheep fell victim to PPR in first 10 days of ourbreak. None of the foundation stock vaccinated three years back with TCRPV was affected. Case fatality was highest during first 5 days of illness
Descriptors:tissue culture rinderpest vaccine. Infection; Veterinary Medicine (Medical Sciences); Epidemiology (Population Studies). peste des petits ruminants virus infection: viral disease
Geographic Locator:Andhra Pradesh (India, Asia, Oriental region)
Organism Descriptors:peste des petits ruminants virus (Paramyxoviridae): pathogen; sheep (Bovidae): host
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Paramyxoviridae: Animal Viruses, Viruses, Microorganisms. Animal Viruses; Animals; Artiodactyls; Chordates; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates; Viruses
Subject Codes:Infection; Veterinary Medicine (Medical Sciences); Epidemiology (Population Studies)
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Bacteriological studies on pneumonic Gaddi sheep of Himachal Pradesh
View Article: Indian Veterinary Journal. 77 (10). October, 2000. 846-848
CD Volume:318
Print Article: Pages: 846-848
Author(s):Kumar Rajiv Katoch R C Dhar Prasenjit
Author Affiliation:Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, Himachal Pradesh Krishi Vishvavidyalaya, Palampur, HP, 176062
Language:English
Language of Summary:English (EN)
Abstract:In all 88 samples i.e. 60 lung tissues and 28 nasal swabs, were collected from pneumonic Gaddi sheep in different parts of Himachal Pradesh for bacteriological investigations. The plethora of organisms like Actinomyces pyogenes, Staphylococcus spp., Streptococcus pyogenes, Micrococcus spp., Citrobacter diversus, Pseudomonas aeruginosa, Corynebacterium ovis, Bacillus megaterium and Pasteurella spp. were isolated and identified from the pneumonic lung tissues. The bacteria from nasal swabs of pneumonic sheep included Actinomyces pyogenes, Branhamella catarrhalis, Streptococcus pyogenes, Staphylococcus aureus, Corynebacterium ovis and Bacillus megaterium. None the less, Actinomyces pyogenes and Streptococcus pyogenes were more frequently identified from the lung tissues whereas Actinomyces pyogenes and Branhamella catarrhalis were more common from the nasal swabs
Descriptors:Infection; Veterinary Medicine (Medical Sciences); Respiratory System (Respiration). bacterial infection: bacterial disease; pneumonia: etiology, respiratory system disease
Geographic Locator:Himachal Pradesh (India, Asia, Oriental region)
Organism Descriptors:Actinomyces pyogenes (Irregular Nonsporing Gram-Positive Rods): pathogen; Bacillus megaterium (Endospore-forming Gram-Positives): pathogen; Branhamella catarrhalis (Neisseriaceae): pathogen; Citrobacter diversus (Enterobacteriaceae): pathogen; Corynebacterium ovis (Irregular Nonsporing Gram-Positive Rods): pathogen; Micrococcus kristinae (Micrococcaceae): pathogen; Micrococcus luteus (Micrococcaceae): pathogen; Micrococcus varians (Micrococcaceae): pathogen; Pasteurella haemolytica (Pasteurellaceae): pathogen; Pasteurella multocida (Pasteurellaceae): pathogen; Pseudomonas aeruginosa (Pseudomonadaceae): pathogen; Staphylococcus aureus (Micrococcaceae): pathogen; Staphylococcus epidermidis (Micrococcaceae): pathogen; Staphylococcus intermedius (Micrococcaceae): pathogen; Streptococcus pyogenes (Gram-Positive Cocci): pathogen; sheep (Bovidae): breed-Gaddi, host
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Endospore-forming Gram-Positives: Eubacteria, Bacteria, Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram- Negative Rods, Eubacteria, Bacteria, Microorganisms; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms; Micrococcaceae: Gram-Positive Cocci, Eubacteria, Bacteria, Microorganisms; Neisseriaceae: Gram-Negative Aerobic Rods and Cocci, Eubacteria, Bacteria, Microorganisms; Pasteurellaceae: Facultatively Anaerobic Gram-Negative Rods, Eubacteria, Bacteria, Microorganisms; Pseudomonadaceae: Gram-Negative Aerobic Rods and Cocci, Eubacteria, Bacteria, Microorganisms. Animals; Artiodactyls; Bacteria; Chordates; Eubacteria; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Infection; Veterinary Medicine (Medical Sciences); Respiratory System (Respiration)

ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Control of brucellosis epidemic in goats in a farm
View Article: Indian Veterinary Journal. 2000. 77 (11). 932-935
CD Volume:318
Print Article: Pages: 932-935
Author(s):Mrunalini N Sastry P R Pandarinadh G N Rao M R
Author Affiliation:Veterinary Biological and Research Institute, Shantinagar, Hyderabad - 500 028, India
Language:English
Abstract:Sixty-five Jakarana goats stationed at a large-scale sheep breeding farm in Andhra Pradesh, India, where abortions due to brucellosis are rampant, were included in the present study [date not given]. Blood samples were collected and serum was separated and tested for antibodies to Brucella. Four farmyard workers associated with goats, who were exhibiting vague symptoms were also examined. The seropositivity for brucellosis was 54.59%. Test and slaughter method succesfully eliminated the infection from the flock. The affected farmyard workers also recovered after treatment. No fresh cases were observed thereafter
Descriptors:abortion. brucellosis. epidemics. epidemiology. human-diseases
Geographic Locator:Andhra-Pradesh. India
Organism Descriptors:Brucella. goats. man
Supplemental Descriptors:India. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. Brucellaceae. Gracilicutes. bacteria. prokaryotes. Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Homo. Hominidae. Primates
Subject Codes:LL821. VV210
Supplementary Info:8 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Studies on multiple arbitrary amplicon profiling in cattle using a single, virus-specific, 22-mer oligonucleotide primer
View Article: Indian Veterinary Journal. 2000. 77 (11). 941-943
CD Volume:318
Print Article: Pages: 941-943
Author(s):Mukhopadhyaya P N Mehta H H Rathod R N
Author Affiliation:Biotechnology Laboratory, National Dairy Development Board, Anand - 388 001, Gujarat, India
Language:English
Abstract:A 22-mer oligonucleotide primer, specific for a promoter region of the bacteriophage T7, belonging to the family Podoviridae, was used for PCR to generate multiple amplicons in cattle. No sequence information of the template DNA was required to demonstrate the phenomenon. The methodology involved a primary amplification at low stringency followed by a final amplification at a higher stringency of annealing temperature. The generality of the technique was tested by application to non descript breeds of buffalo, sheep and goat
Descriptors:DNA. genomes. nucleotide-sequences. oligonucleotides
Identifiers:amplicons
Organism Descriptors:cattle. ruminants

Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240. WW000
Supplementary Info:5 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:Serum cortisol, Tri-iodo-thyronine (T3) and Thyroxine (T4) levels at peri-parturient periods in Patanwadi ewes
View Article: Indian Veterinary Journal. 2000. 77 (12). 1040-1042
CD Volume:318
Print Article: Pages: 1040-1042
Author(s):Jacob N Vadodaria V P
Author Affiliation:Dept. of Veterinary Physiology, College of Vety. & Anim. Sci., Sardarkrushinagar, Gujarat - 385 506, India
Language:English
Abstract:This article evaluates hormone levels during pregnancy and lactation of Patanwadi ewes in particular during pre- and post partum stages. The mean serum cortisol value at post-partum stage in Patanwadi breed was found to be higher than pre-partum value. Cortisol levels were significantly high ($P<0.05$) at the lambing stage than at 30 days post partum stage. However nonsignificant differences for reproductive stages were observed for thyroid hormones (Tri-iodo-thyronine and thyroxine) in the same breed of sheep
Descriptors:ewes. hydrocortisone. native-livestock. Patanwadi. postpartum-period. thyroid-hormones. triiodothyronine
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:10 ref
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal
Copyright:Copyright CAB International

Title:The chemotherapeutic effect of 'Imidocarb' against ovine babesiosis in Iran
View Article: Indian Veterinary Journal. 77 (12). December, 2000. 1078-1080
CD Volume:318
Print Article: Pages: 1078-1080
Author(s):Ali Gholi Ramin
Author Affiliation:Veterinary College, Urmia University, Urmia
Language:English
Language of Summary:English (EN)
Abstract:A field study was carried out to investigate the chemoprophylactic effect of 'Imidocarb' against ovine babesiosis in North west Iran. Twelve sheep flocks with a total strength of 1420 sheep were selected and divided into two groups (721 control and 699 treatment group). Treatment group received 'Imidocarb' at a dose rate of 1.2 mg/kg of body weight given subcutaneously whereas the control group received distilled water subcutaneously. During the 135 days of investigation, blood smears were taken 46 times with an interval of 14 to 30 days and screened for the presence of Babesia. 119 of the control group and 19 of the treatment group presented evidence of Babesia in the blood smear. 'Imidocarb' was found to prevent infection by Babesia effectively and significantly. Increasing the dosage to 1.5 mg/kg body weight could be more effective and requires

investigation. In hot climates, repetition of the medication within 60 days would be necessary
Descriptors:Infection; Veterinary Medicine (Medical Sciences); Pharmacology. babesiosis: parasitic disease, treatment. Imidocarb: antiparasitic-drug, efficacy
Geographic Locator:Iran (Palearctic region)
Organism Descriptors:sheep (Bovidae)
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Infection; Veterinary Medicine (Medical Sciences); Pharmacology
ISSN:0019-6479
Year:2000
Journal Title:Indian Veterinary Journal

Title:Development of immunoassays for tyramine and tryptamine toxins of Phalaris aquatica L
View Article: Journal of Agricultural and Food Chemistry.. 48 (1). Jan., 2000. 27- 32
CD Volume:301
Print Article: Pages: 27-32
Author(s):Skerritt John H Guihot Simone L McDonald Scott E Culvenor Richard A
Author Affiliation:Australian Centre for International Agricultural Research, Canberra, ACT, 2601
Language:English
Language of Summary:English (EN)
Abstract:The leaves of the perennial pasture grass Phalaris aquatica L. (phalaris) contain two groups of known toxins, indole alkaloids, primarily dimethyltryptamines and N-methyltyramines, which cause illnesses in grazing animals, especially sheep. Using amino- reactive and phenolic hydroxyl-reactive homobifunctional reagents, simple methods were devised for coupling toxins representative of those in phalaris to carrier proteins and enzymes for ELISA development. ELISAs were produced for both groups of toxins. Dimethyltryptamines were most sensitively detected (lower limit of detection (LLD) of 1 mug/L for bufotenine) using rabbit anti- bufotenine antibodies, coupled to ovalbumin using divinyl sulfone, with detection using a peroxidase conjugate prepared using the same hapten coupled with 1,4-butanediol diglycidyl ether. The assay cross-reacted with other toxins of the same class (N,N- dimethyltryptamine and N,N-dimethyl-5-methoxytryptamine) but not with the structurally related amino acids histidine and tryptophan. The most sensitive N-methyltyramine assay (LLD of 1 mug/mL for N- methyltyramine) utilized antisera to tyramine with N-methyltyramine coupled to peroxidase. Significant cross-reaction was seen with the low-grade toxin hordenine, but detection of tyramine was poorer, whereas the amino acid tyrosine was not detected. These assays could be applied to the analysis of simple extracts of Phalaris leaves with minimal interference. A good correspondence was observed between toxin levels by ELISA and estimates from a more tedious thin-layer chromatography method. The method has now been incorporated in a Phalaris breeding program
Descriptors:Agronomy (Agriculture); Methods and Techniques; Toxicology. N-methyltyramine: indole alkaloid, toxin, tyramine; dimethyltryptamine: indole alkaloid, toxin, tryptamine
Organism Descriptors:Phalaris aquatica (Gramineae): forage crop, pasture grass. leaf

Supplemental Descriptors:Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Monocots; Plants; Spermatophytes; Vascular Plants
Subject Codes:Agronomy (Agriculture); Methods and Techniques; Toxicology
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Depletion of moxidectin tissue residues in sheep
View Article: Journal of Agricultural and Food Chemistry. 48 (12). December, 2000. 6011-6015
CD Volume:302
Print Article: Pages: 6011-6015
Author(s):Lifschitz A Imperiale F Virkel G Munoz Cobenas M Scherling N DeLay R Lanusse C
Author Affiliation:Fort Dodge Sanidad Animal S.A., Calle 139 e/514 y 515 La Plata, 1900, Buenos-Aires: mario.munoz@fdah.com.ar
Language:English
Language of Summary:English (EN)
Abstract:The pattern of tissue depletion of moxidectin (MXD) subcutaneously administered to sheep was characterized in this study. MXD concentration profiles were determined in muscle, fat, and liver and at the site of injection following administration of a formulation combining MXD (0.5% w/v) with a standard 6 in 1 clostridial vaccine. Thirty-five (35) parasite-free Lincoln sheep were treated with the MXD injectable formulation at a dose rate of 0.2 mg of MXD/kg of live weight, administered subcutaneously on the inner surface of the thigh. Treated animals were sacrificed in randomly selected groups of six sheep weekly from day 21 until day 49 post-treatment. Three nontreated animals were sacrificed to obtain blank tissue samples to validate the analytical methodology. MXD concentration profiles were determined by a validated HPLC analytical method using fluorescence detection. MXD has an adequate pattern of absorption, based on the low residual concentrations found in the injection site area at all sampling intervals. Muscle samples showed the lowest MXD concentrations throughout the study period. The highest MXD concentrations at all sampling times were measured in the adipose tissue, indicating that fat is a target tissue for MXD. MXD concentrations in all of the tissues analyzed were below the accepted maximum limit of residue at 21 days post- treatment
Descriptors:Pharmacology. moxidectin: antiparasitic-drug, subcutaneous administration, tissue depletion
Organism Descriptors:sheep (Bovidae). fat; liver: digestive system; muscle: muscular system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Pharmacology
ISSN:0021-8561
Year:2000
Journal Title:Journal of Agricultural and Food Chemistry

Title:Joint Meeting of the American Dairy Science Association and the American Society of Animal Science, Baltimore, MD, USA, July 24-28, 2000
View Article: Journal of Animal Science. 78 (Supplement 1). 2000. 1-319
CD Volume:319

Print Article: Pages: 1-319
Author(s):American Dairy Science Association American Society of Animal Science
Language:English
Language of Summary:English (EN)
Abstract:This meeting contains over 1300 abstracts, written in English, covering aspects of animal behavior, health, growth and development, genetics, breeding, nutrition, and production of animal food products. This meeting was published as a combined issue of 'Journal of Dairy Science' 83 (Supplement 1) and 'Journal of Animal Science ' 78 (Supplement 1)
Descriptors:agricultural extension; animal health; animal production; animal welfare; behavior; breeding; dairy foods: dairy product; farm management; food safety; forages: animal feed; growth; meat science; milk synthesis; muscle biology; nutrition; pasture; physiology; reproduction; Meeting Summary. Animal Husbandry (Agriculture); Veterinary Medicine (Medical Sciences)
Organism Descriptors:cattle (Bovidae): beef, dairy; goat (Bovidae); horse (Equidae); rabbit (Leporidae); ruminant (Artiodactyla); sheep (Bovidae); swine (Suidae)
Supplemental Descriptors:Artiodactyla: Mammalia, Vertebrata, Chordata, Animalia; Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Equidae: Perissodactyla, Mammalia, Vertebrata, Chordata, Animalia; Leporidae: Lagomorpha, Mammalia, Vertebrata, Chordata, Animalia; Suidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Lagomorphs; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Perissodactyls; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Veterinary Medicine (Medical Sciences)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effects of birth weight and postnatal nutrition on neonatal sheep: II. Skeletal muscle growth and development
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 50-61
CD Volume:318
Print Article: Pages: 50-61
Author(s):Greenwood P L Hunt A S Hermanson J W Bell A W
Author Affiliation:Department of Animal Science, Cornell University, Ithaca, NY, 14853-4801
Language:English
Language of Summary:English (EN)
Abstract:This study investigated effects of birth weight and postnatal nutrition on growth and development of skeletal muscles in neonatal lambs. Low (L; mean +- SD 2.289 +- .341 kg, n = 28) and high (H; 4.840 +- .446 kg, n = 20) birth weight male Suffolk X (Finnsheep X Dorset) lambs were individually reared on a liquid diet to grow rapidly (ad libitum fed, ADG 337 g, n = 20) or slowly (ADG 150 g, n = 20) from birth to live weights (LW) up to approximately 20 kg. At birth, weight of semitendinosus (ST) muscle in L lambs was 43% that in H lambs; aggregate weights of ST and seven other dissected muscles were similarly reduced. In ST muscle of L lambs, mass of DNA, RNA, and protein were also significantly reduced to levels 67, 60, and 34%, respectively, of those in H lambs. However, myofiber numbers of ST, tibialis caudalis, or soleus muscles did not differ between the L and H birth weight lambs and did not change during postnatal growth. During postnatal rearing, daily accretion rate of dissected muscle was lower in L than in H lambs. Accretion of muscle per kilogram of

gain in empty body weight (EBW) was reduced in the slowly grown L lambs compared with their H counterparts, although the difference was less pronounced between the rapidly grown L and H lambs. Throughout the postnatal growth period, ST muscle of L lambs contained less DNA with a higher protein: DNA ratio at any given muscle weight than that of H lambs. Slowly grown lambs had heavier muscles at any given EBW than rapidly grown lambs. Content of DNA and protein:DNA ratio in ST muscle were unaffected by postnatal nutrition, but RNA content and RNA:DNA were greater and protein:RNA was lower at any given muscle weight in rapidly grown lambs. Results suggest that myofiber number in fetal sheep muscles is established before the presumed, negative effects of inadequate fetal nutrient supply on skeletal muscle growth and development become apparent. However, proliferation of myonuclei may be influenced by fetal nutrition in late pregnancy. Reduced myonuclei number in severely growth-retarded newborn lambs may limit the capacity for postnatal growth of skeletal muscles
Descriptors:birth weight; body weight; postnatal nutrition. Animal Husbandry (Agriculture); Development; Muscular System (Movement and Support); Nutrition. DNA: analysis; RNA: analysis; proteins: analysis
Organism Descriptors:sheep (Bovidae): lamb, neonate. skeletal muscle: development, growth, muscular system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Development; Muscular System (Movement and Support); Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Ovine adipose tissue monounsaturated fat content is correlated to depot-specific expression of the stearoyl-CoA desaturase gene
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 62-68
CD Volume:318
Print Article: Pages: 62-68
Author(s):Barber M C Ward R J Richards S E Salter A M Buttery P J Vernon R G Travers M T
Author Affiliation:Hannah Research Institute, Ayr, KA6 5HL
Language:English
Language of Summary:English (EN)
Abstract:The basis for the variation in fatty acid composition in different ovine adipose tissue depots was investigated. The proportion of stearic (C18:0) and oleic (C18:1) acids vary in a site-specific fashion; abdominal depots (omental and perirenal) contain relatively more C18:0 than C18:1, and carcass depots, especially sternum, have a markedly higher proportion of C18:1. Additionally, expression of a number of lipogenic enzyme genes (stearoyl-CoA desaturase (SCD), acetyl-CoA carboxylase-alpha (ACC-alpha), lipoprotein lipase (LPL)) and the cytoskeletal protein gene alpha-tubulin vary among depots, although the pattern of variation differs for each mRNA. When these expression data were related to the mean cell volume of adipocytes pooled from all depots, a significant pattern emerged: expression of the ACC-alpha, LPL, and alpha-tubulin genes was highly correlated with the size of adipocytes. In contrast, when the expression of SCD mRNA was assessed as a function of mean cell volume, two populations of adipocytes emerged: no significant correlation was found between the expression of SCD mRNA per adipocyte and mean cell volume for the abdominal depots, although a highly significant correlation was observed between SCD gene

expression and mean cell volume for the carcass and epicardial depots. Similarly, a highly significant correlation was found for the amount of C18:1 per adipocyte and the abundance of SCD mRNA per adipocyte for the carcass and epicardial depots, whereas no significant correlation was observed for these traits for the omental and perirenal depots. Thus, the SCD gene seems to be regulated in a depot-specific fashion and in a manner distinct from that of the ACC and LPL genes
Descriptors:carcass traits; gene expression: depot-specific; lipogenesis. Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics); Skeletal System (Movement and Support). enzymes; fatty acids; mRNA [messenger RNA]; proteins; stearoyl- coenzyme A desaturase
Organism Descriptors:sheep (Bovidae). adipocyte: skeletal system; adipose tissue: chemical analysis, skeletal system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics); Skeletal System (Movement and Support)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Protein kinetics in callipyge lambs
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 78-87
CD Volume:318
Print Article: Pages: 78-87
Author(s):Lorenzen C L Koohmaraie M Shackelford S D Jahoor F Freetly H C Wheeler T L Savell J W Fiorotto M L
Author Affiliation:Roman L. Hruska U.S. Meat Animal Research Center, ARS, USDA, Clay Center, NE, 68933-0166
Language:English
Language of Summary:English (EN)
Abstract:The objectives for this experiment were to determine the effect of the callipyge phenotype on protein kinetics. We studied callipyge and normal lambs (n = 37) at 5, 8, and 11 wk of age (n = 4 to 7/group) to determine how protein kinetics are altered by this trait. Total protein, DNA, and RNA and calpastatin activity were measured in five skeletal muscles and in the heart, kidneys, and liver, and protein accretion rates were calculated. At 8 wk, the fractional synthesis rates of proteins in these tissues were measured in vivo using a primed, continuous 8-h infusion of (2H5)-phenylalanine. Fractional rates of protein degradation were estimated by differences. At 5 wk of age, muscle weights, protein mass, protein:DNA, RNA:DNA, and calpastatin activity were higher ($P < .05$) for callipyge, and protein mass differences continued to increase through 11 wk. At 8 wk, fractional rates of protein synthesis and degradation were lower ($P < .05$) in callipyge than in normal lambs. The organs of callipyge lambs exhibited reduced growth at 11 wk. Thus, enhanced muscle growth seems to be maintained in callipyge lambs by reduced protein degradation rather than increased protein synthesis. However, we cannot exclude the possibility that the initial onset of the callipyge condition may be caused by an increase in the fractional rate of protein synthesis
Descriptors:callipyge gene mutation; callipyge phenotype. Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics). DNA; RNA; calpastatin; proteins: degradation, kinetics, synthesis

Organism Descriptors:sheep (Bovidae): lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Amino acid flux in ruminal and gastric veins of sheep: Effects of ruminal and omasal injections of free amino acids and carnosine
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 158-166
CD Volume:318
Print Article: Pages: 158-166
Author(s):Remond D Bernard L Poncet C
Author Affiliation:Unite de Recherches sur les Herbivores, Institut National de la Recherche Agronomique de Clermont-Ferrand, 63 122, St. Genes- Champanelle
Language:English
Language of Summary:English (EN)
Abstract:The possibility of free amino acid (FAA) and peptide absorption across the ruminant stomach wall was studied in multicatheterized wethers fed every 12 h. During the last third of the feeding cycle, two intraruminal or intraomasal injections of solutions containing increasing amounts of Ser, Gly, Val, Met, Phe, Lys, and carnosine were successively performed. Before injections, a net uptake of each of these FAA was measured in the ruminal and the gastric veins. The ruminal injections produced a linear increase in ruminal FAA concentration. The highest ruminal concentrations (observed with 3 g of FAA and carnosine) ranged between 5 and 14 mM. After ruminal injections, Ser ($P < .05$), Gly ($P < .05$), Val ($P < .05$), Met ($P < .10$), and Lys ($P < .10$) uptake decreased and carnosine net release linearly increased ($P < .05$), suggesting absorption across the ruminal epithelium. Owing to the low net flux generated by high ruminal concentration, the ruminal epithelium permeability to these molecules seemed to be low. After omasal injections, net flux of injected FAA were not modified, suggesting a low permeability of the gastric epithelia to FAA. Carnosine net release linearily increased ($P < .05$) with increasing level of carnosine injection, indicating the possibility of dipeptide absorption at the gastric level. This study demonstrated in vivo that the stomach epithelia possess the capacity to absorb FAA and small peptides; however, the permeability of these epithelia to these molecules seemed limited
Descriptors:animal feeding. Animal Husbandry (Agriculture); Nutrition; Cardiovascular System (Transport and Circulation). amino acids: fluxes; carnosine: absorption, injection; free amino acids: absorption, injection; peptides: absorption, injection
Organism Descriptors:sheep (Bovidae): male, wether. gastric vein: circulatory system; rumen: digestive system; ruminal vein: circulatory system; stomach: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition; Cardiovascular System (Transport and Circulation)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Influence of the novel urease inhibitor N-(n-butyl) thiophosphoric triamide on ruminant nitrogen metabolism: II. Ruminal nitrogen metabolism, diet digestibility, and nitrogen balance in lambs
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 188-198
CD Volume:318
Print Article: Pages: 188-198
Author(s):Ludden P A Harmon D L Huntington G B Larson B T Axe D E
Author Affiliation:Department of Animal Sciences, University of Kentucky, Lexington, KY, 40546
Language:English
Language of Summary:English (EN)
Abstract:Three lamb metabolism experiments were conducted to investigate the effects of chronic administration of the novel urease inhibitor N (n-butyl) thiophosphoric triamide (NBPT) on ruminal N metabolism, fermentation, and N balance. In Exp. 1, ruminally cannulated wethers (n = 28; 45.0 +- .9 kg) were administered one of seven doses of NBPT (0 (control), .125, .25, .5, 1, 2, or 4 g of NBPT daily) and fed a common cracked corn/cottonseed hull-based diet twice daily containing 2% urea at 2.5% of initial BW for the duration of the 15-d experiment. Overall, NBPT decreased (linear P < .0001; quadratic P < .001) ruminal urease activity, resulting in linear increases (P < .0001) in ruminal urea and decreases in ruminal NH3 N concentrations. However, the detection of an NBPT X day interaction (d 2 vs 15; P < .01) indicated that this depression in urea degradation diminished as the experiment progressed. Increasing NBPT linearly decreased (P < .01) total VFA concentrations on d 2 of the experiment, but it had no effect (P > .10) on d 15. Increasing NBPT had no effect (P > .10) on DM or ADF digestibilities, but it linearly decreased (P < .01) N digestibility. Supplementing NBPT produced a linear increase (P < .05) in urinary N excretion and a linear decrease (P < .01) in N retention. In Exp. 2, ruminally cannulated wethers (n = 30; 46.8 +- .6 kg) were fed one of two basal diets (2.0 vs 1.1% dietary urea) at 2.5% of initial BW and dosed with either 0 (control), .25, or 2 g of NBPT daily for the duration of the 15-d experiment. There were no NBPT X dietary urea interactions (P > .10) for Exp. 2. Increasing NBPT depressed (linear and quadratic P < .0001) ruminal urease activity, producing linear (P < .0001) increases in urea N and linear decreases in NH3 N in the rumen. As in Exp. 1, an NBPT X day interaction (P < .05) was noted for urea, NH3 N, and total VFA concentrations; the maximum response to NBPT occurred on d 2 but diminished by d 15 of the experiment. Administration of NBPT did not influence (P > .10) DM, ADF, or N digestibilities in Exp. 2. In Exp. 3, wether lambs (n = 30; 26.4 +- .7 kg) were subjected to the same treatment regimen as in Exp. 2 for a 14-d N balance experiment. Although several NBPT X dietary urea interactions (P < .05) were noted, increasing NBPT did not affect (P > .10) N digestibility. Administration of NBPT quadratically increased (P < .10) urinary N excretion, producing a linear decrease (P < .05) in N retention. These results suggest that although NBPT is capable of inhibiting ruminal urease short-term, the ruminal microflora may be capable of adapting to chronic NBPT administration, thereby limiting its practical use in improving the utilization of dietary urea
Descriptors:diet digestibilities; diets; fermentations; nitrogen balance; nitrogen metabolism; substrate digestion. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition. N-(n-butyl) thiophosphoric triamide: enzyme inhibitor, physiological effects; nitrogen: metabolism; urea: hydrolysis; ureases

Organism Descriptors:sheep (Bovidae): lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Changes in postprandial plasma and extracellular and ruminal fluid volumes in wethers fed or unfed for 72 hours
View Article: Journal of Animal Science. 78 (1). Jan., 2000. 216-223
CD Volume:318
Print Article: Pages: 216-223
Author(s):Cole N A
Author Affiliation:Conservation and Production Research Laboratory, ARS, USDA, Bushland, TX, 79012
Language:English
Language of Summary:English (EN)
Abstract:Postprandial shifts in body water compartments might limit feed intake by ruminants, especially when an animal becomes partially dehydrated during transportation or other periods of water deprivation. This experiment was conducted to determine the effects of feed and water deprivation on postprandial changes in body water compartments in wethers. Hampshire wethers (n = 8; average BW 42 +- 2 kg) were used in a crossover design. During each period, four wethers were limit-fed (540 g DM/d: FED) and four were deprived of feed and water for 72 h (DEPRIVED). Wethers were infused i.v. with Evans blue and sodium thiosulfate and intraruminally with Cr- or Co- EDTA, after which blood and ruminal samples were collected for the next 4 h. All wethers were then fed 540 g of feed DM, and infusions were repeated 30 min after feeding. Body water compartment volumes were determined with linear regression using plasma concentrations of Evans blue (plasma volume), and sodium thiosulfate (extracellular volume), and using ruminal fluid concentrations of Cr or Co. Feed and water deprivation decreased (P < .01) extracellular water space but did not affect plasma or ruminal water space. After feeding, extracellular water space decreased (P < .01) and ruminal volume increased (P < .05) in the FED and DEPRIVED wethers. Plasma pools of Na, K, and Mg were not affected by feeding in FED wethers but decreased (P < .05) in DEPRIVED wethers. The increase in ruminal fluid pools of Na, K, and Mg were greater (P < .05) in FED than in DEPRIVED wethers. These results indicate that abnormal water and electrolyte shifts may be factors partially responsible for the decreased feed intake by ruminants subjected to transportation or feed and water deprivation stress
Descriptors:animal feeding; body water compartments; feed intake; food deprivation; stress; transportation stress; water deprivation.
Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Nutrition; Blood and Lymphatics (Transport and Circulation)
Organism Descriptors:sheep (Bovidae): male, wether
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Nutrition; Blood and Lymphatics (Transport and Circulation)
ISSN:0021-8812

Year:2000
Journal Title:Journal of Animal Science

Title:Localization of POU1F1 to bovine, ovine, and caprine 1q21-22
View Article: Journal of Animal Science. 2000. 78 (1). 242-243
CD Volume:318
Print Article: Pages: 242-243
Author(s):Woollard J Tuggle C K Ponce de Leon F A
Author Variant:de-Leon-F-A-Ponce
Author Affiliation:Department of Animal Science, Iowa State University, Ames 50011, USA
Language:English
Abstract:A cattle lambda genomic library (Clontech, Inc., Palo Alto, CA) was screened by using the bovine POU1F1 cDNA. Positive recombinant phage were characterized by restriction digestion and Southern blotting analysis. Further analysis of an approximate 12 000-bp DNA fragment containing exons 3 through 6 and flanking genomic regions of the cattle POU1F1 gene included subcloning and sequencing of the exon 4 and exon 6 regions. Metaphase spreads were prepared from lymphoid cells obtained from cattle, sheep and goats (2 males and 2 females for each species). Standard cell culture procedures were used. To generate R-banded metaphases (RBP), cells were synchronized with methotrexate (10-6 M) for 17 h followed by addition of 20 micro g/ml of bromodeoxyuridine (BrdU) during the late synthesis phase. Standard cell harvesting and slide preparation procedures were used. Fluorescent in situ hybridization (FISH) was also carried out. The 12 000-bp genomic DNA fragment of the bovine POU1F1 gene was labelled with biotin-16-dATP by nick translation. Probe was detected with FITC-conjugated avidin DCS. After propidium iodide staining, slides were mounted with an alkaline antifade p-phenylenediamine, pH 11 (PPD-11). At least 20 metaphases from each of the animals were analysed. Cattle 1q21-22, sheep 1q21-22 and goat 1q21-22 genes were located. It is concluded that the current mapping of POU1F1 to identical locations in cattle, sheep and goat further extends this large region of homology. The nucleotide sequences reported in this paper have been submitted to GenBank with accession numbers I38350 and I38351
Descriptors:localization. complementary-DNA. chromosomes. chromosome-banding. clones. DNA. nucleotide-sequences. exons. molecular-genetics. transcription-factors. translation. vectors. gene-mapping. biotechnology
Organism Descriptors:goats. sheep. cattle
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bos
Subject Codes:LL240. WW000
Supplementary Info:9 ref
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Evaluation of Egyptian sheep production systems: I. Breed crosses and management systems
View Article: Journal of Animal Science. 78 (2). February, 2000. 283-287
CD Volume:318
Print Article: Pages: 283-287
Author(s):Almahdy H Tess M W El Tawil E Shehata E Mansour H
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Language:English
Language of Summary:English (EN)
Abstract:Our objective was to evaluate life-cycle performance of flocks of two Egyptian breeds, Rahmani (R) and Ossimi (O), and their crosses with Finnish Landrace (F) in two management systems. Management systems were one mating season per year (1M) and three mating seasons per 2 yr (3M). Breeds and crosses studied included purebred R and O, F1 crosses 1/2F-1/2R (FR) and 1/2F-1/2O (FO), and inter se matings of 1/4 F-3/4 R (RFR) and 1/4 F-3/4 O (OFO). A dynamic computer model was used to simulate animal performance and enterprise efficiency and profit. Two measures of life-cycle feed conversion (biological efficiency) were computed: kilograms of TDN input per kilograms of empty body weight output (TDN/EBW) and kilograms of TDN input per kilogram of carcass lean output (TDN/CLN). Profit was measured as gross margin (income minus variable costs per ewe per year, GM/EWE). Input parameters for the model were obtained from published results and analyses of data collected from experimental flocks of the same genetic stocks in Egypt. Profit for FR and RFR was 42 and 6% higher in 1M than in 3M. However, profit for all other genetic types was 4 to 8% greater in 3M than in 1M. Breed rankings changed depending on the measure of evaluation (i.e., biological efficiency or profit). Maximization of system output did not necessarily improve efficiency. Under accelerated lambing systems, greater overhead costs associated with labor and feed offset gains in ewe productivity. Genetic stocks should be matched to resources and management systems
Descriptors:accelerated lambing systems; carcass lean output; empty body weight output; ewe productivity; life-cycle feed conversion; life-cycle performance; sheep production system management. Animal Husbandry (Agriculture)
Geographic Locator:Egypt (Palearctic region)
Organism Descriptors:sheep (Bovidae): Egyptian breeds, breed-Finnish Landrace, breed- Ossimi, breed-Rahmani, ewe, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Evaluation of Egyptian sheep production systems: II. Breeding objectives for purebred and composite breeds
View Article: Journal of Animal Science. 78 (2). February, 2000. 288-295
CD Volume:318
Print Article: Pages: 288-295
Author(s):Almahdy H Tess M W El Tawil E Shehata E Mansour H
Author Affiliation:Animal and Range Sciences Department, Montana State University, Bozeman, MT, 59717-2900
Language:English
Language of Summary:English (EN)
Abstract:Objectives for this study were to estimate relative economic weights for performance traits for two native and two composite sheep breeds under two management systems in Egypt. Breeds studied were Rahmani (R), Ossimi (O), 3/4R-1/4Finnish Landrace (RFR), and 3/4O-1/4Finn (OFO); OFO and RFR were composite breeds. Management systems were one mating season per year (1M) and three mating seasons per 2 yr (3M). A dynamic computer model was used to simulate animal performance and enterprise efficiency and profit. Input parameters

for the model were obtained from published results and analyses of data collected from experimental flocks of the same genetic stocks in Egypt. Responses for two measures of life-cycle feed conversion and one measure of enterprise profit were evaluated. Life-cycle feed conversion was calculated as kilograms of TDN input per kilogram of empty body weight output (TDN/EBW) and kilograms of TDN input per kilogram of carcass lean output (TDN/CLN). Profit was measured as annual gross margin/ewe (GM/EWE). Traits evaluated were conception rate (CR), lambing rate (LR), mortality rate (MR), mature weight (MW), and milk production (MK). Based on responses to percentage changes in trait means, CR was most important for TDN/EBW, followed by LR and MR. For TDN/CLN, LR, MR, and CR were most important. For GM/EWE, CR was most important, followed by LR, MW, and MR. In the systems studied, there was little response to changes in MK. Based on changes in GM/EWE per genetic standard deviation change, LR was most important, followed by CR, MR, MW, and MK in all systems. Relative economic weights for O and OFO were similar, as were weights for R and RFR. Differences in economic weights between management systems for the same breed were not large enough to justify separate selection lines within breeds
Descriptors:carcass lean output; conception rate; empty body weight output; lambing rate; life-cycle feed conversion; mature weight; mortality rate; performance traits. Animal Husbandry (Agriculture)
Geographic Locator:Egypt (Palearctic region)
Organism Descriptors:sheep (Bovidae): breed-Finnish Landrace, breed-Ossimi, breed- Rahmani, composite breeds, purebreds. milk: production, reproductive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Influence of consumption of endophyte-infested tall fescue hay on performance of heifers and lambs
View Article: Journal of Animal Science. 78 (2). February, 2000. 358-364
CD Volume:318
Print Article: Pages: 358-364
Author(s):Emile J C Bony S Ghesquiere M
Author Affiliation:INRA, 86600, Lusignan
Language:English
Language of Summary:English (EN)
Abstract:Two experiments were conducted to evaluate performance and physiological responses of heifers and lambs to Neotyphodium coenophialum-infested tall fescue hay fed under European rearing conditions. Endophyte-free (E-) or 100% endophyte-infested (E+) hay was derived from the same cultivar (cv. Clarine) so that the effect of the endophytic fungus could be clearly separated from a possible cultivar effect. In Exp. 1, starting in June 1996, 20 age- and body weight-paired Holstein dairy heifers were assigned for 97 d to one of two treatments consisting of ad libitum access to either E- or E+ hay, corresponding to 0 and .41 mg/kg ergovaline, respectively. During the experimental period, no significant difference ($P > .20$) in forage consumption, rectal temperature, or behavioral status of the animals was observed between the two treatments. The E+ diet induced a 10% apparent decrease in ADG and a clear reduction in prolactin (PRL) plasma concentration compared to the E- diet. When

animals were all reassigned to a common endophyte-free diet, the E+ group recovered body weight and PRL to levels similar to those in animals fed E- after 7 wk. In Exp. 2, 30 Texel ram lambs were assigned to two treatments consisting of dietary E- or E+ tall fescue hay. The E- and E+ hays were harvested from the same plots as used in Exp. 1 and contained 0 and .96 mg/kg ergovaline, respectively. No effect of the endophyte was found on intake or carcass or testicle weight (P > .20) after the 95-d feeding period. The E+ treatment resulted in a slight reduction in BW at slaughter, mainly explained by a lower ruminal fill (P < .01). In E+ treated animals, prolactin concentrations dropped significantly (P < .001) from d 27. Hay assessment in both experiments showed no difference in chemical composition and IVDMD. The endophytic fungus strongly lowered the palatability of the E+ hay, although there was no effect on intake with heifers (Exp. 1) or with lambs (Exp. 2). The potential of severe heat stress, as expressed by the temperature humidity index, was not high in our experimental conditions, although they were considered rather unusually stressful for the western part of northern Europe. Yet, no economic effect on cattle was observed, in disagreement with results obtained in many previous U.S. studies
Descriptors:European rearing conditions; behavioral status; carcass weight; common endophyte-free diet: animal feed; endophyte consumption influence; endophyte-infested tall fescue hay: animal feed; forage consumption; performance; physiological responses; rectal temperature. Animal Husbandry (Agriculture); Nutrition. prolactin
Organism Descriptors:Neotyphodium coenophialum (Fungi): endophyte; cattle (Bovidae): breed-Holstein, dairy, female, heifer; fescue (Gramineae): cultivar- Clarine; sheep (Bovidae): breed-Texel, lamb, male, ram. plasma: blood and lymphatics; testicle: reproductive system, weight
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Fungi: Plantae; Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Animals; Artiodactyls; Chordates; Fungi; Mammals; Microorganisms; Monocots; Nonhuman Mammals; Nonhuman Vertebrates; Nonvascular Plants; Plants; Spermatophytes; Vascular Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition
ISSN:0021-8812
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Journal Title:Journal of Animal Science

Title:Investigation of the primary cause of hypoadrenocorticism in South African Angora goats (Capra aegagrus): A comparison with Boer goats (Capra hircus) and Merino sheep (Ovis aries)
View Article: Journal of Animal Science. 78 (2). February, 2000. 371-379
CD Volume:318
Print Article: Pages: 371-379
Author(s):Engelbrecht Y Herselman T Louw A Swart P
Author Affiliation:Department of Biochemistry, University of Stellenbosch, Stellenbosch
Language:English
Language of Summary:English (EN)
Abstract:Our objective was to identify the primary site of the reduced adrenal function in South African Angora goats (Capra aegagrus) that causes a decrease in cortisol production and leads to severe losses of Angora goats during cold spells. Angora goats, Boer goats (Capra hircus), and Merino sheep (Ovis aries) were assigned to three intravenous treatments: 1) insulin, 2) corticotropin- releasing

factor (CRF), and 3) ACTH. Blood cortisol concentrations were determined over a 90-min period to determine any differences in the response of the experimental animals to these treatments. For both the insulin and ACTH treatments, cortisol concentrations were less in Angora goats than in the other experimental animals. The adrenal gland was subsequently investigated as a possible cause for the observed hypoadrenocorticism. Primary adrenal cell cultures were prepared from these species, subjected to different treatments, and the cortisol production determined. Upon pregnenolone (PREG) addition, all the experimental animals' cortisol production increased significantly, with the production in Boer goats higher ($P < .01$) when compared with that in the other species. The stimulation of cortisol biosynthesis by ACTH was only obtained for Boer goats and Merino sheep. The stimulation of cortisol production by forskolin and cholera toxin were compared with ACTH, and, for Angora goats, only cholera toxin caused a significant increase in cortisol production. For Boer goats, no difference ($P > .05$) between the PREG, ACTH, forskolin, or cholera toxin treatments were observed. The Merino adrenal cells were increasingly stimulated in the following order: PREG, ACTH, forskolin, and cholera toxin (forskolin and cholera toxin stimulated cortisol production to the same extent). This investigation of the hypothalamic-pituitary-adrenocortical axis, therefore, identified the adrenal gland as the primary site of the Angora's hypoadrenocorticism
Descriptors:cold spells. Animal Husbandry (Agriculture); Endocrine System (Chemical Coordination and Homeostasis); Pharmacology. hypoadrenocorticism: endocrine disease/adrenal. ACTH [adrenocorticotropic hormone]: hormone-drug; cholera toxin; corticotropin-releasing factor: hormone-drug; cortisol: production; forskolin; insulin: hormone-drug; pregnenolone: hormone-drug
Organism Descriptors:Capra aegagrus [South African Angora goat] (Bovidae); Capra hircus [Boer goat] (Bovidae); Ovis aries [Merino sheep] (Bovidae). adrenal gland: endocrine system, reduced function; blood: blood and lymphatics; hypothalamic-pituitary-adrenocortical axis: endocrine system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Endocrine System (Chemical Coordination and Homeostasis); Pharmacology
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Subclinical infection with the nematode Trichostrongylus colubriformis increases gastrointestinal tract leucine metabolism and reduces availability of leucine for other tissues
View Article: Journal of Animal Science. 78 (2). February, 2000. 380-390
CD Volume:318
Print Article: Pages: 380-390
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Language:English
Language of Summary:English (EN)
Abstract:Gastrointestinal (GI) tract leucine metabolism was measured in 6- to 9-mo-old lambs subjected to trickle infection with Trichostrongylus colubriformis larvae and in separate animals that

were not infected. Animals prepared with a jejunal catheter and with indwelling catheters into the aorta and the portal- (PDV) and mesenteric- (MDV) drained viscera were infused simultaneously with (1-13C) and (5,5,5-2H3) leucine to determine GI tract sequestration of leucine from arterial and luminal amino acid pools by tracer and tracee arteriovenous concentration differences. Leucine oxidative losses and net fluxes were also determined across the GI tract. Infection had no detectable effect on whole-body leucine flux, but it increased total GI tract leucine sequestration by 24% ($P < .05$) and GI tract oxidative losses of leucine by 22 to 41% ($P < .01$). Net PDV fluxes of leucine were decreased by 20 to 32% during the infection. The infection did not alter either the proportion of precursor leucine used by GI tract metabolism that was derived from the arterial leucine pool (.84 to .88) or the proportional sequestration of digesta-derived leucine during "first pass" absorptive metabolism (.12 to .18). These findings help to elucidate the metabolic basis for the reduced growth rates and nitrogen retention observed when animals are subjected to subclinical nematode infection
Descriptors:Veterinary Medicine (Medical Sciences); Metabolism; Parasitology. Trichostrongylus colubriformis trickle infection: parasitic disease. leucine: flux, gastrointestinal tract metabolism, oxidative losses, tissue availability
Organism Descriptors:Trichostrongylus colubriformis (Nematoda): larva, parasite; sheep (Bovidae): lamb. gastrointestinal tract: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Nematoda: Aschelminthes, Helminthes, Invertebrata, Animalia. Animals; Artiodactyls; Aschelminths; Chordates; Helminths; Invertebrates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Veterinary Medicine (Medical Sciences); Metabolism; Parasitology
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effect and absorption of histamine in sheep rumen: Significance of acidotic epithelial damage
View Article: Journal of Animal Science. 78 (2). February, 2000. 464-470
CD Volume:318
Print Article: Pages: 464-470
Author(s):Aschenbach J R Gaebel G
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Language:English
Language of Summary:English (EN)
Abstract:The significance of ruminal histamine for the induction of epithelial damage and systemic histaminosis during the ruminal lactic acidosis syndrome was investigated using the Ussing chamber technique. Histamine did not affect the electrophysiological characteristics of ovine ruminal epithelia under short-circuit conditions. In contrast, mucosal acidification to pH 5.1 induced pronounced effects on tissue conductance (Gt) and short-circuit current (Isc). Using (3H)histamine for flux determination (hist-rad fluxes), significant net absorption of hist-rad (.40 +- .07 nmolcntdot cm-2cntdoth-1; n = 6) was evident under short-circuit conditions in the presence of a mucosal-to-serosal (ms) histamine gradient (80 muM:12 muM). In comparison to hist-rad, absorption of native histamine (ms histamine gradient 80 muM:0 muM) measured with HPLC under open circuit conditions was smaller (.010 +- .003

nmolcntdot cm-2cntdoth-1; n = 10). Mucosal acidification to pH 5.1 led to an increase (P < .05) in net absorption of hist-rad (to .67 +- .06 nmolcntdot cm-2cntdoth-1; n = 6) and a dramatic increase (P < .01) in the absorption of native histamine (to .27 +- .04 nmolcntdotcm-2cntdoth-1; n = 10). Absorption of ruminal histamine should be considered an important cause of systemic histaminosis in acidotic ruminants. Histamine absorption is linked to ruminal epithelial damage, which is primarily induced by luminal acidity and not by histamine
Descriptors:acidotic epithelial damage; luminal acidity; short-circuit current; tissue conductance. Digestive System (Ingestion and Assimilation); Metabolism. ruminal lactic acidosis syndrome: digestive system disease, metabolic disease; systemic histaminosis: metabolic disease. histamine: absorption
Organism Descriptors:sheep (Bovidae). rumen: digestive system; ruminal mucosa: acidification, digestive system; serum: blood and lymphatics
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Digestive System (Ingestion and Assimilation); Metabolism
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Determination of parotid urea secretion in sheep by means of ultrasonic flow probes and a multifactorial regression analysis
View Article: Journal of Animal Science. 78 (2). February, 2000. 471-476
CD Volume:318
Print Article: Pages: 471-476
Author(s):Cirio A Meot F Delignette Muller M L Boivin R
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Language:English
Language of Summary:English (EN)
Abstract:For determination of the dynamics of parotid urea secretion in conscious sheep, a previously standardized transit time ultrasonic flow metering system was used to measure bilateral parotid flow. Six ewes fed for ad libitum consumption were prepared under halothane anesthesia with ultrasonic probes around both parotid ducts; these ducts were also cannulated orally. After probe encapsulation (8 d), parotid flows were recorded during 24 h, and samples of saliva and blood for urea determination were obtained hourly. Jaw movements were recorded by means of a submandibular balloon to monitor feeding behavior. Urea concentration in parotid saliva was 60 to 74% of that in plasma (a positive linear correlation existed) and was poorly influenced by the parotid flow. The amount of urea secreted with parotid saliva was directly related to the salivation rate. To calculate the urea secretion in parotid saliva, a multiple linear regression model was developed from computer-calculated parotid flows over 1-min periods and plasma urea concentration. The model was accurate because the plot of calculated vs measured values was not significantly different from the line of identity. The daily parotid urea N varied from .35 to 1.02 g among ewes. The higher urea secretion rate found during rumination and eating (1.32 +- .42 and .98 +- .33 mg/min, respectively) vs during rest (.60 +- .39 mg/min, P < .05) was due to higher salivation rates (5.17 +- 1.46, 3.56 +- .90, and 2.04 +- .52 mL/min, respectively, P < .05) rather than to changes

in saliva urea concentrations (saliva:plasma urea ratio = .65 +- .04, .67 +- .04, and .68 +- .03, respectively). Of the daily parotid urea output, 40.8% was secreted during rest. The contribution of parotid urea N to the ruminal N pool was relatively small (1.2 to 3.7% of the N intake, which was 23.0 to 33.6 g/d). These techniques allowed direct and precise measurements of parotid urea secretion without disturbing the animal or altering the physiological regulation of salivary secretion
Descriptors:bilateral parotid flow; feeding behavior. Mathematical Biology (Computational Biology); Dental and Oral System (Ingestion and Assimilation); Methods and Techniques. urea: parotid secretion
Organism Descriptors:sheep (Bovidae): ewe, female. blood: blood and lymphatics; jaw: dental and oral system, movements, skeletal system; parotid duct: dental and oral system; saliva: dental and oral system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Mathematical Biology (Computational Biology); Dental and Oral System (Ingestion and Assimilation); Methods and Techniques
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Suppressor activity of bone marrow cells and localization of fluorescent-labeled bone marrow cells within ovine endometrial tissue
View Article: Journal of Animal Science. 78 (3). March, 2000. 709-717
CD Volume:318
Print Article: Pages: 709-717
Author(s):Segerson E C Beetham P K
Author Affiliation:Department of Animal Science, North Carolina A and T State University, Greensboro, NC, 27411
Language:English
Language of Summary:English (EN)
Abstract:Numbers of fluorescein isothiocyanate (FITC)-labeled bone marrow (BM) cells of donor lambs were quantified within endometrial cell suspensions following their administration to ovariectomized (OVX; control-and estradiol-17beta-treated) and intact (estrus, d-14 cyclic and pregnant) ewes. The numbers of fluorescent BM cells were greater (P < .05) for the estrous and d-14 cyclic ewes than for both groups of OVX ewes. Fractionation of the endometrial cells with Percoll revealed that the majority of fluorescent cells were low-density (1.002 to 1.056 g/mL) cells. In coculture experiments, low-density cells from lamb BM not only suppressed the incorporation of thymidine into phytohemagglutinin-treated peripheral blood lymphocytes, but the cells also released suppressor factor into the culture medium. Suppressor activity tended to be reversed (P < .1) by a pan-specific neutralization antibody to transforming growth factor-beta (TGF-beta); however, the activity was unaffected by a neutralization antibody to TGF- beta2. These findings suggest that ovine endometrial suppressor cells may represent a population of low-density BM-derived natural suppressor cells, and their trafficking and localization patterns may depend on an ovarian factor(s). Further, suppressor activity does not seem to be mediated by TGF-beta2
Descriptors:estrous; immunosuppression. Animal Husbandry (Agriculture); Immune System (Chemical Coordination and Homeostasis); Reproductive System (Reproduction); Blood and Lymphatics (Transport and Circulation). TGF-beta [transforming growth factor-beta]; fluorescein isothiocyanate: diagnostic-drug; pan-specific neutralization antibody; thymidine

Organism Descriptors:sheep (Bovidae): ewe, female, intact, lamb, ovariectomized. bone marrow cell: blood and lymphatics, immune system; endometrium: reproductive system; ovary: reproductive system; peripheral blood lymphocyte: blood and lymphatics, immune system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Immune System (Chemical Coordination and Homeostasis); Reproductive System (Reproduction); Blood and Lymphatics (Transport and Circulation)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Ruminal fermentation and duodenal flow following progressive inoculations of fauna-free wethers with major individual species of ciliate protozoa or total fauna
View Article: Journal of Animal Science. 78 (3). March, 2000. 750-759
CD Volume:318
Print Article: Pages: 750-759
Author(s):Ivan M Neill L Entz T
Author Affiliation:Lethbridge, AB
Language:English
Language of Summary:English (EN)
Abstract:Naturally fauna-free (FF) wethers, equipped with ruminal and duodenal cannulas, were used in two groups of eight (Group A) and seven (Group B) animals in six consecutive experimental periods, each lasting for 28 d. The objective was to measure ruminal fermentation traits, and flows of nonammonia nitrogen (NAN), total amino acid (TAA), and bacterial nitrogen (BN) from the stomach after inoculation with individual ciliate protozoa species in each period. The wethers in both groups were fed a diet based on corn silage, haylage, and soybean meal, and they remained FF during the first period. At the beginning of each other period, the wethers were progressively inoculated intraruminally with one individual major species of ruminal ciliate protozoa or total fauna (TF). Thus, Group A was progressively inoculated (+) with Dasytricha ruminantium (DS), Polyplastron multivesiculatum (PP), Isotricha intestinalis (IS), Entodinium caudatum (EN) and TF-type A. Also, Group B was progressively inoculated (+) with IS, DS, Epidinium ecaudatum (EP), Eudiplodinium maggi (EU), and EN. Duodenal digesta and ruminal fluid were collected and sampled in each period on d 26 and 28, respectively, and subjected to chemical analyses. A significantly higher ($P < .05$) pH (6.4) in ruminal fluid of the Group A wethers was obtained when each DS, DS+PP, DS-PP-IS+EN, and TF population was present in the rumen than when the wethers were FF (6.2). In the Group B wethers, pH (6.1) was lower ($P < .05$) for the population of IS-DS-EP+EU than for other populations (6.2 to 6.3). The concentration of total VFA in ruminal fluid was higher ($P < .05$) in the Group B wethers when IS, IS+DS, or IS-DS+EP populations were present in the rumen than when the wethers were FF. The flow of NAN, TAA, and BN from the stomach to the intestinal tract was generally lower for different protozoa populations than for the FF period. Largest decreases ($P < .05$) in the flow of NAN, TAA, and BN occurred when EN was added into the rumen of wethers in the A and B groups, which already contained populations of DS-PP+IS and IS-DS-EP+EU, respectively. Holotrich protozoa had very little effect on the protein metabolism in the rumen, but cellulolytic protozoa (PP, EP, and EU) and EN decreased the efficiency of protein utilization by the ruminant host

Descriptors:protein metabolism; ruminal fermentation; total fauna-type A. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism. nitrogen: bacterial; nonammonia nitrogen; total amino acid
Organism Descriptors:Dasytricha ruminantium (Ciliata); Entodinium caudatum (Ciliata); Epidinium ecaudatum (Ciliata); Eudiplodinium maggi (Ciliata); Isotricha intestinalis (Ciliata); Polyplastron multivesiculatum (Ciliata); sheep (Bovidae): male, naturally fauna-free, wether. duodenum: digestive system; rumen: digestive system; stomach: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Ciliata: Protozoa, Invertebrata, Animalia. Animals; Artiodactyls; Chordates; Invertebrates; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Protozoans; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effects of diet forage:concentrate ratio and metabolizable energy intake on visceral organ growth and in vitro oxidative capacity of gut tissues in sheep
View Article: Journal of Animal Science. 78 (3). March, 2000. 760-770
CD Volume:318
Print Article: Pages: 760-770
Author(s):McLeod K R Baldwin R L VI
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Language:English
Language of Summary:English (EN)
Abstract:We used 28 crossbred wether lambs to determine the effects of dietary forage:concentrate ratio and metabolizable energy intake on visceral organ growth and oxidative capacity of gut tissues in lambs. Lambs were assigned randomly to a factorial arrangement of dietary treatments consisting of pelleted diets containing either 75% orchardgrass or 75% concentrate fed once daily at either .099 or .181 Mcal MEcntdot(kg BW.75)-1cntdotd-1. After a 52-d feeding period, lambs were slaughtered to obtain measurements of visceral organ mass and composition and oxidative capacity of isolated epithelial cells. Lamb performance, as measured by DMI, ADG, and efficiency of gain, was greater (P = .0001) for both diets at high ME intake. Likewise, lambs fed 75% concentrate gained faster and more (P ltoreq .01) efficiently than lambs fed 75% forage. Total digestive tract (TDT; includes rumen, reticulum, omasum, abomasum, and intestines) weight increased (P = .0001) with ME intake and was greater (P = .03) in lambs fed 75% forage than in those fed 75% concentrate. As a percentage of empty body weight (EBW), TDT weight increased with ME intake in lambs fed 75% forage, but it was unaffected by ME intake in lambs fed 75% concentrate (diet X intake, P = .03). Liver weight increased (P = .0001) with ME intake and was greater (P = .005) in lambs fed 75% concentrate vs 75% forage; however, liver weight as a percentage of EBW was increased (P = .0002) with ME intake but was unaffected by diet. Greater ME intake increased (P ltoreq .02) small intestinal (SI) epithelial and muscle mass of 15-cm sections, whereas jejunal epithelial mass was greater (P = .01) for lambs fed 75% forage vs 75% concentrate. Rumen epithelial concentrations of DNA and RNA increased (P ltoreq .02) with greater ME intake, whereas SI concentrations of DNA and RNA were largely unaffected by diet or ME intake. The activity of Na+-K+-ATPase increased in ileal epithelium

(P ltoreq .02) with ME intake and concentrate in the diet, but activity in ruminal epithelium increased (P = .05) with concentrate. Total oxygen consumption by isolated ruminal and intestinal epithelial cells was unaffected by treatment. These data suggest that ME intake and level of dietary forage affect ruminal and intestinal growth via changes in cellular hyperplasia. Additionally, this study supports the concept that ME intake and diet composition alter gut energy expenditure, at least in part, through changes in mass rather than mass specific metabolism
Descriptors:concentrate: animal feed; diet composition; diet forage:concentrate ratio; gut energy expenditure; gut oxidative capacity; metabolizable energy intake; orchardgrass: animal feed; visceral organ growth. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition
Organism Descriptors:sheep (Bovidae): crossbred, lamb, wether. digestive tract: digestive system; ileum: digestive system; intestine: digestive system; liver: digestive system; rumen: digestive system; small intestine: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effects of diet forage:concentrate ratio and metabolizable energy intake on isolated rumen epithelial cell metabolism in vitro
View Article: Journal of Animal Science. 78 (3). March, 2000. 771-783
CD Volume:318
Print Article: Pages: 771-783
Author(s):Baldwin R L VI McLeod K R
Author Affiliation:Bldg. 162, Rm. 204c, BARC-East, Beltsville, MD
Language:English
Language of Summary:English (EN)
Abstract:Crossbred wether lambs were used to assess the effect of altered forage:concentrate ratio and metabolizable energy intake on metabolism of substrates by ruminal epithelium using an isolated cell system. Lambs (n = 28; 20.1 +- 3 kg BW) were assigned randomly to a factorial arrangement of dietary treatments consisting of either 75% forage or 75% concentrate fed once daily at either .099 or .181 Mcal MEcntdot(kg BW.75)-1cntdotd-1 for 52 d. After a 52-d feeding period, isolated rumen epithelial cells (IREC) were incubated in the presence of an oxidizable substrate with a single 14C label (acetate, propionate, butyrate, glucose, glutamate, and glutamine) at concentrations ranging from .1 to 50 mM, and substrate oxidation to 14CO2 or metabolism to beta-hydroxybutyrate (beta-HBA), acetoacetate, pyruvate, and lactate was determined. For all substrates, oxidation to CO2 was concentration-dependent and saturable within the physiological range. Differences in substrate oxidation to CO2 by IREC at specific substrate concentrations did not affect Vmax (maximal rate of substrate oxidation, nmol oxidized to CO2cntdot1 X 106 cells-1cntdot90 min-1) and Kox (concentration of substrate at which half Vmax oxidation rate is achieved, mmoles/L) estimates for the dietary treatments. Production of beta- HBA from butyrate by IREC from the lambs fed 75% forage was not affected by ME intake; however, production was elevated by high ME intake of the 75% concentrate diet (diet X intake interaction; P < .02). Acetoacetate production from butyrate by IREC from lambs fed at high ME intake was greater (P =

.001) than from those fed at low ME intake. Lactate and pyruvate production from glucose, glutamate, and propionate were generally unaffected by dietary treatment; however, rate of glutamine metabolism to lactate and pyruvate by IREC was increased with increased ME intake. The observed changes in metabolite production rates across groups did not affect the predicted Vmax and Kox parameter estimates. The estimated Kox values corroborate that VFA are the primary oxidizable fuels used by ruminal epithelial cells while illustrating that other substrates such as glucose, glutamate, and glutamine would not be expected to be oxidized extensively in vivo due to the high Kox relative to substrate concentrations in vivo. In conclusion, the capacity of isolated ruminal epithelial cells to oxidize substrates was largely unaffected by ME intake or dietary forage:concentrate ratio of the diet
Descriptors:concentrate: animal feed; diet composition; diet forage:concentrate ratio; forage: animal feed; metabolizable energy intake; oxidation. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition. glucose; glutamate; glutamine; lactate; pyruvate
Organism Descriptors:sheep (Bovidae): crossbred, lamb, wether. rumen: digestive system; rumen epithelial cell: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Metabolism; Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Polyethylene glycol as a means for reducing the impact of condensed tannins in carob pulp: Effects on lamb growth performance and meat quality
View Article: Journal of Animal Science. 78 (4). April, 2000. 810-816
CD Volume:318
Print Article: Pages: 810-816
Author(s):Priolo A Waghorn G C Lanza M Biondi L Pennisi P
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Language:English
Language of Summary:English (EN)
Abstract:We conducted an experiment to evaluate the effects that a diet containing condensed tannins with and without polyethylene glycol (PEG) has on lamb growth and meat quality. Twenty-three male Comisana lambs were introduced to the three experimental diets between 45 and 50 d of age. Eight were given a diet containing 56% of Ceratonia siliqua (carob) pulp (tannin group), another eight received the same diet with a supplement of 40 g of PEG for each kilogram of diet (PEG group), and the remaining seven lambs were given a conventional maize-based diet (maize group). Voluntary feed intake and live weights were measured until slaughter at 105 d of age, and digestibility measurements were undertaken toward the end of the feeding trial. Carcass yield, meat quality characteristics, and a taste panel evaluation were conducted. The tannin-based diet contained 2.5% condensed tannins (DM basis), and lambs given this diet had lower growth rates and poorer feed efficiencies ($P < .01$) compared with the other treatment groups. Daily gain was similar between the maize and PEG lambs, although the efficiency of feed conversion was highest in the maize group. The digestibility of DM, N, and fiber was reduced ($P < .05$) by the condensed tannins. Lambs

fed the tannin diet had a lower carcass yield (P < .05) and had less fat (P < .05), and the meat had a higher ultimate pH (P < .01) than those given the PEG or maize diets. Condensed tannins affected meat color, which was lighter (L*) than meat from lambs given the PEG-containing diet (P < .01). Sensory evaluation showed that panelists preferred meat from lambs receiving PEG and maize treatments compared with those receiving the tannin diet, and this could be related to differences in meat ultimate pH and carcass fatness. These results show that condensed tannins from carob pulp are very detrimental to feed digestibility and lamb performance. Inclusion of 40 g of PEG/kg diet eliminated the effects of condensed tannins so that lamb performance and meat quality were similar to lambs given a maize-based diet
Descriptors:carcass fatness; carcass yield; carob pulp: animal feed; daily gain; feed conversion; growth rate; lamb: meat, pH; maize-based diet. Animal Husbandry (Agriculture). condensed tannins: dietary, digestibility; polyethylene glycol: feed additive
Organism Descriptors:Ceratonia siliqua (Leguminosae); sheep (Bovidae): breed-Comisana, lamb, male
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Leguminosae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Animals; Artiodactyls; Chordates; Dicots; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Plants; Spermatophytes; Vascular Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Response to 13 generations of selection for increased 8-week body weight in lines of mice carrying a sheep growth hormone-based transgene
View Article: Journal of Animal Science. 78 (4). April, 2000. 832-845
CD Volume:318
Print Article: Pages: 832-845
Author(s):Siewerdt F Eisen E J Murray J D Parker I J
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Language:English
Language of Summary:English (EN)
Abstract:The purpose of this study was to evaluate selection in lines of transgenic mice. Two replicates of lines that either carried or did not carry the sheep metallothionein-1a sheep growth hormone transgene (oMt1a-oGH) were established. The host lines had been previously selected for rapid growth or selected randomly. Within-litter selection for increased 8-wk body weight was carried out for 13 generations. The frequency of oMtla-oGH was monitored in all generations in the transgenic lines, but no genotypic information regarding the transgene was used as an aid to selection. The oMtla-oGH was activated from weaning, at 3 wk, until 8 wk of age by adding ZnSO4 to the drinking water. Zinc stimulation of the transgene was not done during mating, gestation, or lactation. Data on body weights and weight gains were analyzed with a conventional mixed model and with an animal model. Genetic progress was achieved in all lines subjected to directional selection. In the control background, response to selection for 8-wk body weight was larger in the nontransgenic lines than in the transgenic lines, whereas no difference was found in the selected background. The frequency of the transgene was increased from the initial .5 to .62 in the randomly selected background but decreased to .04 in lines from a selected

background. The REML estimates of variance components and genetic gain estimates varied greatly between the two methods. In general, there was better agreement between the realized heritability estimates and the heritability estimates obtained from the conventional mixed model analysis than between realized heritability estimates and results obtained using the animal model. Favorable correlated responses were obtained for 3- and 6-wk body weights and on 3- to 6- and 6- to 8-wk weight gains. Correlated responses to selection were larger in the selected than in the nonselected background but were not affected by the presence of the transgene. Results suggest that constructs similar to the oMt1a- oGH, which allows tight regulation, may be successfully incorporated into commercial livestock and should have larger effects in populations that have not been subject to selection
Descriptors:body weight; heritability estimates. Molecular Genetics (Biochemistry and Molecular Biophysics). sheep metallothionein-1a sheep growth hormone transgene (Bovidae)
Organism Descriptors:mouse (Muridae): animal model, transgenic
Supplemental Descriptors:Muridae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia. Animals; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Rodents; Vertebrates
Subject Codes:Molecular Genetics (Biochemistry and Molecular Biophysics)
ISSN:0021-8812
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Title:Genetic parameters among weight, prolificacy, and wool traits of Columbia, Polypay, Rambouillet, and Targhee sheep
View Article: Journal of Animal Science. 78 (4). April, 2000. 846-858
CD Volume:318
Print Article: Pages: 846-858
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Language:English
Language of Summary:English (EN)
Abstract:Genetic parameters for Columbia, Polypay, Rambouillet, and Targhee sheep were estimated using REML with animal models for prolificacy, weight, and wool traits. All bivariate analyses included a covariance between additive genetic effects for the two traits plus appropriate additional covariances. Number of observations by breed ranged from 5,140 to 7,095 for prolificacy traits, from 7,750 to 9,530 for weight traits, and from 4,603 to 34,746 for wool traits. Heritability estimates ranged from .03 to .11 for prolificacy traits (litter size at birth and litter size at weaning), from .09 to .26 for weight traits (birth weight and average daily gain), and from .25 to .53 for wool traits (fleece weight, fleece grade and staple length). Estimates of direct genetic correlations among prolificacy and among weight traits were positive and ranged from .58 to 1.00 and .18 to 1.00, respectively. Estimates of direct genetic correlation between fleece weight and staple length were positive (.50 to .70) but were negative between fleece weight and fleece grade (-.60 to -.34) and between staple length and fleece grade (-.72 and -.40). Prolificacy and wool traits were essentially uncorrelated. Weight and prolificacy traits were slightly positively correlated. Weight traits had a moderate positive direct genetic correlation with fleece weight and staple length, but were uncorrelated with fleece grade. These estimates of genetic parameters between prolificacy, weight, and wool

traits can be used to construct multiple-trait selection indexes for dual-purpose sheep
Descriptors:average daily gain; birth litter size; birth weight; breed difference; fleece grade; fleece weight; heritability estimates; staple length; weaning litter size. Animal Husbandry (Agriculture); Genetics
Organism Descriptors:sheep (Bovidae): breed-Columbia, breed-Polypay, breed-Rambouillet, breed-Targhee
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Genetics
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Hand-feeding and gentling influence early-weaned lambs' attachment responses to their stockperson
View Article: Journal of Animal Science. 78 (4). April, 2000. 879-884
CD Volume:318
Print Article: Pages: 879-884
Author(s):Boivin X Tournadre H Le Neindre P
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Language:English
Language of Summary:English (EN)
Abstract:Artificially reared herbivores are highly dependent on the stockperson at an early age in order to learn to drink from an artificial milk provider. This period of training may be a determinant for the animals' subsequent responses toward humans. However, long-term responses may also depend on the human contact (e.g., visual, physical interactions, gentling, and handling) provided to the young lambs after this training period. We examined whether different levels of subsequent contact (no visual and physical contact, stroking, and feeding reward) affect long-term attachment responses of lambs to the caretaker that provided the subsequent contact, after a common initial training period for artificial feeding provided by another person. Ewe lambs (n = 45) were artificially reared from multinippled buckets in groups of three. All the lambs were trained by a stockperson (S1) to suck from the bucket (4.4 +- .3 sessions of 3 min per animal for the first 2 d of life). Subsequently, 15 lambs received no further human contact (T0). Fifteen other lambs received only stroking from a second stockperson (S2) for 6 min three times a day during the first 4 wk (T1). The remaining 15 lambs (T2) were stroked and bottle-fed by S2 during the same posttraining period as for T1. Tests were performed at 4, 6 (just before weaning), 9, and 13 wk of age in an unfamiliar arena marked in a grid pattern. The test procedure included three successive parts: 1) isolation for 1 min; 2) S2 presence for 2 min; and 3) isolation for 1 min. The T0 lambs spent a similar amount of time in the grid square close to S2 regardless of whether he was present. The T1 and T2 lambs spent more time close to S2 than T0 ($P < .01$), and T2 spent more time close than T1 ($P < .05$). In the presence of S2, T2 vocalized less ($P < .01$) than T0, and T1 did not differ from either T2 or T0. The T2 lambs also crossed fewer squares than T0. When S2 left the arena, T2 vocalized more ($P < .01$) than T0 and more ($P < .05$) than T1, and T1 had a tendency to vocalize more ($P = .08$) than T0. Differences persisted with increasing age. Human contact, especially stroking and feeding, during the 4 wk following initial training strongly and durably influenced the lambs' response

not only to the appearance but also to the disappearance of a familiar stockperson. This last result supports the idea that lambs could form a social bond with their stockperson
Descriptors:attachment behavior; hand-feeding; lamb-stockperson social bonding; stroking. Animal Husbandry (Agriculture); Behavior
Organism Descriptors:sheep (Bovidae): ewe, female, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Behavior
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Adrenal function in Angora goats: A comparative study of adrenal steroidogenesis in Angora goats, Boer goats, and Merino sheep
View Article: Journal of Animal Science. 78 (4). April, 2000. 1036-1046
CD Volume:318
Print Article: Pages: 1036-1046
Author(s):Engelbrecht Y Swart P
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Language:English
Language of Summary:English (EN)
Abstract:South African Angora goats (Capra aegagrus) are susceptible to stress conditions, possibly due to adrenal cortex malfunction. Selection for mohair production may reduce adrenal function and decrease cortisol production. Secretion of cortisol by the adrenal cortex is essential for the induction of several gluconeogenic enzymes that enable animals to survive stressful conditions, and adrenocortical insufficiency, therefore, precipitates a vulnerability to stress. In this study, Angora goats were compared with two breeds generally accepted as hardy, Boer goats (Capra hircus) and Merino sheep (Ovis aries). Adrenal steroidogenesis was studied using subcellular fractions prepared from the adrenal glands of freshly slaughtered animals. Adrenal microsomes and mitochondria were incubated with the relevant steroid substrates, and products were analyzed and quantified with TLC, HPLC, or RIA. Subsequently, the activity of individual enzymes involved in this pathway were further investigated. The cytochrome P450 content in the preparations was also compared. The results from these studies indicated that the activity of the cytochrome P450c17 enzyme in Angora goats differed ($P < .01$) from that of the other species investigated. This difference may contribute to the cause of the observed hypoadrenocorticism in Angora goats
Descriptors:adrenal steriodogenesis; breed difference. Enzymology (Biochemistry and Molecular Biophysics); Endocrine System (Chemical Coordination and Homeostasis). cortisol: adrenal production; cytochrome P450; cytochrome P450c17 enzyme; hydrocortisone
Organism Descriptors:Capra aegagrus (Bovidae); Capra hircus (Bovidae); Ovis aries (Bovidae). adrenal cortex: endocrine system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Enzymology (Biochemistry and Molecular Biophysics); Endocrine System (Chemical Coordination and Homeostasis)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Absorption of 2-hydroxy-4-(methylthio)butanoic acid by isolated sheep ruminal and omasal epithelia
View Article: Journal of Animal Science. 78 (4). April, 2000. 1078-1083
CD Volume:318
Print Article: Pages: 1078-1083
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Language:English
Language of Summary:English (EN)
Abstract:Alimet (Novus Inter., Inc., St. Louis, MO) feed supplement (an 88% aqueous solution of 2-hydroxy-4-(methylthio) butanoic acid; HMB) is a source of L-Met commonly used in nonruminants and ruminants. The absorption of HMB across ovine omasal and ruminal epithelia was evaluated in this study. Ruminal and omasal epithelia were collected from eight lambs (BW = 67.6 kg +- 9.1) and mounted in parabiotic chambers that were repeatedly sampled throughout a 60- min incubation. The appearance of HMB (using DL-(5-14C)-HMB as a radiolabeled marker) in serosal buffers increased quadratically (P < .004) with time in both tissues. More (P < .001) HMB appeared in the serosal buffers with omasal than with ruminal epithelia. Both tissues responded similarly, and, after 60 min of incubation, the accumulation of HMB within the tissues increased linearly (P < .001) as substrate concentration (.375, .75, 1.5, 3.0, 6.0, and 12.0 mM) increased in mucosal buffers. As the concentration of HMB in the mucosal buffers increased, there was a quadratic (P < .001) increase in the appearance of HMB in the serosal buffer of the omasal epithelium, indicating some saturation of the system. The increase in serosal appearance of HMB was linear (P < .001) with ruminal tissue. The results indicate that there are probably multiple mechanisms involved in the absorption of HMB. Because saturation was observed in the omasum, it is likely that mediated transport accounts for at least a portion of the absorption of HMB in the omasum. Other mechanisms (e.g., diffusion and(or) paracellular absorption) are responsible for the balance of the absorption. Omasal epithelium appears to have a greater capacity for HMB absorption than ruminal epithelium. The enzymes involved in the conversion of HMB to 2-keto-4-(methylthio)butanoic acid were found in ruminal and omasal epithelia, liver and kidney. These results indicate that HMB can be absorbed across ruminal and omasal epithelium and that HMB can be used as a source of L-methionine
Descriptors:Digestive System (Ingestion and Assimilation). 2-hydroxy-4-(methylthio)butanoic acid: omasal epithelia absorption, ruminal epithelia absorption; methionine
Organism Descriptors:sheep (Bovidae): lamb. omasal epithelium: digestive system; ruminal epithelium: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Digestive System (Ingestion and Assimilation)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Body weight and tissue gain in lambs fed an all-concentrate diet and implanted with trenbolone acetate or grazed on alfalfa
View Article: Journal of Animal Science. 78 (5). May, 2000. 1117-1124

CD Volume:318
Print Article: Pages: 1117-1124
Author(s):McClure K E Solomon M B Loerch S C
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Language:English
Language of Summary:English (EN)
Abstract:Targhee X Hampshire lambs (average BW 23 +- 1 kg) were used in two experiments to determine the effects of finishing on concentrate with an anabolic implant or forage grazing after concentrate feeding on growth, organ and viscera weights, and carcass tissue accretion. In Exp. 1 and 2 lambs were penned by sex and assigned for slaughter at initial (23 kg), intermediate (37 kg), or end BW (ewes, 47.7; wethers 50.4 kg). From 23 to 37 kg BW, lambs were fed all-concentrate diets in drylot (DL) or grazed on alfalfa (ALF). Experiment 1 was a 2 X 2 factorial with 28 lambs; factors were wether vs ewe lambs and unimplanted vs DL implanted with trenbolone acetate-estradiol benzoate. There were no differences in organ and viscera weights due to implant status. However, ADG (P < .03) and lean gain (P < .02) were greater for implanted than for unimplanted wethers (507 vs 357 g and 1,314 vs 656 g, respectively). Ewes did not respond to the implant. Fat accretion was not affected by implantation. Experiment 2 was a 2 X 3 factorial with 42 lambs; factors were wether vs ewe lambs and drylot during growing and finishing phases (DL-DL) vs drylot during growing and alfalfa grazing during finishing (DL-ALF) vs alfalfa grazing during growing and finishing phases (ALF-ALF). In Exp. 2, ADG of DL-DL lambs was greater (P < .01) than ADG of DL-ALF or ALF-ALF lambs. Lambs on ALF- ALF had smaller (P < .05) livers and rumen/reticulum weights but heavier (P < .04) kidney, omasum, small and large intestine, and cecum weights than those on DL. In Exp. 2, DL-ALF and ALF-ALF lambs had overall hindsaddle lean gain equal to those on DL-DL with less mesenteric fat and 100 g less separable fat. Finishing lambs on alfalfa reduced fat accretion without decreasing lean accretion, whereas trenbolone acetate implants for lambs fed concentrate increased BW gain and lean accretion without affecting fat accretion
Descriptors:alfalfa grazing; average daily gain; concentrate diet; fat accretion; lean gain. Animal Husbandry (Agriculture). trenbolone acetate-estradiol benzoate: growth promotant, implant administration
Organism Descriptors:sheep (Bovidae): breed-Targhee x Hampshire, ewe, female, lamb, male, wether
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Duration of the seasonal anestrus in sheep selected for fertility in a fall-lambing system
View Article: Journal of Animal Science. 78 (5). May, 2000. 1149-1154
CD Volume:318
Print Article: Pages: 1149-1154
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Language:English
Language of Summary:English (EN)
Abstract:Crossbred ewes (1/2 Dorset, 1/4 Rambouillet, and 1/4 Finnsheep) from a flock being selected for spring fertility, defined as ability to lamb following ram exposure in May and June in Virginia (37degree N latitude), were used to study the duration of the seasonal anestrus. In the first 3 yr of the study (1992, 1993, and 1995), mature ewes were divergently selected based on EBV for fertility, and the duration of anestrus was measured by continuously exposing the ewes to vasectomized rams equipped with marking harnesses from mid-January until approximately August 1. Only ewes that had lambed in the previous fall were used to ensure that ewes were in a comparable physiological state, and the same rams remained with the ewes in each year to avoid induction of estrus by introduction of novel rams. The duration of anestrus in high-fertility ewes (n = 26; mean fertility EBV of 12.6%) was 28.4, which was significantly less than the 70.2 d of anestrus observed for low-fertility ewes (n = 15; mean fertility EBV of .3%). Five high-fertility ewes did not exhibit a period of anestrus. The regression of number of days of anestrus on fertility EBV was -2.15 +- .72 d/%. In yr 4 (1997), 11 high-fertility and two low-fertility ewes were evaluated. None of these ewes exhibited a clear seasonal anestrus; six unequivocally cycled continuously. Between January 23 and July 31, the mean duration of anestrus for these ewes was only approximately 11 d. The duration of anestrus for high-fertility ewes seems to be the shortest reported for temperate sheep breeds
Descriptors:fall-lambing system; seasonal anestrus; spring fertility.
Animal Husbandry (Agriculture); Reproduction
Organism Descriptors:sheep (Bovidae): breed-Dorset x Rambouillet x Finnsheep, ewe, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Reproduction
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Genetic correlations for daily gain between ram and ewe lambs fed in feedlot conditions and ram lambs fed in Pinpointer units
View Article: Journal of Animal Science. 78 (5). May, 2000. 1155-1158
CD Volume:318
Print Article: Pages: 1155-1158
Author(s):Van Vleck L D Leymaster K A Jenkins T G
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Language:English
Language of Summary:English (EN)
Abstract:When performance is recorded in automated facilities that measure feed intake of individual lambs that are penned in a group, such as Pinpointer units, a legitimate question is the degree to which daily gain is genetically correlated with daily gain achieved under feedlot conditions. Lambs were from a composite population (1/2 Columbia, 1/4 Suffolk, and 1/4 Hampshire germplasm) and of the F2 or more advanced generations. Data were daily gains of 1,101 rams (PR) fed in Pinpointer units (11 to 17 wk of age) and 2,021 rams (FR) and 3,513 ewes (FE) fed under feedlot conditions (9- or 10-wk period starting at 9 wk of age). The FR and FE lambs were born from 1983 through 1995, whereas the PR lambs were born from 1986 through 1995. Measurements of daily gain in PR, FR, and FE lambs were considered to

represent three correlated traits. Unadjusted means were .411, .406, and .326 kg/d for PR, FR, and FE, respectively. Random effects in the model were animal direct genetic, maternal genetic, and maternal permanent environmental. Fixed effects were associated with age of dam (1 to 6 yr), type of rearing (1 to 4), and contemporary group (test date). Variances due to maternal genetic effects with single-trait analyses were near zero, so those effects were eliminated from the three-trait analysis although a random uncorrelated effect due to dam was included in the model. Estimates of heritability were .22, .14, and .23 for PR, FR, and FE, respectively, with fractions of variance due to dam effects ranging from .02 to .05. Estimates of genetic correlations were .86 for PR with FR, .83 for PR with FE, and 1.00 for FR with FE. Estimated phenotypic variances were similar for PR and FR, but one- third less for FE. The similarity of heritability estimates and estimates of genetic correlations all exceeding .83 suggest that daily gain of rams fed in Pinpointer units will reflect genetic expression for daily gain in both ram and ewe lambs fed under feedlot conditions
Descriptors:daily weight gain; feedlot conditions; heritability estimates; pinpointer units. Animal Husbandry (Agriculture); Genetics
Organism Descriptors:sheep (Bovidae): breed-Columbia x Suffolk x Hampshire, ewe, female, lamb, male, ram
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Genetics
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Self-regulation of intake of polyethylene glycol by sheep fed diets varying in tannin concentrations
View Article: Journal of Animal Science. 78 (5). May, 2000. 1206-1212
CD Volume:318
Print Article: Pages: 1206-1212
Author(s):Provenza F D Burritt E A Perevolotsky A Silanikove N
Author Affiliation:Department of Rangeland Resources, Utah State University, Logan, UT, 84322-5230
Language:English
Language of Summary:English (EN)
Abstract:Tannins occur in many plant species, and they often suppress intake by reducing nutrient availability or by causing malaise. Polyethylene glycol (PEG) binds to tannins and may thereby increase the availability of macronutrients and decrease malaise. Supplemental PEG increases intake of tannin-containing plants by sheep, goats, and cattle. Given the strong response to supplemental PEG, we speculated that animals might self-regulate their intake of PEG when offered foods high in tannins. The objective of the first experiment was to determine if the amount of supplemental PEG (0, 25, 50, 75, or 100 g; molecular weight, 3,350) affected intake by lambs of a food (milo-tannin mix) containing 20% quebracho tannin. There was a linear relationship (Y = 272 + 1.2X; R2 = .86; P = .023) between the amount of supplemental PEG ingested and the subsequent intake of milo-tannin food by lambs. The objective of the second experiment was to determine whether lambs self-regulated intake of PEG when fed a ration that contained 0, 5, 10, 15, or 20% quebracho tannin and whether they adjusted their intake of PEG when tannin was removed from the diet. There was a positive relationship between the amount of PEG ingested and intake of food and tannin (P = .0001).

Lambs fed high-tannin diets ate more PEG than controls (P = .03). Lambs fed the 20% tannin diet ate the most PEG, and controls ate the least PEG. Tannin limited intake of the diets, but PEG attenuated the response to a great degree (P = .065). Immediately after tannin was removed from the ration, lambs that formerly had been fed the 20% tannin ration ate more PEG than lambs fed the other rations (P = .0075). Ten of the lambs (5 from the 20% tannin group, 1 from the 15% tannin, and 2 each from the 10 and 5% groups) continued to eat PEG for 7 d after tannin was removed from their ration. When they were tested again 6 wk after the trial and offered tannin-free diets, their intake of PEG had decreased
Descriptors:feed intake. Animal Husbandry (Agriculture); Nutrition. polyethylene glycol: self-regulated intake; tannin: dietary
Organism Descriptors:sheep (Bovidae): weanling
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:The effect of physical form of orchardgrass hay on the passage of particulate matter through the rumen of sheep
View Article: Journal of Animal Science. 78 (5). May, 2000. 1338-1354
CD Volume:318
Print Article: Pages: 1338-1354
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Language:English
Language of Summary:English (EN)
Abstract:Four Texel wethers (60 to 64 kg) fitted with ruminal and duodenal cannulas were used to study the kinetics of particulate matter in the rumen and the series of processes involved in their selection and passage. They were fed, in eight equal meals, 1,200 g of a mixture of a chopped orchardgrass hay and ground (8-mm screen) and pelleted orchardgrass hay in 90/10, 50/50, 30/70, or 10/90 ratios, according to a 4 X 4 Latin square design. The particle size distributions in feed, chewed feed, and ruminal, reticular, and duodenal digesta were determined by a wet-sieving procedure. Indigestible lignin was used as an internal marker to trace the passage of particles through the rumen. Digesta flow measurement was performed using the double-marker technique. We used a three- pool model, which partitions particles through the large, medium, and small particle pools, to determine the passage of lignin through those pools. Particle pool sizes and rumen and pool mean retention times (MRT) of lignin and of the rumen MRT of an ideal marker introduced separately in each pool were corrected for the "filter bed" effect. Grinding and pelleting of hay decreased the MRT of the indigestible lignin pool in the rumen. Particle MRT decreased and then reached a plateau with increased proportion of ground/pelleted hay in the diet. The diet with a ratio of 50/50 of chopped and ground/pelleted hay was the most favorable for the exist of particles from the rumen because of both a higher outflow rate from the rumen of particles eligible to exit and a sufficient comminution rate of larger particles to supply particles that were able to pass. For all diets, the large-particle comminution rate was always higher than the small-particle outflow rate, indicating that comminution was not the

limiting step for passage. These results were the consequence of the curvilinear and opposite evolutions of both the particulate lignin pool in, and outflow from, the rumen. Those results contribute to an improved explanation of the mechanisms involved in the outflow of particles from the rumen
Descriptors:digesta flow rate; orchardgrass hay: animal feed, chopped, ground, pelleted. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation)
Organism Descriptors:orchardgrass (Gramineae); sheep (Bovidae): breed-Texel, male, wether. rumen: digestive system, particulate matter passage
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Animals; Artiodactyls; Chordates; Mammals; Monocots; Nonhuman Mammals; Nonhuman Vertebrates; Plants; Spermatophytes; Vascular Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Net portal appearance of volatile fatty acids in sheep intraruminally infused with mixtures of acetate, propionate, isobutyrate, butyrate, and valerate
View Article: Journal of Animal Science. 78 (5). May, 2000. 1372-1379
CD Volume:318
Print Article: Pages: 1372-1379
Author(s):Kristensen N B Pierzynowski S G Danfaer A
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Language:English
Language of Summary:English (EN)
Abstract:The net portal appearance of volatile fatty acids (VFA) was investigated in four ruminally fistulated and multicatheterized sheep. During the experiments, the sheep were fed once every hour for 14 h and intraruminally infused with mixtures of VFA for the 12 h commencing 2 h after the initiation of the hourly feeding protocol. Paired arterial and portal blood samples were obtained hourly during the last 6 h of the experiments. In the control treatment (1), only water was infused intraruminally. In Treatments 2 through 4, the intraruminal infusion rates of propionate (40 mmol/h), isobutyrate (5 mmol/h), and valerate (5 mmol/h) were unchanged. In Treatments 2, 3, and 4, the acetate infusion rate was 100, 60, and 20 mmol/h, respectively, and the butyrate infusion rate was 10, 30, and 50 mmol/h, respectively. Thus, the infusion rate of VFA carbon was constant across Treatments 2 through 4. Portal recovery estimated from the increased net portal appearance in Treatments 2 through 4 compared to the control treatment was 85% for propionate and 60% for isobutyrate, and these recoveries were unaffected by treatment. The portal recovery of butyrate increased (from 21 to 32%) with increasing infusion rate of butyrate and decreasing infusion rate of acetate, as did the portal recovery of valerate (from 14 to 31%). The portal recovery of acetate was 55%, when measured as net portal appearance. Thus, it seems that the capacity for beta-oxidation in ruminal epithelium is limited, which would explain the increasing portal recovery of butyrate and valerate with increasing infusion rate of butyrate, when infusion rate of VFA carbon is unchanged

Descriptors:Animal Husbandry (Agriculture); Metabolism. acetate: portal recovery; butyrate: portal recovery; isobutyrate; propionate: portal recovery; valerate: portal recovery
Organism Descriptors:sheep (Bovidae): breed-Leicester, ewe, female, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Metabolism
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Net flux of nonesterified fatty acids, cholesterol, triacylglycerol, and glycerol across the portal-drained viscera and liver of pregnant ewes
View Article: Journal of Animal Science. 78 (5). May, 2000. 1380-1388
CD Volume:318
Print Article: Pages: 1380-1388
Author(s):Freetly H C Ferrell C L
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Language:English
Language of Summary:English (EN)
Abstract:The objective of this study was to determine the pattern of nutrient flux across portal-drained viscera (PDV) and liver in ewes with varying numbers of fetuses. Catheters were placed in the hepatic portal vein, a branch of the hepatic vein, a mesenteric vein, and the abdominal aorta of each ewe. Plasma flow and net cholesterol, nonesterified fatty acids (NEFA), and glycerol release across the PDV and liver were determined prior to exposure to rams. Ewes were subsequently mated. Two ewes were not pregnant, six ewes gave birth to singles, and 11 ewes gave birth to twins. Additional measurements were taken 103, 82, 61, 39, 19, and 6 d before parturition. There was a net PDV uptake of nonesterified cholesterol in the nonpregnant ewes and a net release in the ewes with singles and twins. Net nonesterified cholesterol hepatic release did not differ with days from parturition (P = .77). There was a net hepatic release of nonesterified cholesterol in the ewes with twins and a net hepatic uptake in the ewes with singles and in nonpregnant ewes (P = .03). There was a net PDV release of NEFA; however, it did not differ with litter size (P = .59) or days from parturition (P = .63). Hepatic NEFA uptake increased with litter size (P = .03) and increased as gestation progressed (P = .006). There was an interaction (P = .04) between litter size and days from parturition for net PDV glycerol release. Net PDV glycerol release in the nonpregnant ewes decreased over time, but release in pregnant ewes tended to increase over time. Hepatic glycerol uptake increased with litter size and increased as gestation progressed. There was a net PDV uptake of triacylglycerol, but it did not differ with litter size (P = .11) or with days from parturition (P = .06). There was a net hepatic release of triacylglycerol, but it did not differ with litter size (P = .59) or with days from parturition (P = .67). Liver utilization of glycerol and NEFA as substrates for metabolism increases as pregnancy progresses. In the nonpregnant ewe, the combined contribution of glycerol and NEFA carbon accounted for 10% of the carbon taken up by the liver, and in ewes pregnant with twins, the combined contribution accounted for 42% of the carbon uptake 19 d before parturition. In conclusion, these data demonstrate NEFA are an important metabolite

when determining carbon balance across the liver and their relative contribution to carbon balance increases as pregnancy progresses
Descriptors:days from parturition; litter size; pregnancy. Animal Husbandry (Agriculture); Metabolism. carbon; cholesterol; glycerol; nonesterified fatty acids; triacylglycerol
Organism Descriptors:sheep (Bovidae): breed-Dorset, ewe, female. liver: digestive system, nutrient flux pattern; viscera: nutrient flux pattern, portal-drained
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Metabolism
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Evaluation of Dorset, Finnsheep, Romanov, Texel, and Montadale breeds of sheep: I. Effects of ram breed on productivity of ewes of two crossbred populations
View Article: Journal of Animal Science. 78 (6). June, 2000. 1422-1429
CD Volume:318
Print Article: Pages: 1422-1429
Author(s):Freking B A Leymaster K A Young L D
Author Affiliation:ARS, U.S. Meat Animal Research Center, USDA, Clay Center, NE, 68933-0166: freking@email.marc.usda.gov
Language:English
Language of Summary:English (EN)
Abstract:Effects of Dorset, Finnsheep, Romanov, Texel, and Montadale breeds for performance as sires were estimated in the initial phase of a comprehensive evaluation of these breeds as contributors to sheep crossbreeding systems. Objectives were to evaluate the effects of ram breed, ewe breed, season of mating, and two-way interactions. Rams from the five breeds were single-sire-mated with ewes from two breed types to produce lambs over a 3-yr period. Ewes were assigned to one of three distinct 35-d mating seasons initiated each year in August, October, and December. A different sample of six rams per breed was used each year across all three seasons, and each ram was penned with ewes of both breeds. Traits evaluated and number of ewe records were conception rate and litter weaning weight per ewe exposed (n = 3,261) and number born, litter birth weight, average birth weight, number weaned, and litter weaning weight per ewe lambing (n = 2,751). Ram breed and ewe breed interacted (P < .01) for conception rate and litter weaning weight per ewe exposed, implicating mating preferences, particularly of Romanov rams. In mixed groups of ewes exposed to Romanov rams, conception rate was 12.7% lower and litter weight weaned was 8.4 kg lower in the ewe breed presumably less preferred for mating by the rams. On a per ewe exposed basis, Romanov-sired litters produced either the largest or the smallest values for litter weaning weight, depending on the breed of ewe. Effects of ram breed on number born and litter birth weight interacted (P < .05) with season of mating. The largest litters within each ram breed were associated with the October mating season. Montadale and Romanov rams sired larger and heavier litters from August matings than from December matings, whereas the opposite was true for Dorset-sired litters. Texel- and Finnsheep-sired litters were similar in size and weight from August and December matings. Breed of ram differences affected per ewe lambing productivity measurements (P < .01). Differences between ram breeds for ewe productivity were noted, with increased number born and improved

survival of crossbred progeny to weaning for Romanov-sired litters. These results may have implications for using these ram breeds as sires in different crossbreeding systems. Structured mating systems or the creation of new composite populations involving these breeds could be used to match the resources, environment, and market of specific production situations
Descriptors:crossbreeding; ewe productivity; ram breed effects.
Animal Husbandry (Agriculture); Reproduction
Organism Descriptors:sheep (Bovidae): breed-Dorset, breed-Finnsheep, breed-Montadale, breed-Romanov, breed-Texel
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Reproduction
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Preferences for foods varying in macronutrients and tannins by lambs supplemented with polyethylene glycol
View Article: Journal of Animal Science. 78 (6). June, 2000. 1443-1449
CD Volume:318
Print Article: Pages: 1443-1449
Author(s):Titus C H Provenza F D Perevolotsky A Silanikove N
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Language:English
Language of Summary:English (EN)
Abstract:Supplemental polyethylene glycol (PEG) increases intake when animals eat foods high in tannins, but little is known about how PEG affects preference for foods that vary in concentrations of macronutrients and tannin. We investigated how varying macronutrients and tannins (commercially available extracts from quebracho trees) affected food intake, and we assessed the degree to which PEG (MW 3350) affected intake of tannin-rich foods by sheep. From 0715 to 1800 daily, lambs were offered diets that varied in concentrations of macronutrients: high energy/low protein (75% barley/25% alfalfa), medium energy/medium protein (35% barley/65% alfalfa), and low energy/high protein (100% alfalfa). Preference for these diets was determined in the absence of tannin, and then, in Trials 1 to 3, tannin was added in increasing concentrations (from 5 to 20%) to the diets with high and medium levels of energy. In Trial 4, tannin (10%) also was added to the low-energy diet. Lambs were supplemented with either 50 g of PEG mixed with 50 g of ground barley or 50 g of ground barley alone from 0700 to 1715 daily; lambs always consumed all of these supplements. In the absence of added tannins, all lambs preferred high energy/low protein > medium energy/medium protein > low energy/high protein. As tannin levels increased, preference for the high- and medium-energy foods decreased, and all lambs preferred foods that were lower in tannins and higher in protein. Lambs supplemented with PEG ate more macronutrients and tannins than unsupplemented lambs, and the effect became increasingly apparent as tannin levels increased from Trials 1 to 4. We conclude that the effectiveness of supplemental PEG may be low if alternative forages are equal or superior in nutritional quality and contain fewer metabolites with adverse effects. In such cases, animals would likely prefer alternatives to high-tannin foods

Descriptors:dietary protein content; food preference; macronutrient content; tannin content. Animal Husbandry (Agriculture); Nutrition. polyethylene glycol: dietary supplement
Organism Descriptors:sheep (Bovidae): lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effect of individual terpenes on consumption of alfalfa pellets by sheep
View Article: Journal of Animal Science. 78 (6). June, 2000. 1636-1640
CD Volume:318
Print Article: Pages: 1636-1640
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Language:English
Language of Summary:English (EN)
Abstract:We examined effects of individual terpenes on alfalfa pellet intake of lambs in five experiments. Forty-five lambs (nine lambs/treatment) were individually fed alfalfa pellets sprayed with either p-cymene, alpha-humulene, 1,8-cineole, 3-carene, or sabinene at one of five concentrations (one terpene per experiment). Treatments (0, .5, 1, 2, and 10X) were multiples of the concentration (X) of a specific terpene in tarbush that was related to differential herbivory by livestock in previous studies. Terpenes were applied to alfalfa pellets (.64 kgcntdotlamb-1cntdotd- 1, DM basis), and consumption was measured during a 20-min interval for 5 d. Lambs were adapted to handling and pen feeding for 10 d and were maintained and fed alfalfa pellets in one group (except during 20-min tests) at a mean total daily intake of 4.7% of BW (DM basis). None of the five compounds decreased alfalfa pellet consumption during the 20-min interval. These five mono- and sesquiterpenes do not seem to be responsible for differential herbivory of individual tarbush plants by livestock
Descriptors:alfalfa pellets: animal feed, consumption; food preference. Animal Husbandry (Agriculture); Nutrition. 1,8-cineole: terpene; 3-carene: terpene; alpha-humulene: terpene; p- cymene: terpene; sabinene: terpene
Organism Descriptors:sheep (Bovidae): lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Palatability of wethers fed an 80% barley diet processed at different ages and of yearling wethers grazed on native range
View Article: Journal of Animal Science. 78 (7). July, 2000. 1779-1785
CD Volume:319

Print Article: Pages: 1779-1785
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Language:English
Language of Summary:English (EN)
Abstract:Seasonal availability of lamb in the Western United States contributes to a large fluctuation in lamb supply and value. However, alternatives to fall marketing may not be practical unless palatability traits are acceptable. A 3-yr study was conducted to investigate 1) the effects of slaughter age (7 to 8; 10 to 11; or 14 to 15 mo) on carcass and palatability characteristics of wethers fed an 80% barley diet (Exp. 1); and 2) the effects of finishing on range or on an 80% barley diet on carcass and palatability traits of 14- to 15-mo-old wethers (Exp. 2). In Exp. 1, no differences (P = .27) were detected in flavor intensity of longissimus muscle area among slaughter age groups, but fat depth was greater (P < .05) for 7- to 8-mo-old wethers than for 10- to 11- or 14- to 15-mo-old wethers. Year X slaughter age interactions were detected (P < .10) for hot carcass weight, Warner-Bratzler shear value, body wall thickness, and percentage kidney fat. Hot carcass weight was greater (P < .05) for 14- to 15-mo-old wethers than for both groups of younger wethers in yr 1, did not differ (P = .53) among slaughter ages in yr 2, and was greater (P < .05) for 10- to 11- than for 14- to 15-mo-old wethers in yr 3. Warner-Bratzler shear values did not differ (P > .10) among slaughter ages in yr 1 and 3, but shear values for 14- to 15-mo-old wethers were greater (P < .05) than for both younger slaughter age groups in yr 2. Percentage kidney fat was lower (P < .05) for 14- to 15- than for 7- to 8-mo- old wethers in all years. In Exp. 2, flavor intensity of the meat did not differ (P = .35) between finishing systems, but longissimus muscle area was greater (P = .02) for range-finished wethers than for wethers fed an 80% barley diet. Year X finishing treatment interactions were detected (P < .10) for shear values, body wall thickness, percentage kidney fat, and fat depth. Shear values were greater (P = .10) for range-finished wethers than for wethers fed an 80% barley diet in yr 1, but did not differ (P > .55) in yr 2 and 3. Body wall and fat measurements were greater (P < .10) for wethers fed an 80% barley diet than for range-finished wethers in all years except yr 3, when fat depth did not differ (P = .47). Overall, slaughtering wethers fed an 80% barley diet or range-finished wethers at older ages produced acceptable carcasses with desirable meat palatability traits
Descriptors:body wall thickness; carcass characteristics; carcass weight; kidney fat percentage; lamb: meat; meat flavor; meat palatability; meat quality. Animal Husbandry (Agriculture); Foods; Nutrition
Organism Descriptors:sheep (Bovidae): lamb, wether, yearling. longissimus muscle: muscular system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods; Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:A generalized Michaelis-Menten equation for the analysis of growth

View Article: Journal of Animal Science. 78 (7). July, 2000. 1816-1828
CD Volume:319
Print Article: Pages: 1816-1828
Author(s):Lopez S France J Gerrits W J J Dhanoa M S Humphries D J Dijkstra J
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Language:English
Language of Summary:English (EN)
Abstract:The functional form W = (W0Kc + Wftc)/(Kc + tc), where W is body size at age t, W0 and Wf are the zero- and infinite-time values of W, respectively, and K and c are constants, is derived. This new generalized Michaelis-Menten-type equation provides a flexible model for animal growth capable of describing sigmoidal and diminishing returns behavior. The parameters of the nonlinear model are open to biological interpretation and can be used to calculate reliable estimates of growth traits, such as maximum or average postnatal growth rates. To evaluate the new model, the derived equation and standard growth functions such as the Gompertz and Richards were used to fit 83 growth data sets of different animal species (fish, mice, hamsters, rats, guinea pigs, rabbits, cats, dogs, broilers, turkeys, sheep, goats, pigs, horses, and cattle) with a large range in body size. A comparative study was carried out based on mathematical, statistical, and biological characteristics of the models. The statistical goodness-of-fit achieved with the new model was similar to that of Richards, and both were slightly superior to the Gompertz. The new model differed from the others with respect to some of the estimated growth traits, but there were highly significant correlation coefficients between estimates obtained with the different models, and the ranking of animals based on growth parameters computed with the new function agreed with the rankings computed by the other models. Therefore, the new model, with its variable inflection point, was able to adequately describe growth in a wide variety of animals, to fit a range of data showing sigmoidal growth patterns, and to provide satisfactory estimates of traits for quantifying the growth characteristics of each type of animal
Descriptors:body size; growth model; growth rate. Animal Husbandry (Agriculture); Models and Simulations (Computational Biology)
Organism Descriptors:cat (Felidae); cattle (Bovidae); chicken (Galliformes): broiler; dog (Canidae); fish (Pisces); goat (Bovidae); guinea-pig (Caviidae); hamster (Cricetidae); horse (Equidae); mouse (Muridae); pig (Suidae); rabbit (Leporidae); rat (Muridae); sheep (Bovidae); turkey (Galliformes)
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Canidae: Carnivora, Mammalia, Vertebrata, Chordata, Animalia; Caviidae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia; Cricetidae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia; Equidae: Perissodactyla, Mammalia, Vertebrata, Chordata, Animalia; Felidae: Carnivora, Mammalia, Vertebrata, Chordata, Animalia; Galliformes: Aves, Vertebrata, Chordata, Animalia; Leporidae: Lagomorpha, Mammalia, Vertebrata, Chordata, Animalia; Muridae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia; Pisces: Vertebrata, Chordata, Animalia; Suidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Birds; Carnivores; Chordates; Fish; Lagomorphs; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Perissodactyls; Rodents; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Models and Simulations (Computational Biology)
ISSN:0021-8812

Year:2000
Journal Title:Journal of Animal Science

Title:Effects of temperature and plane of nutrition on beta-adrenergic receptors in heart, kidney, and liver of lambs
View Article: Journal of Animal Science. 78 (7). July, 2000. 1907-1916
CD Volume:319
Print Article: Pages: 1907-1916
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Language:English
Language of Summary:English (EN)
Abstract:We determined the effects of temperature and feed intake on beta- adrenergic receptors (beta-adrenoceptors) in tissues of sheep. Twenty-four lambs were exposed during three 5-wk periods to either thermoneutral, control (W; 23 +- 2degreeC) or cold (C; 0 +- 2degreeC) temperatures and were fed either ad libitum (A) or restricted (R) levels of feed intake, resulting in four treatment groups: WA, WR, CA, and CR. Hearts, kidneys, and livers were harvested at slaughter and binding of (3H)dihydroalprenolol to plasma membrane extracts was used to determine densities (BMAX) and binding affinities (Kd) of beta1 and beta2 adrenoceptors. The BMAX values ranged from 12.10 to 201.26 and 3.38 to 12.30 fmol/mg protein for beta1 and beta2 adrenoceptors, respectively; heart and kidney had the highest and lowest values, respectively. Feed restriction reduced ($P < .05$) beta1 and beta2 receptor densities in heart but increased ($P < .05$) beta1 receptor density in kidney and liver. Cold temperature exposure reduced beta1 receptor density in heart tissue during feed restriction. The Kd values, ranging from 1.32 to 5.98 nM, were increased ($P < .05$) by cold exposure and feed restriction in kidney and liver. Because the effectiveness of hormones is a function of their concentrations, binding affinities, and their receptor densities, these results imply that cold temperature exposure and feed restriction could potentially reduce (in heart) and increase (in kidney and liver) metabolic responsiveness of tissues to catecholamines
Descriptors:cold exposure; feed intake; feed restriction; metabolism; temperature. Chemical Coordination and Homeostasis; Metabolism; Nutrition. beta-1 adrenoceptors; beta-2 adrenoceptors; catecholamines
Organism Descriptors:sheep (Bovidae): lamb. heart: circulatory system; kidney: excretory system; liver: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Chemical Coordination and Homeostasis; Metabolism; Nutrition
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Influence of castration and estrogen replacement on sexual behavior of female-oriented, male-oriented, and asexual rams
View Article: Journal of Animal Science. 78 (7). July, 2000. 1947-1953
CD Volume:319

Print Article: Pages: 1947-1953
Author(s):Pinckard K L Stellflug J Stormshak F
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Language:English
Language of Summary:English (EN)
Abstract:An experiment was conducted to determine whether exogenous estradiol-17beta (E2) could restore sexual behavior in castrated rams. The protocol consisted of three sequential 6-wk periods during which rams were studied while 1) intact, 2) bilaterally castrated, or 3) implanted s.c. with two 7.6-cm silastic implants each containing 309 +- 16 mg of E2. Rams (classified as female- oriented (FOR, n = 7), male-oriented (MOR, n = 7), or asexual (n = 7)) were subjected to 30-min sexual behavior tests every 2 wk during the ensuing 18 wk. Rams were observed for mounts and ejaculations using two ovariectomized, estrous ewes and two intact males secured in stanchions. Behavioral data were analyzed using the signed rank test, but asexual rams showed no sexual behavior and therefore were not evaluated statistically. Jugular blood was collected prior to castration and at the end of the 18-wk period, and testicular venous (n = 21) and arterial (n = 8) bloods were collected immediately prior to castration. Radioimmunoassay was used to quantify systemic levels of estrone (E1), E2, and testosterone (T) and testicular serum concentrations of oxytocin (OT). Mounting behavior of MOR and FOR declined after castration (P < .05 and P < .10, respectively). Castration reduced the number of ejaculations by FOR (P < .05), but not by MOR (P > .10). Mounting behavior of castrated MOR and FOR was not affected by E2 treatment relative to that observed if castrated only (P > .10). Treatment of asexual rams with E2 did not stimulate sexual behavior in these rams. There were no marked differences (P > .10) among ram groups with regard to serum concentrations of E1, E2, or T prior to castration (overall mean +- SE, 12.8 +- .7, 7.6 +- .5, and 2,670 +- 780 pg/mL, respectively) or any difference (P > .10) in systemic concentration of E1 or E2 among ram groups after rams were implanted with E2 (overall mean +- SE, 9.7 +- .7 and 9.0 +- .7 pg/mL, respectively). Serum concentrations of E2 after implantation of the steroid did not differ from those present while rams were intact (P > .10). Testicular venous and arterial serum concentrations of OT were low and did not differ within or between rams. These results suggest that restoration of E2 concentrations to physiological levels in castrated adult rams (regardless of sexual orientation) cannot stimulate or reestablish sexual behaviors to levels observed prior to castration
Descriptors:sexual behavior. Behavior; Endocrine System (Chemical Coordination and Homeostasis). estradiol-17-beta: hormone-drug
Organism Descriptors:sheep (Bovidae): asexual, castrated, ewe, female, female-oriented, male, male-oriented, ram. serum: blood and lymphatics
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Behavior; Endocrine System (Chemical Coordination and Homeostasis)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Free and peptide amino acid net flux across the rumen and the mesenteric- and portal-drained viscera of sheep

View Article: Journal of Animal Science. 78 (7). July, 2000. 1960-1972
CD Volume:319
Print Article: Pages: 1960-1972
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Language:English
Language of Summary:English (EN)
Abstract:This experiment was conducted to determine the significance of the peptide amino acid (PAA) contribution to amino acid (AA) net flux in the portal vein and to evaluate the capacity for peptide absorption in the different segments of the gastrointestinal tract of ruminants. Four sheep (64 +- 3 kg BW) were fitted with catheters and blood flow probes, allowing AA net flux measurements across the portal- (PDV) and mesenteric (MDV)-drained viscera and the rumen. Sheep were fed at maintenance a diet containing hay and extruded peas (70:30). Peptide absorption was investigated by a dose infusion of a mixture of peptides (casein hydrolysate, Pro-Phe, beta-Ala-His, Gly-Gly) into the rumen. Control and postinjection net fluxes of plasma free amino acids (FAA) and PAA were determined. The concentration of plasma PAA was determined by quantification of amino acids before and after acid hydrolysis of samples first submitted to chemical deproteinization and ultrafiltration (3-kDa cut-off filter). During the control period a significant net release (12 mmol/h) of PAA was observed across the PDV, which accounted for 35% of the sum of FAA and PAA net fluxes. This PDV flux of PAA mainly resulted from a MDV release of PAA (15 mmol/h). The net flux of total PAA across the ruminal wall was not significantly different from zero, but uptake of peptide Ile and release of peptide Gly were observed. The injection into the rumen of the peptide mixture increased the net release of peptide essential AA (EAA) across the MDV ($P < .05$) and the PDV ($P < .10$), and of peptide Pro and Phe across the non-MDV ($P < .10$). Peptide Ile uptake by the rumen tissues was decreased by the injection ($P < .05$). Significant increases in peptide Pro and Gly arterial concentrations were observed ($P < .05$). The beta-Ala-His and Gly- Gly arterial concentrations and net fluxes across the PDV were not affected by their injections into the rumen. This study showed that PAA may contribute significantly to AA flux across the PDV of sheep, and that part of this flux can probably be attributed to peptide absorption from the gut lumen. When high concentrations of peptides are generated in the rumen the possibility of peptide absorption before the jejunum has to be considered
Descriptors:extruded peas: animal feed; hay: animal feed. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation). free amino acids; peptide amino acids
Organism Descriptors:sheep (Bovidae). mesenteric-drained viscera; portal-drained viscera: digestive system; rumen: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Sheep rumen metabolic development in response to age and dietary treatments

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CD Volume:319
Print Article: Pages: 1990-1996
Author(s):Lane M A Baldwin R L VI Jesse B W
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Language:English
Language of Summary:English (EN)
Abstract:This study examined the time course of rumen metabolic development in the absence of solid feed consumption and the effect of delayed solid feed consumption on sheep rumen development. Twenty-seven lambs consumed milk replacer until slaughter at nine ages from 1 to 84 d (milk group). Three additional lambs consumed milk replacer from 1 to 48 d. From 49 d until slaughter at 84 d, these lambs were weaned onto solid feed (fed group). At slaughter, rumen contents were removed for VFA analysis and rumen epithelium was preserved for morphological examination. Rumen men epithelial cells were isolated and incubated in media containing 2.5 mM U-(14C)-glucose or 10 mM 1-(14C)-butyrate. Rumen VFA concentrations did not change with age in lambs given milk replacer. At 84 d of age, intraruminal VFA concentrations were elevated in lambs consuming solid feed compared to 84-d-old lambs given milk replacer ($P < .05$). The number of ruminal papillae per square centimeter decreased ($P < .05$) while papillae length and width did not change significantly with age in rumen epithelium from lambs given milk replacer. At 84 d of age, rumen epithelium from lambs in the fed group had fewer and larger papillae/per square centimeter than rumen epithelium from lambs given milk replacer ($P < .05$). Rates of glucose and butyrate oxidation and acetoacetate and lactate production by rumen cells isolated from lambs given milk replacer did not change with age. beta-Hydroxybutyrate (BHBA) production was undetectable before 42 d of age in lambs given milk replacer and increased to levels found in conventionally raised adults by 84 d. At 84 d there were no differences in rates of glucose and butyrate oxidation or acetoacetate and lactate production by rumen cells between the two treatment groups. Thus, the change in substrate oxidation from glucose to butyrate, indicative of rumen metabolic maturation, does not occur in the absence of solid feed consumption. However, the development of rumen ketogenesis, as evidenced by increased BHBA production, does occur in the absence of solid feed consumption. Delaying the initiation of solid feed consumption results in rumen morphological development but does not stimulate rumen metabolic development. Increased intraruminal VFA concentrations, earlier exposure to VFA, or a longer period of exposure to VFA may be required to induce the genes responsible for rumen metabolic development
Descriptors:milk replacer: animal feed; rumen ketogenesis; rumen metabolic development; solid feed consumption. Animal Husbandry (Agriculture); Development; Digestive System (Ingestion and Assimilation); Nutrition. beta-hydroxybutyrate; volatile fatty acids
Organism Descriptors:sheep (Bovidae): lamb. rumen: digestive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Development; Digestive System (Ingestion and Assimilation); Nutrition
ISSN:0021-8812
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Journal Title:Journal of Animal Science

Title:Chemical characteristics and relative bioavailability of supplemental organic zinc sources for poultry and ruminants
View Article: Journal of Animal Science. 2000. 78 (8). 2039-2054
CD Volume:319
Print Article: Pages: 2039-2054
Author(s):Cao J Henry P R Guo R Holwerda R A Toth J P Littell R C Miles R D Ammerman C B
Author Affiliation:Department of Animal Science, University of Florida, Gainesville, FL 32611-0900, USA
Language:English
Abstract:Eight commercially available organic Zn products and reagent-grade ZnSO40.7H2O (Zn Sulf) were evaluated by polarographic analysis, and solubility in 0.1 M K2HPO4-KH2PO4 buffer (pH 5), 0.2 M HCl-KCl buffer (pH 2), and deionized water. Fractions from these solubility tests were evaluated by gel filtration chromatography for structural integrity. Degree of chelation was generally positively related to chelation effectiveness determined by polarography. The organic sources were Zn methionine complex A (Zn MetA), Zn methionine complex B (Zn MetB), Zn polysaccharide complex (Zn Poly), Zn lysine complex (Zn Lys), Zn amino acid chelate (Zn AA), Zn proteinate A (Zn ProA), Zn proteinate B (Zn ProB) and Zn proteinate C (Zn ProC). Three experiments were conducted to estimate the relative bioavailability of Zn from the organic Zn supplements for chicks and lambs when added at high dietary levels to practical diets. Bone Zn concentration increased ($P<0.001$) as dietary Zn increased in both experiments. When Zn Sulf was assigned a value of 100% as the standard, multiple linear regression slope ratios of bone Zn from chicks fed 3 week regressed on dietary Zn intake gave estimated relative bioavailability values of 83 plus or minus 14.6 and 139 plus or minus 16.9 for Zn AA and Zn ProA, respectively, in Exp. 1 and 94 plus or minus 11.6, 99 plus or minus 8.8, and 108 plus or minus 11.4 for Zn Poly, Zn ProB and Zn ProC, respectively, in Exp. 2. In Exp. 3, 42 lambs were fed diets containing Zn Sulf, Zn ProA, Zn AA or Zn MetB for 21 days. Based on multiple linear regression slope ratios of liver, kidney and pancreas Zn and liver metallothionein concentrations on added dietary Zn, bioavailability estimates relative to 100% for Zn Sulf were 130, 110 and 113 for Zn ProA, Zn AA, and Zn MetB, respectively. Except for Zn ProA, which was greater, the organic Zn supplements had bioavailability values similar to that of Zn Sulf for chicks and lambs. Bioavailability of organic Zn products was inversely related to solubility of Zn in pH 5 buffer in chicks (r2=0.91) and pH 2 buffer in lambs (r2=0.91), but not to an estimate of degree of chelation
Descriptors:lamb-feeding. chicks. fowl-feeding. sheep-feeding. feeding. young-animals. bioavailability. bones. chelation. lambs. liver. metallothionein. mineral-supplements. pancreas. zinc. sources. poultry
Organism Descriptors:fowls. sheep
Supplemental Descriptors:Gallus-gallus. Gallus. Phasianidae. Galliformes. birds. vertebrates. Chordata. animals. Ovis. Bovidae. ruminants. Artiodactyla. mammals. ungulates
Subject Codes:LL510. RR300. LL520
Supplementary Info:46 ref
ISSN:0021-8812
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Title:Parameter estimates for number of lambs born at different ages and for 18-month body weight of Rambouillet sheep
View Article: Journal of Animal Science. 2000. 78 (8). 2086-2090
CD Volume:319
Print Article: Pages: 2086-2090
Author(s):Lee J W Waldron D F Vleck L D van
Author Variant:van-Vleck-L-D
Author Affiliation:Department of Animal Science, University of Nebraska, Lincoln, NE 68583-0908, USA
Language:English
Abstract:Genetic parameters were estimated using REML with animal models for number of lambs born and 18-month body weight in Rambouillet sheep. Number of lambs born was modelled either as repeated measurements on the same trait or as different traits at different ages. The original data for number of lambs born were separated according to age of the ewe into two classes: 2 and 3 yr, and older than 3 yr. Numbers of ewes with lambing records for the age classes were 653 and 466 with 1106 and 1118 records, respectively. For the data set that included all ages, the number of ewes was 684 with 2224 records, and for 18-month body weight the number of ewes measured was 557. For number of lambs born, the animal model included random genetic, permanent environmental, and residual environmental effects and fixed effects for age of ewe, year of lambing, and month of year of lambing. Lambing day within season was used as a covariate. For 18-month body weight, year of birth of ewe was used as a fixed effect. Actual age in days when the ewe was weighed was used as a covariate. Estimates of heritability for number of lambs born by age group were 0.04, for 2- and 3-yr old ewes, and 0.06, for ewes greater than 3 yr old, from the two-trait (two age of ewe classes) analyses and 0.06 when all ages were included. Estimates of heritability for number of lambs born from the single-trait analyses were somewhat less than estimates from two-trait analyses. Estimate of genetic correlation between number of lambs born for the 2 and 3 years and the >3 years classes was near unity (1.00), which suggests that a repeated measures model for number of lambs born is adequate for making selection decisions. Estimate of genetic correlation between number of lambs born and 18-month body weight was 0.35, with a heritability estimate of 0.48 for 18-month body weight. The estimate of genetic correlation suggests that selection for increased number of lambs born would result in increased 18-month body weight
Descriptors:parturition. age-differences. body-weight. environment. ewes. fertility. genetic-correlation. genetic-parameters. heritability. lambing. lambs. mathematical-models. Rambouillet. seasons. selection
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240
Supplementary Info:21 ref
ISSN:0021-8812
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Journal Title:Journal of Animal Science

Title:Parameter estimates for greasy fleece weight of Rambouillet sheep at different ages
View Article: Journal of Animal Science. 2000. 78 (8). 2108-2112
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Print Article: Pages: 2108-2112
Author(s):Lee J W Waldron D F Vleck L D van
Author Variant:van-Vleck-L-D

Author Affiliation:Department of Animal Science, University of Nebraska, Lincoln, NE 68583-0908, USA
Language:English
Abstract:Variance components for greasy fleece weight in Rambouillet sheep were estimated. Greasy fleece weight was modelled either as repeated measurements on the same trait or as different traits at different ages. The original data were separated according to the age of the ewe at shearing into 3 classes; 1, 2 + 3 years, and >3 years. An animal model was used to obtain estimates of genetic parameters with a REML algorithm. Total numbers of animals in pedigrees for the different age classes were 696, 729 and 573, respectively, and 822 for the repeated measures model across ages. The animal model included direct genetic, permanent environmental, and residual environmental random effects and fixed effects for age of ewe, shearing date as contemporary group, and number of lambs born. Days between shearings was used as a covariate. Single-trait analyses were initially done to obtain starting values for multiple-trait analyses. A repeated measures model across ages was also used. Estimates of heritability by age group were 0.42, 0.50, and 0.58 from three-trait (age class) analyses and for the repeated measures model the estimate was 0.57. Estimates of genetic correlations between fleece yields for 1 and 2 + 3 years, 1 and >3 years, and 2 + 3 years and >3 years classes were 0.88, 0.89, and 0.97, respectively. These estimates of genetic correlations suggest that a repeated measures model for greasy fleece weight is adequate for making selection decisions
Descriptors:age. algorithms. environment. fleece-weight. genetic-correlation. genetic-parameters. heritability. lambs. mathematical-models. Rambouillet. selection-criteria. shearing
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. LL240
Supplementary Info:14 ref
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Journal Title:Journal of Animal Science

Title:Genetic analysis of litter size in Targhee, Suffolk, and Polypay sheep
View Article: Journal of Animal Science. 2000. 78 (8). 2113-2120
CD Volume:319
Print Article: Pages: 2113-2120
Author(s):Rao S Notter D R
Author Affiliation:Department of Animal and Poultry Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA
Language:English
Abstract:Data on litter size, weaning weights at 60, 90 and 120 days, postweaning gains from weaning to 120 or 365 days of age, fleece weight and fibre diameter from Targhee, Suffolk and Polypay flocks participating in the U.S. National Sheep Improvement Program were used to estimate genetic parameters for litter size and genetic relationships between early-life traits and future litter size. Records on 7591 lambings by 3131 Targhee ewes, 10 295 lambings by 5038 Suffolk ewes, and 6061 lambings by 2709 Polypay ewes were used. Heritability estimates for litter size ranged from 0.09 to 0.11 across breeds; repeatability ranged from 0.09 to 0.13. Additive genetic effects on litter size were generally positively, and occasionally significantly, correlated with animal additive genetic

effects on weaning weights and postweaning gains. Genetic correlations (ra) ranged from 0.08 to 0.48 in Targhee and from 0.17 to 0.43 in Suffolk but were close to 0 in Polypay (-0.14 to 0.09). Additive maternal effects on weaning weight were positively associated with litter size in Suffolk and Polypay; this correlation was negative (-0.23 to -0.35), but not significant, in Targhee. Fleece weight was not strongly associated with litter size; (ra=-0.09 to 0.21). However, fibre diameter had a significant undesirable correlation with litter size (0.30) in Targhee. Estimates of phenotypic correlations of litter size with early-life traits were uniformly small (-0.02 to 0.08). Thus, although occasional genetic antagonisms between litter size and early-life traits were observed in these data, none appeared large enough to prevent simultaneous genetic improvement in both traits
Descriptors:ewes. fleece-weight. genetic-correlation. heritability. litter-size. maternal-effects. Suffolk-(sheep-breed). Targhee. weaning-weight. sheep-breeds
Geographic Locator:USA
Identifiers:Polypay
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. North-America. America. Developed-Countries. OECD-Countries
Subject Codes:LL145. LL240. LL250
Supplementary Info:16 ref
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Preparation of an epithelium-free mammary fat pad and subsequent mammogenesis in ewes
View Article: Journal of Animal Science. 2000. 78 (8). 2177-2185
CD Volume:319
Print Article: Pages: 2177-2185
Author(s):Hovey R C Auldist D E Mackenzie D D S McFadden T B
Author Affiliation:Dairy Science Group, Ruakura Research Centre, Hamilton, New Zealand
Language:English
Abstract:The objective of this study was to develop a surgical procedure for the preparation of an epithelium-free mammary fat pad (cleared mammary fat pad; CFP) in ewes. At 7 to 10 d of age, ewe lambs (n=43, mean BW 9.2 plus or minus 0.2 kg at 14 days) were sedated and one mammary gland was locally anaesthetized. An incision circumscribing the base of the teat was made and blunt dissection was performed through the extraneous mammary fat pad tissue to enable the parenchyma and teat to be wholly removed. Failure to completely remove the epithelium enabled it to regenerate and grow into the mammary fat pad. Mean diameter of the parenchymal rudiment at 7 to 10 days of age was 8.9 plus or minus 0.5 mm (range of 5 to 16 mm). The excision site was closed with wound clips and recovered lambs returned to their dams. The contralateral mammary gland remained intact, allowing it to undergo normal development. Live weight gain was unaffected by this procedure. Ewes were subsequently slaughtered in groups at various stages of prepuberty, puberty, gestation and lactation. Of 39 operated glands recovered, only one demonstrated epithelial outgrowth within the CFP. Parenchyma within the contralateral, intact gland underwent phases of rapid growth in prepuberty, puberty and late gestation and was capable of milk synthesis after steroid induction or parturition. Change in weight of the CFP paralleled that of the intact mammary gland to 100 days of

pregnancy. Sham CFP surgery was performed on 4 additional ewes wherein the parenchyma was completely excised and immediately replaced. Sham-operated epithelium populated the mammary fat pad and synthesized milk that could be expressed from the teat. A CFP in sheep will be a useful model for future investigations into the local growth regulatory mechanisms associated with ruminant mammogenesis
Descriptors:epithelium. ewes. experimental-surgery. mammary-development. mammary-glands. mammary-tissue. ontogeny. surgical-operations
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL884. ZZ900. LL600
Supplementary Info:47 ref
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Portal-drained visceral metabolism of 3-hydroxybutyrate in sheep
View Article: Journal of Animal Science. 2000. 78 (8). 2223-2228
CD Volume:319
Print Article: Pages: 2223-2228
Author(s):Kristensen N B Pierzynowski S G Danfaer A
Author Affiliation:Department of Animal Nutrition and Physiology, Danish Institute of Agriculture Sciences, P.O. Box 50, DK-8830 Tjele, Denmark
Language:English
Abstract:The present experiment was conducted to study the impact of portal-drained visceral (PDV) metabolism of arterial 3-OH-butyrate on estimates of the portal recovery of intraruminally infused butyrate. Three multi-catheterized and rumen-fistulated Leicester ewes were subjected to 3 intraruminal infusion protocols in a Latin square design: control (C; water), butyrate (B; 20 mmol h-1), and butyrate (20 mmol h-1) + propionate (40 mmol h-1) (BP). During the experiments, the sheep were infused with 1,2,3,4-13C4-D-3-OH-butyrate in a mesenteric vein. Portal recoveries of intraruminally infused butyrate and propionate were obtained by comparing Treatments B and BP, respectively, with Treatment C. The portal net appearance of butyrate and the portal net appearance of butyrate + 3-OH-butyrate accounted for 20 plus or minus 2% and 48 plus or minus 14% of intraruminally infused butyrate, respectively. Metabolism by the PDV tissues accounted for 32 to 44% of the whole-body irreversible loss rate of 3-OH-butyrate (12.0 to 24.7 plus or minus 0.5 mmol/h). The portal net appearance of butyrate plus the unidirectional PDV output of 3-OH-butyrate accounted for 62 plus or minus 5% of the intraruminally infused butyrate, and this estimate was comparable to the portal recovery of intraruminally infused propionate (62 plus or minus 7%). The results from the present study show that the extent of epithelial butyrate oxidation is overestimated and the portal recovery of butyrate carbon underestimated if only portal net appearance rates of butyrate and 3-OH-butyrate are considered
Descriptors:3-hydroxybutyric-acid. butyrates. digestive-absorption. ewes. lipid-metabolism. propionates. volatile-fatty-acids. sheep-feeding. ewe-feeding. rumen
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL520
Supplementary Info:20 ref

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Title:Gonadal function, sexual behavior, feedlot performance, and carcass traits of ram lambs actively immunized against GnRH
View Article: Journal of Animal Science. 78 (9). September, 2000. 2237-2243
CD Volume:319
Print Article: Pages: 2237-2243
Author(s):Kiyma Z Adams T E Hess B W Riley M L Murdoch W J Moss G E
Author Affiliation:Department of Animal Science, University of Wyoming, Laramie, WY, 82071
Language:English
Language of Summary:English (EN)
Abstract:The effect of active immunization against GnRH on production, carcass, and behavioral traits was examined in ram lambs fed to a uniform slaughter weight. Lambs (initial BW = 32.6 +- 1 kg) were stratified by BW and assigned at random to one of four treatment groups (n = 12 lambs/group). Lambs were untreated, castrated, or actively immunized against GnRH using a GnRH-keyhole limpet hemocyanin conjugate (1 mg) emulsified with either Freund's complete adjuvant (FCA) or another oil-based adjuvant (ISA). Animals were housed individually and slaughtered at 58 kg BW. Immunoneutralization of GnRH reduced (P < .05) testes weight and the concentration of testosterone in serum at slaughter. Suppression of testicular size and function was most clearly evident in animals immunized using FCA. Final anti-GnRH titer was also highest in lambs immunized using FCA. Several measures of sexual behavior (frequency of mounts and ejaculations) were also reduced (P < .05) in animals immunized using FCA. The duration of the feeding period was greater (P < .05) for castrated lambs than for untreated lambs, and intermediate feeding periods were required for FCA and ISA lambs. Average daily gain was greater (P < .05) in untreated than in castrated, FCA, or ISA lambs. Similarly, feed efficiency for untreated lambs was greater (P < .05) than for castrated, FCA, or ISA lambs, but feed efficiency did not differ among castrated, FCA, or ISA lambs. Longissimus muscle area, lean and bone maturity, overall quality, muscling score, flank streaking, and color of fat did not differ among treatments. Intact, FCA, and ISA lambs had more (P < .05) desirable yield grades, less (P < .05) backfat, and less (P < .05) marbling than castrated lambs. In summary, immunization against GnRH decreased testicular weight and reduced (P <.05) feedlot performance and sexual behavior to levels comparable to those of castrated males. Partitioning of nutrients for growth and deposition of fat, however, seems to differ among immunologically castrated and physically castrated lambs. This difference in nutrient partitioning may be due to residual testicular activity in immunized lambs
Descriptors:average daily gain; body weight; carcass traits; feedlot performance; gonadal function; nutrient partitioning; sexual behavior. Animal Husbandry (Agriculture); Behavior; Immune System (Chemical Coordination and Homeostasis); Reproductive System (Reproduction). GnRH [gonadotropin-releasing hormone]
Organism Descriptors:sheep (Bovidae): lamb, male, ram. testes: reproductive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates

Subject Codes:Animal Husbandry (Agriculture); Behavior; Immune System (Chemical Coordination and Homeostasis); Reproductive System (Reproduction)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Acetyl-CoA carboxylase and fatty acid synthase activity and immunodetectable protein in adipose tissues of ruminants: Effect of temperature and feeding level
View Article: Journal of Animal Science. 78 (9). September, 2000. 2383-2392
CD Volume:319
Print Article: Pages: 2383-2392
Author(s):Moibi J A Ekpe E D Christopherson R J
Author Affiliation:Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, T6G 2P5
Language:English
Language of Summary:English (EN)
Abstract:To gain insights into the regulation of fat synthesis, we have investigated the effect of cold environmental exposure and feed restriction of sheep on activity and immunodetectable protein content of acetyl-CoA carboxylase (ACC) and fatty acid synthase in adipose tissue. Subcutaneous and mesenteric adipose tissues were collected at slaughter from sheep exposed to either cold (0 +- 2degreeC) or warm (23 +- 2degreeC) environment, and given either ad libitum or restricted access to feed for three 5-wk periods. Acetyl- CoA carboxylase was isolated from frozen adipose tissue samples and activity determined as the rate of incorporation of H14CO3- into acid stable malonyl-CoA. Cold exposure and feed restriction reduced (P < .05) ACC activity in the two adipose tissue depots. Western blot analysis with peroxidase-conjugated streptavidin showed that both adipose tissue depots express a single isoform of ACC. In s.c. adipose tissue, cold exposure increased (P < .05) ACC protein abundance, which is opposite to the change in activity. However, feed restriction reduced immunodetectable ACC protein. There was no significant effect of environment or feeding level on ACC protein abundance in mesenteric tissue. Fatty acid synthase activity determined in ammonium sulfate extract by measuring the malonyl-CoA- and acetyl-CoA-dependent oxidation of NADPH was decreased (P < .05) by feed restriction in both s.c. and mesenteric tissues. Cold exposure reduced fatty acid synthase activity in s.c. but not in mesenteric tissue. There was no effect of environment on fatty acid synthase protein abundance in either adipose tissue depot. However, feed restriction significantly reduced fatty acid synthase protein abundance in the two depots. The data suggest that feed restriction and exposure of ruminants to cold environmental conditions may significantly down-regulate the activity of key lipogenic enzymes
Descriptors:cold environmental exposure; feed restriction; temperature. Animal Husbandry (Agriculture); Enzymology (Biochemistry and Molecular Biophysics); Nutrition. NADPH; acetyl-CoA carboxylase: adipose tissue; fatty acid synthase: adipose tissue; immunodetectable protein: adipose tissue
Organism Descriptors:sheep (Bovidae): ruminant. adipose tissue: integumentary system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Enzymology (Biochemistry and Molecular Biophysics); Nutrition

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Year:2000
Journal Title:Journal of Animal Science

Title:Effects of protozoa on bacterial nitrogen recycling in the rumen
View Article: Journal of Animal Science. 78 (9). September, 2000. 2431-2445
CD Volume:319
Print Article: Pages: 2431-2445
Author(s):Koenig K M Newbold C J McIntosh F M Rode L M
Author Affiliation:Lethbridge Research Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, T1J 4B1
Language:English
Language of Summary:English (EN)
Abstract:The effects of protozoa on ruminal NH3-N kinetics and bacterial N recycling were measured in five sheep (57.6 +- 7.1 kg BW, x +- SD) with ruminal and duodenal cannulas in naturally faunated, defaunated, and refaunated periods. The sheep were fed a diet of 239 g of alfalfa haylage and 814 g of barley concentrate per day (DM basis) divided into 12 equal portions and allocated at 2-h intervals. A pulse dose of 300 mg of 15N as (15N)NH4Cl was administered into the rumen (on d 1 and 15) and 300 mg of 15N as (15N)urea was administered intravenously to the blood (d 8). Enrichment of 15N was measured in ruminal NH3-N, bacterial N, and plasma urea N over a period of 35 h. Total collection of urine was made for 5 d and analyzed for purine derivatives to calculate the flow of microbial N. Ruminal parameters and nutrient digestibilities were also measured. Sheep were defaunated using a rumen washing procedure 50 d prior to measurements in the defaunated period. Sheep were refaunated with ruminal contents from a faunated sheep receiving the same diet. Measurements began 26 d following refaunation, at which time protozoal numbers had returned to those in the originally faunated sheep. Data reported in parentheses are for faunated, defaunated, and refaunated sheep, respectively. Total culturable and cellulolytic bacterial numbers were unaffected by defaunation, but there was an increase in flow of microbial N from the rumen (10.8, 17.3, and 11.1 g N/d; P < .05) in the defaunated period. Flux, irreversible loss, and intraruminal recycling of NH3-N and recycling of NH3-N from plasma urea N were not affected by defaunation. Defaunation had no effect on reducing the absolute amount (13.8, 10.0, and 11.3 g N/d; P > .20) of bacterial N recycling and the percentage of N flux through the bacterial N pool. Total-tract digestion was reduced in defaunated compared with faunated sheep by 8, 17, 15, and 32% for OM, N, NDF, and ADF, respectively. In conclusion, defaunation improved ruminal N metabolism through the enhancement of bacterial protein synthesis, and improvement in the flow of microbial protein to the host animal
Descriptors:alfalfa haylage: animal feed; barley concentrate: animal feed; defaunation; nutrient digestibility. Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Nutrition. nitrogen-15: bacterial, metabolism, recycling, ruminal; urea: blood, intravenous
Organism Descriptors:protozoa (Protozoa): intestinal flora; sheep (Bovidae). duodenum: digestive system; rumen: digestive system; urine: excretory system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Protozoa: Invertebrata, Animalia. Animals; Artiodactyls; Chordates; Invertebrates; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Protozoans; Vertebrates

Subject Codes:Animal Husbandry (Agriculture); Digestive System (Ingestion and Assimilation); Nutrition
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Year:2000
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Title:Nitrogen metabolism and fertility in cattle: I. Adaptive changes in intake and metabolism to diets differing in their rate of energy and nitrogen release in the rumen
View Article: Journal of Animal Science. 78 (10). October, 2000. 2659-2669
CD Volume:319
Print Article: Pages: 2659-2669
Author(s):Sinclair K D Sinclair L A Robinson J J
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Series Title:and FE:A diets but did not rise in heifers offered the SE:S and FE:S diets. All feed offered was consumed within 1 h on diets SE:S and FE:S throughout the experiment. The proportion of feed consumed within 1 h of feeding declined from 100% on d 0 to aroun
Language:English
Language of Summary:English (EN)
Abstract:The ruminal degradability, intake, and metabolism of diets differing in their relative rate of energy and nitrogen release in the rumen were characterized prior to their use in a study of the effects of high peripheral levels of ammonia on reproductive function in cattle. In a 2 X 2 factorial experiment, replicated four times, 16 heifers were offered isocaloric and isonitrogenous diets containing two sources of fermentable carbohydrate, fiber (slow energy release, SE) or starch (fast energy release, FE), and two rates of nitrogen release, which were either synchronous (S) or asynchronous (A) to that of energy release. Throughout the experiment, the amount of feed offered was held constant, at a level equivalent to 1.5 X maintenance. Four ruminally fistulated sheep were used to determine the in situ degradability of these diets. The 16 heifers were bled before feeding at 0800 and at 0900, 1000, 1100, 1200, 1400, and 1600 on d 0 (introduction to dietary treatments) and on d 4, 7, 11, 14, 21, and 28. Diet refusals were recorded at hourly intervals after feeding. The rapidly degradable nitrogen fraction of the SE:A and FE:A diets was greater than that of the SE:S and FE:S diets. Postprandial jugular plasma ammonia levels rose to a peak of around 300 mumol/L in heifers offered the
Descriptors:feed intake; fertility. Animal Husbandry (Agriculture). ammonia: plasma; insulin: plasma; nitrogen: metabolism, rumenal release; urea: plasma
Organism Descriptors:bovine (Bovidae): breed-Charolais x Holstein-Friesian, female, heifer
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
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Title:Nutritional regulation of the genes encoding the acid-labile subunit and other components of the circulating insulin-like growth factor system in the sheep

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CD Volume:319
Print Article: Pages: 2681-2689
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Language:English
Language of Summary:English (EN)
Abstract:In sheep, perinatal maturation of the endocrine arm of the insulin- like growth factor (IGF) system is characterized by two developmental events. First, concentrations of circulating IGF-I increase rapidly after birth and become responsive to changes in nutrition and growth hormone (GH). Second, the liver initiates synthesis of a serum protein called the acid-labile subunit (ALS). The acid-labile subunit promotes the endocrine actions of IGF-I and -II by recruiting them to long-lived complexes of 150 kDa. In this study, we examined the effect of nutrition on hepatic expression of the ALS gene around the time of birth and later in life. Expression of genes encoding other components of the circulating IGF system was also measured. At d 130 of fetal life, fetuses suffering from chronic undernutrition caused by placental insufficiency had lower expression of the ALS and IGF-I genes than well-nourished fetuses, but they did not have any changes in the expression of the IGF- binding protein (IGFBP)-2 or IGFBP-3 genes. In early postnatal life, hepatic gene expression was analyzed between d 12 and 38 in lambs fed a milk replacer at levels sustaining weight gains of 150 or 337 g/d. The lower plane of nutrition decreased the expression of the ALS, IGF-I, and GH receptor genes and increased the expression of the IGFBP-2 gene; expression of the IGFBP-3 gene was not affected by nutrition at this stage of life. Finally, hepatic gene expression was measured in 3-mo-old lambs offered ad libitum levels of a balanced diet or of a diet limiting for both energy and protein. Although the rate of growth of the lambs fed the limiting diet was reduced by 38%, the only effect detected in hepatic gene expression was a ninefold increase in the abundance of IGFBP-2 mRNA. Overall, these results indicate that undernutrition during late fetal and early postnatal life delays hepatic expression of the ALS gene and final maturation of the endocrine IGF system
Descriptors:lamb growth rate; nutritional gene regulation; undernutrition. Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics). growth hormone; insulin-like growth factor; insulin-like growth factor binding protein-2 mRNA. sheep acid-labile subunit gene (Bovidae): expression; sheep growth hormone receptor gene (Bovidae): expression; sheep insulin-like growth factor binding protein-2 gene (Bovidae): expression; sheep insulin-like growth factor-1 gene (Bovidae): expression
Organism Descriptors:sheep (Bovidae): breed-Suffolk x Finn x Dorset, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics)
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Title:A kinetic model of phosphorus metabolism in growing goats

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Author(s):Vitti D M S S Kebreab E Lopes J B Abdalla A L De Carvalho F F R De Resende K T Crompton L A France J
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Language:English
Language of Summary:English (EN)
Abstract:The effect of increasing phosphorus (P) intake on P utilization was investigated in balance experiments using 12 Saanen goats, 4 to 5 mo of age and weighing 20 to 30 kg. The goats were given similar diets with various concentrations of P, and 32P was injected to trace the movement of P in the body. A P metabolism model with four pools was developed to compute P exchanges in the system. The results showed that P absorption, bone resorption, and excretion of urinary P and endogenous and fecal P all play a part in the homeostatic control of P. Endogenous fecal output was positively correlated to P intake (P < .01). Bone resorption of P was not influenced by intake of P, and P recycling from tissues to the blood pool was lesser for low P intake. Endogenous P loss occurred even in animals fed an inadequate P diet, resulting in a negative P balance. The extrapolated minimum endogenous loss in feces was .067 g of P/d. The minimum P intake for maintenance in Saanen goats was calculated to be .61 g of P/d or .055 g of P/(kg.75cntdotd) at 25 kg BW. Model outputs indicate greater P flow from the blood pool to the gut and vice versa as P intake increased. Intake of P did not significantly affect P flow from bone and soft tissue to blood. The kinetic model and regressions could be used to estimate P requirement and the fate of P in goats and could also be extrapolated to both sheep and cattle
Descriptors:kinetic metabolism model. Metabolism. phosphorus: intake, metabolism
Organism Descriptors:goat (Bovidae): breed-Saanen
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Metabolism
ISSN:0021-8812
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Title:Evaluation of ewe and lamb immune response when ewes were supplemented with vitamin E
View Article: Journal of Animal Science. 78 (10). October, 2000. 2731-2736
CD Volume:319
Print Article: Pages: 2731-2736
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Language:English
Language of Summary:English (EN)
Abstract:Fifty-two Targhee twin-bearing ewes were used in a factorial arrangement of treatments to investigate the role of supplemental vitamin E (vit E); 0 (NE) vs 400 IU of vit Ecntdotewecntdot-1d-1 (E) and parainfluenza type 3 (PI3) vaccination; none (NP) vs PI3 vaccination (P) in immune function. Parainfluenza type 3 vaccination was used to evoke an immune response. Ewes receiving PI3 were vaccinated at 49 and 21 d before the expected lambing date. Ewes

receiving vit E were orally dosed daily, 32 to 0 d before lambing. Blood was collected from ewes at the time of the initial PI3 vaccination and 4 h postpartum. Blood was collected from lambs (n = 104) at 3 d postpartum. Ewe and lamb sera were analyzed for anti-PI3 antibody titers, immunoglobulin G (IgG) titers, and vit E concentrations. Colostrum was collected 4 h postpartum and analyzed for IgG. The model for ewe and lamb analysis included the main effects of vit E and PI3, sex (lambs model only), and their interactions. No interactions were detected (P > 0.20) for any ewe or lamb variables. Serum anti-PI3 titers were greater (P < 0.01) in P ewes and their lambs than NP ewes and their lambs. Serum vit E concentrations were greater (P < 0.01) in E ewes and their lambs than NE ewes and their lambs. Colostral IgG titers and serum anti-PI3 titers did not differ (P > 0.20) between E and NE ewes. Serum IgG titers in E ewes and their lambs did not differ (P > 0.15) from IgG titers in NE ewes and their lambs. Lamb anti-PI3 titers did not differ (P = 0.76) between lambs reared by E and NE ewes. These results indicate that, although supplemental vit E to the ewe increased lamb serum vit E concentration, it had no effect on measures used in this study to assess humoral immunity in the ewe or passive immunity to the lamb
Descriptors:immune response. Animal Husbandry (Agriculture); Immune System (Chemical Coordination and Homeostasis). IgG [immunoglobulin G]: colostrum; anti-parainfluenza type 3 antibodies; parainfluenza type 3 vaccine: antiviral-drug; vitamin E: blood, dietary supplement
Organism Descriptors:sheep (Bovidae): breed-Targhee, ewe, female, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Immune System (Chemical Coordination and Homeostasis)
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Title:Site of administration and duration of feeding oleamide to cattle on feed intake and ruminal fatty acid concentrations
View Article: Journal of Animal Science. 78 (10). October, 2000. 2745-2753
CD Volume:319
Print Article: Pages: 2745-2753
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Language:English
Language of Summary:English (EN)
Abstract:Two experiments were conducted to determine effects of oleamide on feed intake and ruminal fatty acids when the oleamide was introduced in the feed vs through a ruminal fistula (Exp. 1) or the oleamide was fed for an extended (9-wk) length of time (Exp. 2). In Exp. 1, four nonlactating Holstein cows, each fitted with a ruminal cannula, were fed four diets in a 4 X 4 Latin square design. Each period lasted 2 wk. Diets consisted of 48% corn silage and 52% concentrate on a DM basis. One diet contained no added fat (control) and a second diet contained 4.2% oleic acid. The remaining two diets were designed to expose cows to 4.2% amide (as oleamide) either through the feed (AF) or by administering oleamide into the rumen (AR) each day through the ruminal cannula. The AF diet reduced DMI

similarly to results reported previously for lactating dairy cows and sheep. Intake of the oleic acid diet was intermediate between the control and AF diets. Dry matter intake was reduced by AR similarly to the AF diet. The acetate:propionate ratio in samples of ruminal contents was reduced by oleic acid but not by AF or AR. In Exp. 2, 12 steers were divided into three equal groups of two Angus and two Simmental X Angus crosses, and each group was assigned a diet containing either no added fat (control), 4% oleamide, or 4% high-oleic canola oil. All steers had ad libitum access to feed and water. Dry matter intake by steers fed the canola oil diet was not different from that by steers fed the control diet when averaged over the first 3 wk, the last 3 wk, or over the entire 9-wk study. Oleamide reduced DMI 4 kg/d over the first 3 wk of the study. However, DMI of the oleamide diet consistently increased over the 9-wk study, resulting in wk 7 to 9 DMI that was not different from that of steers fed the control diet. These results show that the reduction in feed intake when oleamide is added to cattle rations can be attributed more to physiological responses than to an undesirable unique taste or odor of the oleamide. In finishing beef steers, the decreased intake induced by oleamide was most severe during the first 1 or 2 wk of feeding but gradually lessened over time until it nearly returned to normal by wk 9
Descriptors:acetate-propionate ratio; dry matter intake; feed intake. Animal Husbandry (Agriculture). oleamide: feed additive; oleic acid
Organism Descriptors:bovine (Bovidae): breed-Angus, breed-Holstein, breed-Simmental x Angus, cow, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Effect of the callipyge gene on muscle growth, calpastatin activity, and tenderness of three muscles across the growth curve
View Article: Journal of Animal Science. 78 (11). November, 2000. 2836-2841
CD Volume:319
Print Article: Pages: 2836-2841
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Language:English
Language of Summary:English (EN)
Abstract:Changes in muscle growth, calpastatin activity, and tenderness of three muscles were assessed in 20 callipyge and 20 normal wether lambs slaughtered at live weights (LW) of 7, 20, 36, 52, and 69 kg. At 24 h portmortem, the longissimus (LM), semimembranosus (SM), and supraspinatus (SS) muscles were removed and weighted and samples were obtained for calpastatin activity (CA; 24 h) and Warner- Bratzler shear force (WBS; aged 6 d). For muscle weights and calpastatin activity, the weight group X muscle X phenotype interaction was significant ($P < 0.05$). Muscle weights were similar ($P > 0.05$) between phenotypes for all three muscles at 7 kg LW. At 20 kg LW, the LM and SM muscles from the callipyge lambs were heavier ($P < 0.05$) than those from normal lambs; however, the SS did not differ ($P > 0.05$) between phenotypes at 7, 20, or 52 kg. From 20 to 69 kg LW, the LM and SM weights were 42 and 49% heavier ($P < 0.05$) for callipyge than for normal lambs. Calpastatin activity of the

callipyge LM was greater (P < 0.05) than that of normal LM at 36, 52, and 69 kg. In the callipyge LM, CA was similar (P > 0.05) at 20, 36, and 52 kg LW and did not differ (P > 0.05) from 7-kg or 69-kg values. Calpastatin activity declined (P < 0.05) across the growth curve for the SM and SS, but values were higher (P < 0.05) in the SM in callipyge than in normal lambs. Shear force values of the LM were lower (P < 0.05) for normal lambs at 36, 52, and 69 kg LW than for callipyge lambs. In the SM and SS, WBS values decreased (P < 0.05) across the growth curve, but values were higher (P < 0.05) for callipyge lambs in the SM only. These data indicate that the selective muscular hypertrophy of the callipyge phenotype develops during the postnatal growth period between 7 and 20 kg LW (19 and 100 d of age). Longissimus and semimembranosus muscles in the callipyge lambs were over 40% heavier from 20 to 69 kg LW; however, they also had higher levels of calpastatin activity and Warner-Bratzler shear force during this time period, indicating the need for postmortem tenderization treatments to improve palatability
Descriptors:muscle tenderness. Genetics; Muscular System (Movement and Support). calpastatin: muscle. sheep callipyge gene (Bovidae)
Organism Descriptors:sheep (Bovidae): breed-Columbia x Dorset, lamb, male, wether. longissimus muscle: Warner-Bratzler shear force, muscular system, weight; semimembranosus muscle: Warner-Bratzler shear force, muscular system, weight; supraspinatus muscle: Warner-Bratzler shear force, muscular system, weight
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Genetics; Muscular System (Movement and Support)
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Rigor temperature and meat quality characteristics of lamb longissimus muscle
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Print Article: Pages: 2842-2848
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Language:English
Language of Summary:English (EN)
Abstract:The present experiment was conducted to determine the effect of muscle temperature during the prerigor and early postrigor period on meat tenderness, postmortem proteolysis, calpain system activity, water-holding capacity, and color. Lamb longissimus muscle (n = 14) from the right and left carcass sides was excised immediately after dressing, divided into an anterior and posterior sample, vacuum-packaged, and stored overnight at 5 to 35degreeC. Further storage, up to 14 d postmortem, was at 2degreeC. Tenderness at 1 d postmortem, tenderization during further storage, and postmortem proteolysis were negatively affected by overnight incubation above 25degreeC. This effect could be explained by an effect of temperature on muscle contraction and activity of the calpain system. Muscle contraction was at a minimum after incubation at 15degreeC. Water-holding capacity was negatively affected by incubation above 25degreeC. Color scores improved with increasing incubation temperature at 1 d postmortem. However, after 14 d of postmortem storage, no differences

in color scores were observed. Based on the present results and results of other groups, a temperature around 15degreeC at the onset of rigor seems optimal to maximize tenderness without having detrimental effects on water- holding capacity or color
Descriptors:calpain system; lamb: meat, tenderness; muscle temperature; postmortem proteolysis; rigor temperature. Foods; Muscular System (Movement and Support)
Organism Descriptors:sheep (Bovidae): breed-Romney x Coopworth, lamb. longissimus muscle: color, muscular system, water-holding capacity
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Foods; Muscular System (Movement and Support)
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Year:2000
Journal Title:Journal of Animal Science

Title:Chromium supplementation does not influence glucose metabolism or insulin action in response to cold exposure in mature sheep
View Article: Journal of Animal Science. 78 (11). November, 2000. 2950-2956
CD Volume:319
Print Article: Pages: 2950-2956
Author(s):Sano H Konno S Shiga A
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Language:English
Language of Summary:English (EN)
Abstract:An isotope dilution method using (U-13C)glucose infusion and a glucose clamp approach were applied to determine the effects of supplemental Cr and cold exposure on blood glucose turnover rate and tissue responsiveness and sensitivity to insulin in eight sheep. The daily profiles of blood metabolites and hormones were also determined. The sheep consumed diets containing either 0 or 1 mg of Cr/kg from a high-Cr yeast and were exposed from a thermoneutral environment (20degreeC) to a cold environment (0 to 4degreeC) for 9 d. The experiment used a crossover design. Body weight was lost ($P = 0.02$) during cold exposure, regardless of Cr supplementation. Blood glucose turnover rate and the maximal glucose infusion rate did not differ between diets, but both were higher ($P = 0.0004$ and $P = 0.0001$, respectively) during cold exposure than in the thermoneutral environment. The plasma insulin concentration at half-maximal glucose infusion rate changed with neither diet nor environment. Plasma concentrations of glucose and NEFA increased ($P < 0.05$) during cold exposure for both diets. In sheep, Cr supplementation, 1 mg/kg of diet as high-Cr yeast, has little influence on blood glucose metabolism and insulin action, whereas cold exposure enhances both without further modification by Cr supplementation
Descriptors:body weight; cold exposure. Animal Husbandry (Agriculture); Metabolism. chromium: dietary supplement; glucose: metabolism, plasma; insulin: plasma; non-esterfied fatty acids: plasma
Organism Descriptors:sheep (Bovidae): adult, breed-Corriedale x Suffolk, ewe, female, male, ram
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Metabolism
ISSN:0021-8812
Year:2000

Journal Title:Journal of Animal Science

Title:Intake, digestibility, and composition of orchardgrass and alfalfa silages treated with cellulase, inoculant, and formic acid fed to lambs
View Article: Journal of Animal Science. 78 (11). November, 2000. 2980-2989
CD Volume:319
Print Article: Pages: 2980-2989
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Author Affiliation:Department of Animal Science, Iowa State University, Ames, IA, 50011: jrussell@iastate.edu
Language:English
Language of Summary:English (EN)
Abstract:The objectives of this study were to determine the effect of a cellulase (from Trichoderma longibrachiatum) alone or combined with a bacterial inoculant (Lactobacillus plantarum and Pediococcus cerevisiae) or formic acid on composition, intake, and digestibility of orchardgrass (Dactylis glomerata L.) and alfalfa (Medicago sativa L.) silages. Orchardgrass and alfalfa were harvested at the early heading stage and at the early bloom stage of maturity and wilted to approximately 22 and 32% DM, respectively. Forages were then ensiled in 100-L sealed barrels for at least 60 d before they were fed to lambs. Silage treated with cellulase had lower (P < .001) pH and lower (P < .001) acetic acid and NH3N concentrations than untreated silage of both plant species and a higher (P = .004) lactic acid concentration than the control treatment of alfalfa silage. Fermentation characteristics of cellulase-treated silages, especially of alfalfa, were further enhanced by use of inoculant. Formic acid addition increased (P < .001), reducing sugar concentration of cellulase-treated orchardgrass and alfalfa silage by 90 and 154%, respectively, and decreased (P < .001) NH3N concentration of cellulase-treated alfalfa silage by 19%. Averaged across plant species, cellulase, combined with inoculant or formic acid, resulted in 8 and 13% greater (P = .03) DMI, respectively, than the control silage. Extensive enzymatic cell-wall degradation during ensiling decreased (P = .003) NDF intake of cellulase-treated orchardgrass silage by 25% and decreased (P = .001) cellulose intake by 23%, when averaged across plant species. Addition of formic acid increased (P = .003) NDF intake of cellulase-treated orchardgrass silage by 19%. Averaged across species, cellulase application decreased (P < .05) silage NDF digestibility by 18%. Greater sugar and lower acetic acid, NH3 N, and NDF concentrations resulted in greater DMI of cellulase-treated silage than of control silage, when cellulase was combined with formic acid or inoculant
Descriptors:alfalfa silage: animal feed, composition; orchardgrass silage: animal feed, composition; silage digestibility; silage intake. Animal Husbandry (Agriculture); Foods. bacterial inoculant; cellulase; formic acid; neutral detergent fiber: digestibility
Organism Descriptors:Dactylis glomerata (Gramineae); Lactobacillus plantarum (Regular Nonsporing Gram-Positive Rods); Medicago sativa (Leguminosae); Pediococcus cerevisiae (Gram-Positive Cocci); Trichoderma longibrachiatum (Fungi Imperfecti or Deuteromycetes); sheep (Bovidae): breed-Dorset x Polypay, lamb, male
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Fungi Imperfecti or Deuteromycetes: Fungi, Plantae; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Gramineae: Monocotyledones, Angiospermae, Spermatophyta, Plantae; Leguminosae: Dicotyledones, Angiospermae, Spermatophyta, Plantae; Regular Nonsporing Gram-Positive Rods: Eubacteria, Bacteria,

Microorganisms. Angiosperms; Animals; Artiodactyls; Bacteria; Chordates; Dicots; Eubacteria; Fungi; Mammals; Microorganisms; Monocots; Nonhuman Mammals; Nonhuman Vertebrates; Nonvascular Plants; Plants; Spermatophytes; Vascular Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods
ISSN:0021-8812
Year:2000
Journal Title:Journal of Animal Science

Title:Roles of novelty, generalization, and postingestive feedback in the recognition of foods by lambs
View Article: Journal of Animal Science. 78 (12). December, 2000. 3060-3069
CD Volume:319
Print Article: Pages: 3060-3069
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Language:English
Language of Summary:English (EN)
Abstract:Ruminants select foods higher in nutrients and lower in toxins than the average of what is available whether fed in confinement or foraging on pastures or wild lands. Our objective was to better understand how sheep learn to select the most nutritious foods when they concurrently ingest different foods. We hypothesized that novelty and generalization are two ways sheep discriminate among foods. The first experiment determined whether lambs offered two foods in a meal (one a novel-flavored food and the other a familiar food) acquired a preference for the novel-flavored food following an infusion of energy (starch) into the rumen. Lambs did not increase preference for the novel-flavored food when the amount of starch infused (150 g) was held constant ($P > 0.05$). However, when the amount of starch infused was made directly proportional to the amount of novel-flavored food ingested, lambs quickly formed a preference for the novel-flavored food ($P < 0.001$). The second experiment determined whether lambs generalized preferences from familiar to novel foods. Lambs fed coconut-flavored milo grain for 51 d subsequently preferred coconut-flavored straw to plain straw ($P < 0.001$). Conversely, lambs that were not fed coconut-flavored milo grain preferred plain to coconut-flavored straw ($P < 0.001$). Lambs infused with a source of energy (starch, 100 g/(lambcntdotd)) consumed more coconut-flavored straw and less plain straw than lambs that had no infusions or lambs infused with a toxin (LiCl, 100 mg/kg BW; $P < 0.05$). Lambs infused once with LiCl had the lowest preference for coconut-flavored straw ($P < 0.05$). Lambs conditioned with starch had the highest intakes of coconut-flavored straw, even after starch infusions were suspended ($P < 0.1$). When straw was replaced by an energy-dense food (wheat grain), all lambs equally preferred coconut-flavored grain to plain grain ($P < 0.001$). Collectively, our results suggest that lambs learned to prefer a novel-flavored food when the amount of energy reward was contingent on the amount of novel-flavored food ingested, and that they generalized from familiar to unfamiliar foods based on common flavor cues. Once generalization occurred, postingestive feedback from nutrients and toxins calibrated preference according to the food's utility
Descriptors:coconut-flavored milo grain: animal feed; coconut-flavored straw: animal feed; feeding preference; flavor; food preference; milo grain: animal feed; novel food; straw: animal feed. Animal Husbandry (Agriculture); Behavior; Nutrition. starch: dietary
Organism Descriptors:sheep (Bovidae): lamb. rumen: digestive system

Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Behavior; Nutrition
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Journal Title:Journal of Animal Science

Title:Characteristics of Lacha and Rasa Aragonesa lambs slaughtered at three live weights
View Article: Journal of Animal Science. 78 (12). December, 2000. 3070-3077
CD Volume:319
Print Article: Pages: 3070-3077
Author(s):Beriain M J Horcada A Purroy A Lizaso G Chasco J Mendizabal J A
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Language:English
Language of Summary:English (EN)
Abstract:A study was made of differences in the quality of meat from Lacha (L) and Rasa Aragonesa (RA) lambs slaughtered at 12, 24, or 36 kg live weight. Lambs from both breeds were weaned at 25 to 57 d, approximately 11.5 to 18.5 kg live weight, and fed concentrate and barley straw until slaughter at 24 and 36 kg live weight. Hot carcass weight, cold carcass weight, conformation, color, firmness, and thickness of backfat and color of rectus abdominis muscle were recorded on the carcass. Final pH (pHu), instrumental color (L*, a*, b*), myoglobin concentration, chemical composition, and water-holding capacity (WHC) of the longissimus muscle, shear force of the biceps femoris muscle, and iodine values and fatty acid composition of the i.m. and s.c. fat depots were determined. The percentage of fat in the longissimus muscle increased with live weight, and values for RA lambs were higher than those for L lambs. The WHC of meat from RA lambs was lower at 24 kg than at 12 or 36 kg slaughter weight. Live weight and breed had no effect on the shear force of the biceps femoris muscle. There was an increase in myoglobin concentration in the longissimus muscle with increased live weight in both breeds. The fatty acid content of s.c. and i.m. fat, which was not affected by breed, declined with the increase in slaughter weight. The polyunsaturated fatty acid content of the s.c. fat depot increased, whereas that of the i.m. fat depot decreased, with the increase in slaughter weight in both breeds. Subcutaneous fat had a higher content of heptadecanoic acid (17:0) than i.m. fat, and this increased with the increase in slaughter weight. In both depots, there was an increase in oleic acid (18:1) at 12 kg in RA lambs and at 24 kg in L lambs. In the s.c. fat depot, there was a progressive increase in linoleic acid (18:2) content with the increase in live weight in both breeds. There was a higher degree of unsaturation in the s.c. fat of RA lambs than in that of L lambs, which was reflected in the iodine value
Descriptors:backfat thickness; barley straw: animal feed; breed differences; concentrate: animal feed supplement; live weight; meat quality; muscle color; pH; slaughter; water-holding capacity. Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics); Foods. fatty acid; heptadecanoic acid; linoleic acid; myoglobin; oleic acid
Organism Descriptors:sheep (Bovidae): breed-Lacha, breed-Rasa Aragonesa, lamb. longissimus muscle: muscular system

Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Molecular Genetics (Biochemistry and Molecular Biophysics); Foods
ISSN:0021-8812
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Journal Title:Journal of Animal Science

Title:The effect of feeding ewe lambs a 15% tarbush (Flourensia cernua DC) pellet pre- and post-weaning on the subsequent diet selection of tarbush
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CD Volume:322
Print Article: Pages: 123-131
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Language:English
Language of Summary:English (EN)
Abstract:The shrub Flourensia cernua (tarbush) has rapidly increased in dominance within Chihuahuan Desert grasslands, and is comparable to alfalfa in nutrient content. Increasing tarbush in livestock diets may improve diet quality, but reduces tarbush dominance. We examined dietary selection for tarbush by sheep, and the effect of previous exposure on selection. Thirty-eight ewe lambs received either tarbush or alfalfa in a sorghum-based pellet 120 days postparturition, after which dietary selection was assessed. Previous exposure to tarbush deterred lambs from tarbush consumption. Lambs without previous exposure maintained greater intakes initially, but this declined with time, which corresponds with the onset of tarbush toxicosis
Descriptors:arid land remediation; biological control; diet selection; feeding; grasslands; learning; nutrient content. Animal Husbandry (Agriculture); Behavior. tarbush toxicosis: toxicity
Geographic Locator:Chihuahuan Desert (North America, Nearctic region)
Organism Descriptors:Flourensia cernua [tarbush] (Compositae): diet item, dominant species; alfalfa (Leguminosae): diet item; sheep (Bovidae): ewe lamb, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Compositae: Dicotyledones, Angiospermae, Spermatophyta, Plantae; Leguminosae: Dicotyledones, Angiospermae, Spermatophyta, Plantae. Angiosperms; Animals; Artiodactyls; Chordates; Dicots; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Plants; Spermatophytes; Vascular Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Behavior
ISSN:0140-1963
Year:2000
Journal Title:Journal of Arid Environments

Title:Joint Meeting of the American Dairy Science Association and the American Society of Animal Science, Baltimore, MD, USA, July 24-28, 2000
View Article: Journal of Dairy Science. 83 (Supplement 1). 2000. 1-319
CD Volume:319
Print Article: Pages: 1-319
Author(s):American Dairy Science Association American Society of Animal Science

Language:English
Language of Summary:English (EN)
Abstract:This meeting contains over 1300 abstracts, written in English, covering aspects of animal behavior, health, growth and development, genetics, breeding, nutrition, and production of animal food products. This meeting was published as a combined issue of 'Journal of Dairy Science' 83 (Supplement 1) and 'Journal of Animal Science ' 78 (Supplement 1)
Descriptors:agricultural extension; animal health; animal production; animal welfare; behavior; breeding; dairy foods: dairy product; food safety; forages: animal feed; growth; milk synthesis; muscle biology; nutrition; pasture; physiology; reproduction; Meeting Summary.
Animal Husbandry (Agriculture); Veterinary Medicine (Medical Sciences)
Organism Descriptors:cattle (Bovidae): beef, dairy; goat (Bovidae); horse (Equidae); rabbit (Leporidae); ruminant (Artiodactyla); sheep (Bovidae); swine (Suidae)
Supplemental Descriptors:Artiodactyla: Mammalia, Vertebrata, Chordata, Animalia; Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Equidae: Perissodactyla, Mammalia, Vertebrata, Chordata, Animalia; Leporidae: Lagomorpha, Mammalia, Vertebrata, Chordata, Animalia; Suidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Lagomorphs; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Perissodactyls; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Veterinary Medicine (Medical Sciences)
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Effects of isolation stress on mammary tight junctions in lactating dairy cows
View Article: Journal of Dairy Science. 83 (1). January, 2000. 48-51
CD Volume:319
Print Article: Pages: 48-51
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Language:English
Language of Summary:English (EN)
Abstract:Eighteen cows had been selected for their responsiveness to psychological stress during the first lactation and were classified as having low (n = 10) or high (n = 8) cortisol concentrations in response to isolation-induced stress. In the present study these cows, now in their second lactation, were used to determine the effect of social isolation stress on the permeability of mammary tight junctions. During the experiment, each cow was isolated from the rest of the herd for 55 h. After the 1st h of isolation, each cow received a bolus infusion of endotoxin in one hind quarter in order to challenge tight junctions. Blood samples were taken throughout to measure lactose, which was used as an indicator of tight-junction leakiness. After 1 h of isolation, stress caused an increase in tight junction permeability in both groups, which was further enhanced by the endotoxin treatment. Although the permeability did not differ significantly between the two groups, it was consistently higher in the high-cortisol group, which was also the most stress-responsive group. Thus, psychological stress may adversely affect milk quality by allowing serum components to leak into milk

Descriptors:lactation; milk: dairy product, quality; social isolation stress. Animal Husbandry (Agriculture); Behavior; Foods; Reproductive System (Reproduction). cortisol; endotoxin: toxin; lactose: tight-junction leakiness indicator
Organism Descriptors:cattle (Bovidae): cow, female, lactating. blood: blood and lymphatics; mammary tight junctions: permeability, reproductive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Behavior; Foods; Reproductive System (Reproduction)
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Effect of alpha -tocopherol deprivation on the involution of mammary gland in sheep
View Article: Journal of Dairy Science. 2000. 83 (2). 345-350
CD Volume:319
Print Article: Pages: 345-350
Author(s):Colitti M Stradaioli G Stefanon B
Author Affiliation:Faculty of Veterinary Medicine, Department of Animal Production Sciences, University of Udine, Udine, Italy
Language:English
Abstract:The objective of this study was to investigate the effect of alpha -tocopherol deprivation on mammary gland involution and apoptosis in sheep. Two groups of four single lamb ewes were used. The control group received 100 mg/d of RRR- alpha -tocopherol supplementation and the experimental group received no vitamin E supplementation. After 3 months of suckling, ewes were dried off, and blood samples from the jugular vein and tissue biopsies from the mammary gland were collected at d 1, 3, 5 and 8 after dry-off. The experimental group had lower plasma concentrations of alpha -tocopherol (1.8 vs. 4.2 micro mol/Litre), lower glutathione peroxidase activity in erythrocytes, and higher concentration of malondialdehyde in plasma than the control group. Immunohistochemical analysis of tissue samples resulted in marked differences of bcl-2 and bax protein expressions during involution and between groups. The bax expression was decreased by alpha -tocopherol deprivation at 1, 3 and 5 d, but not at 8 d, while the bcl-2 score was higher only at 8 d (1.5 vs. 0.0 for experimental and control groups, respectively). As a result, the bcl-2 to bax ratios were increased for the experimental group at 1 and 8 d. During involution, apoptotic counts increased (from 0.12 to 4.06%), but no effects were detected in relation to bcl-2 to bax ratio and alpha -tocopherol. These results indicate that alpha -tocopherol can control bcl-2 expression, but not apoptosis in cells of the mammary gland during involution
Descriptors:alpha-tocopherol. apoptosis. erythrocytes. ewes. gene-expression. glutathione-peroxidase. involution. mammary-glands
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL600
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Effect of superovulation prior to mating on milk production performance during lactation in ewes
View Article: Journal of Dairy Science. 2000. 83 (3). 477-483
CD Volume:319
Print Article: Pages: 477-483
Author(s):Manalu W Sumaryadi M Y Sudjatmogo Satyaningtijas A S
Author Affiliation:Faculty of Veterinary Medicine, Department of Physiology and Pharmacology, Bogor Agricultural University, Jalan Taman Kencana I No. 3, Bogor 16151, Indonesia
Language:English
Abstract:30 lactating ewes were used to evaluate the effect of superovulation on milk production. 12 ewes had been injected, prior to mating, with 700 IU of pregnant mare serum gonadotropin; 18 ewes were injected with saline and acted as control. 13 ewes (9 control and 4 superovulated ewes) were fed at a low plane of nutrition; the other ewes (9 control and 8 superovulated ewes) were fed at a high plane of nutrition. Superovulated ewes, fed at both low and high planes of nutrition, had dramatically higher milk yields (59%), and their milk composition was not changed. Plane of nutrition increased milk lactose and P contents without significant effects on milk production. The increased milk yields in the superovulated ewes were accompanied by increases in dry matter, gross energy intakes, and gross efficiency of milk synthesis. At the end of lactation, superovulated ewes had higher mammary dry fat-free tissue, total DNA, and total RNA. The results demonstrated that superovulation prior to mating dramatically increased milk production and efficiency regardless of plane of nutrition. Increased milk production and efficiency in the superovulated ewes were due to the increased numbers of mammary secretory cells and their synthetic activities, presumably through the increased endogenous hormonal stimulation of mammary growth and development during pregnancy
Descriptors:energy-intake. ewes. high-plane-feeding. lactation. lactose. low-plane-feeding. milk-composition. milk-synthesis. milk-yield. phosphorus. plane-of-nutrition. PMSG. sheep-feeding. superovulation
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL110. LL250. QQ010. WW000
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Effects of Isotricha, Dasytricha, Entodinium, and total fauna on ruminal fermentation and duodenal flow in wethers fed different diets
View Article: Journal of Dairy Science. 83 (4). April, 2000. 776-787
CD Volume:319
Print Article: Pages: 776-787
Author(s):Ivan M Neill L Forster R Alimon R Rode L M Entz T
Author Affiliation:Lethbridge Research Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, T1J 4B1: ivanm@agr.ca
Language:English
Language of Summary:English (EN)
Abstract:The objective was to measure rumen fermentation and duodenal flow of amino acids and nonammonia N components in five groups of five ruminally and duodenally cannulated wethers that were fauna-free, or inoculated with the ciliate protozoa genera of Isotricha, Dasytricha, Entodinium, or a normal population (total) of fauna. They were used in two 25-d periods and fed a haycrop-based diet in

the first period and a corn silage-based diet in the second period. Feces, duodenal digesta, and rumen contents were sampled in each period and analyzed. The number of Entodinium in wethers containing the Entodinium monofauna was higher than the total protozoa numbers, including Entodinium, in wethers containing total fauna population. The type of diet or fauna did not affect total volatile fatty acid concentrations in rumen fluid. The ammonia N concentration in rumen fluid was higher in wethers containing total fauna (25 mg/100 ml) than in fauna-free wethers fed the two diets (18 and 12 mg/100 ml). In comparison with the respective fauna-free wethers, the concentration of ammonia in wethers containing Entodinium was higher when fed the corn silage diet, but not different when fed the haycrop diet. Ruminal presence of total fauna or Entodinium decreased the nonammonia N by 16 and 17%, and total amino acid flows from the stomach by 20 and 19%, respectively. Flow of bacteria N was decreased in wethers fed the two diets when Entodinium or total fauna were present in the rumen. The presence of Isotricha resulted in higher flow of bacteria N in wethers fed the haycrop diet, but the presence of Dasytricha resulted in higher bacteria N flow in wethers fed the corn silage diet. Entodinium was the most detrimental of ciliate protozoa species concerning protein nutrition of the host ruminant
Descriptors:duodenal digesta; haycrop-based diet. Digestive System (Ingestion and Assimilation); Nutrition; Parasitology. amino acids: duodenal flow, rumen fermentation; fatty acid: concentration; nitrogen; nonammonia amino components
Organism Descriptors:Dasytricha (Ciliata): effects, parasite; Entodinium (Ciliata): effects, parasite; Isotricha (Ciliata): effects, parasite; sheep (Bovidae): breed-Canadian Arcott, host, wether. duodenum: digestive system; feces: digestive system; rumen: contents, digestive system, fluid
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Ciliata: Protozoa, Invertebrata, Animalia. Animals; Artiodactyls; Chordates; Invertebrates; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Protozoans; Vertebrates
Subject Codes:Digestive System (Ingestion and Assimilation); Nutrition; Parasitology
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Time series autoregressive integrated moving average modeling of test-day milk yields of dairy ewes
View Article: Journal of Dairy Science. 83 (5). May, 2000. 1094-1103
CD Volume:319
Print Article: Pages: 1094-1103
Author(s):Macciotta N P P Cappio Borlino A Pulina G
Author Affiliation:Dipartimento di Scienze Zootecniche, Universita degli Studi di Sassari, Via De Nicola 9, 07100, Sassari: macciott@ssmain.UNISS.IT
Language:English
Language of Summary:English (EN)
Abstract:Monthly test-day milk yields of 1200 dairy Sarda ewes were analyzed by time-series methods. Autocorrelation functions were calculated for lactations within parity classes and altitude of location of flocks. Spectral analysis of the successions of data was developed by Fourier transformation, and different Box-Jenkins autoregressive integrated moving average models were fitted. The separation of deterministic and stochastic components highlighted the autoregressive feature of milk production pattern. The forecasting

power of autoregressive integrated moving average models was tested by predicting total milk production for a standardized lactation length of 225 d from only a few test-day records. Results indicated a greater forecasting capacity in comparison with standard methods and suggested further development of time-series analysis for studying lactation curves with more sophisticated methods, such as wavelet decomposition and neural network models
Descriptors:forecasting; lactation; milk: dairy product, production prediction; test-day milk yields. Animal Husbandry (Agriculture); Models and Simulations (Computational Biology); Methods and Techniques
Organism Descriptors:sheep (Bovidae): breed-Sarda, dairy, ewe, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Models and Simulations (Computational Biology); Methods and Techniques
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:The effect of the introduction of automatic milking systems on milk quality
View Article: Journal of Dairy Science. 83 (9). September, 2000. 1998-2003
CD Volume:319
Print Article: Pages: 1998-2003
Author(s):Klungel G H Slaghuis B A Hogeveen H
Author Affiliation:Research Station for Cattle, Sheep and Horse Husbandry, 8203 AD, Lelystad: H.Hogeveen@pv.agro.nl
Language:English
Language of Summary:English (EN)
Abstract:Changes in milk quality after the introduction of automatic milking systems on 28 Dutch dairy farms were examined and observations were compared with milk quality characteristics on two groups of farms milking either two (49 farms) or three times (28 farms) per day in a conventional milking parlor. Milk quality data were collected from January 1996 until March 1998. The farms with an automatic milking system are pioneers and cannot be considered representative of Dutch dairy farms. After the introduction of the automatic milking system, a statistically significant increase in total bacterial plate count and in free fatty acids was observed. Total bacterial plate count, free fatty acids, and freezing point were higher on farms using the automatic milking system than in the other two groups of farms. Somatic cell counts did not change after the introduction of the automatic milking system, but were already rather high in herds using the automatic milking system compared with the other groups of farms. The introduction of automatic milking systems used in the study resulted in a decrease in milk quality compared with conventional systems
Descriptors:dairy science; milk: dairy product, quality analysis. Animal Husbandry (Agriculture); Foods. free fatty acids
Geographic Locator:Netherlands (Europe, Palearctic region)
Organism Descriptors:bacteria (Bacteria); dairy cattle (Bovidae): female
Supplemental Descriptors:Bacteria: Microorganisms; Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Bacteria; Chordates; Eubacteria; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods

ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:In vitro methods for measuring the dry matter digestibility of ruminant feedstuffs: Comparison of methods and inoculum source
View Article: Journal of Dairy Science. 83 (10). October, 2000. 2289-2294
CD Volume:319
Print Article: Pages: 2289-2294
Author(s):Mabjeesh S J Cohen M Arieli A
Author Affiliation:Department of Animal Sciences, The Faculty of Agricultural, Food, and Environmental Quality Sciences, Rehovot, 76100: mabjeesh@agri.hugi.ac.il
Language:English
Language of Summary:English (EN)
Abstract:We conducted this study to evaluate the new in vitro system, DAISYII, to determine dry matter (DM) digestibility in ruminant feedstuffs. Results from the DAISYII were compared to those obtained by the traditional Tilly and Terry method. The traditional method buffer was used for both methods. We also compared two sources of rumen inoculum from sheep and dairy cows. Seventeen different feeds were tested, grouped into roughage, concentrate, and CP supplements. The experiment was replicated on two different occasions for all feeds and the two sources of inoculum. The source of inoculum and the time at which it was collected had no effect on the in vitro DM digestibility of the feedstuffs in either of the methods. The DAISYII DM digestibility value compared well with the traditional method values for the roughage group; however, for some feedstuffs in the concentrate and CP supplement groups, the DAISYII values were significantly higher than the traditional method values. Regression analysis of the feeds that resulted in similar values with the two methods revealed that the DAISYII method can be used to predict in vitro digestibility with relatively small variation
Descriptors:CP supplement [crude protein supplement]: cattle feed; concentrate: cattle feed; in vitro dry matter digestibility [IVDMD]; roughage: cattle feed; ruminant feedstuffs. Animal Husbandry (Agriculture); Equipment, Apparatus, Devices and Instrumentation; Nutrition
Organism Descriptors:cattle (Bovidae): cow, dairy animal, female; sheep (Bovidae). rumen: digestive system, inoculum
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Equipment, Apparatus, Devices and Instrumentation; Nutrition
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Identification of Corynebacterium bovis and other coryneforms isolated from bovine mammary glands
View Article: Journal of Dairy Science. 83 (10). October, 2000. 2373-2379
CD Volume:319
Print Article: Pages: 2373-2379
Author(s):Watts J L Lowery D E Teel J F Rossbach S

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Language:English
Language of Summary:English (EN)
Abstract:Bovine mastitis remains the most economically important disease in dairy cows. Corynebacterium bovis, a lipid-requiring Corynebacterium spp., is frequently isolated from the milk of infected mammary glands of dairy cows and is associated with reduced milk production. A total of 212 coryneform bacteria isolated from the milk of dairy cows were obtained from mastitis reference laboratories in the United States and Canada. All isolates had been presumptively identified as Corynebacterium bovis based on colony morphology and growth in the presence of butterfat. Preliminary identification of the isolates was based on Gram stain, oxidase, catalase, and growth on unsupplemented trypticase soy agar (TSA), TSA supplemented with 5% sheep blood, and TSA supplemented with 1% Tween 80. Of the 212 isolates tested, 183 were identified as Corynebacterium spp. based on preliminary characteristics. Of the strains misidentified, one was identified as a yeast, two as Bacillus spp., 11 as Enterobacteriaceae, 18 as staphylococci, one as a Streptococcus spp., and one as an Enterococcus spp. Eighty- seven coryneforms were selected for identification to the species level by direct sequencing of the 16S rRNA gene, the Biolog system and the API Coryne system. Fifty strains were identified as C. bovis by 16S rRNA gene similarity studies: the Biolog and API Coryne systems correctly identified 54.0 and 88.0% of these strains, respectively. The other coryneforms were identified as other Corynebacterium spp., Rhodococcus spp., or Microbacterium spp. These data indicate that the coryneform bacteria isolated from bovine mammary glands are a heterogeneous group of organisms. Routine identification of C. bovis should include Gram-stain, cell morphology, catalase production, nitrate reduction, stimulated growth on 1% Tween 80 supplemented media, and beta-galactosidase production as the minimum requirements
Descriptors:Animal Husbandry (Agriculture); Infection; Veterinary Medicine (Medical Sciences). mastitis: reproductive system disease/female. Tween 80; beta-galactosidase: production; butterfat; catalase: production; mRNA [messenger RNA]; nitrate: reduction; oxidase; trypticase soy agar [TSA]. coryneform 16S mRNA gene (Irregular Nonsporing Gram-Positive Rods)
Geographic Locator:Canada (North America, Nearctic region); USA (North America, Nearctic region)
Organism Descriptors:Bacillus (Endospore-forming Gram-Positives): pathogen; Corynebacterium (Irregular Nonsporing Gram-Positive Rods): pathogen; Corynebacterium bovis (Irregular Nonsporing Gram-Positive Rods): pathogen; Enterobacteriaceae (Enterobacteriaceae): pathogen; Enterococcus (Gram-Positive Cocci): pathogen; Microbacterium (Irregular Nonsporing Gram-Positive Rods): pathogen; Rhodococcus (Nocardioform Actinomycetes): pathogen; Streptococcus (Gram- Positive Cocci): pathogen; cattle (Bovidae): cow, dairy animal, female, host; coryneforms (Irregular Nonsporing Gram-Positive Rods): pathogen; sheep (Bovidae); staphylococci (Micrococcaceae): pathogen; yeast (Fungi). blood: blood and lymphatics; mammary glands: reproductive system; milk: reproductive system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Endospore-forming Gram-Positives: Eubacteria, Bacteria, Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram- Negative Rods, Eubacteria, Bacteria, Microorganisms; Fungi: Plantae; Gram-Positive Cocci: Eubacteria, Bacteria, Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms; Micrococcaceae:

Gram-Positive Cocci, Eubacteria, Bacteria, Microorganisms; Nocardioform Actinomycetes: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms. Animals; Artiodactyls; Bacteria; Chordates; Eubacteria; Fungi; Mammals; Microorganisms; Nonhuman Mammals; Nonhuman Vertebrates; Nonvascular Plants; Plants; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Infection; Veterinary Medicine (Medical Sciences)
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Postprandial metabolism and endocrine status in veal calves fed at different frequencies
View Article: Journal of Dairy Science. 83 (11). November, 2000. 2480-2490
CD Volume:319
Print Article: Pages: 2480-2490
Author(s):Kaufhold J N Hammon H M Bruckmaier R M Breier B H Blum J W
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Language:English
Language of Summary:English (EN)
Abstract:Veal calves fed by bucket often develop postprandial insulin resistance, hyperglycemia, and glucosuria during fattening. Automatic feeding systems allow feed intake for 24 h, and small ingested portions are expected to decrease postprandial glucose loads. We have studied metabolic and endocrine traits in calves that were either 1) fed identical daily amounts of whole milk plus milk replacer by a computer-programmed automatic feeder (gtoreq6 portions from 0800 to 2400 h) (GrA) or 2) fed by bucket at 0800 and 1630 h (GrB). Calves started at a body weight of 118 kg, and the experiment lasted for 3 wk. During wk 3, lactose was supplemented to stress postabsorptive glucose homeostasis. Feed intake and average daily gains in GrA and GrB were similar. Plasma concentrations during an 8-h period of glucose (in part), lactate, urea, and somatostatin (in wk 3), and of glucagon and insulin (wk 2 and 3) were smaller in GrA than in GrB, whereas growth hormone, insulin-like growth factor I, insulin-like growth factor binding protein-1 (wk 2), and prolactin concentrations (wk 2 and 3) were higher. Lactose supplementation in wk 3 enhanced transient postprandial hyperglycemia and hyperinsulinemia. Thus, there were marked metabolic and endocrine differences when calves sucked their feed in six or more portions during a 16-h period from an automatic feeder compared with twice daily drinking from a bucket. Ingestion of small portions by calves avoided marked hyperglycemia and lactate increments, and lower plasma urea concentrations mirrored enhanced nitrogen utilization, possibly mediated by the altered growth hormone, IGF-I and insulin status
Descriptors:automatic feeding system; average daily gain; endocrine status; feed intake; postprandial hyperglycemia; postprandial hyperinsulinemia; postprandial metabolism. Animal Husbandry (Agriculture); Endocrine System (Chemical Coordination and Homeostasis); Metabolism. glucagon; glucose; growth hormone; insulin; insulin-like growth factor I; insulin-like growth factor binding protein-1; lactate; lactose: dietary supplement; nitrogen: utilization; prolactin; somatotropin; urea
Organism Descriptors:sheep (Bovidae): calf, veal animal. plasma: blood and lymphatics

Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Endocrine System (Chemical Coordination and Homeostasis); Metabolism
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:A comparison of methods of adding fibrolytic enzymes to lactating cow diets
View Article: Journal of Dairy Science. 83 (11). November, 2000. 2512-2520
CD Volume:319
Print Article: Pages: 2512-2520
Author(s):Yang W Z Beauchemin K A Rode L M
Author Affiliation:Livestock Sciences Section, Research Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, T1J 4B1: beauchemin@em.agr.ca
Language:English
Language of Summary:English (EN)
Abstract:Holstein cows (n = 43) in early lactation were used to investigate effects of method of adding fibrolytic enzymes to diets on feed intake, milk production, and digestibility. Cows were blocked according to parity and calving date and randomly assigned to three treatments: control, enzymes applied to the total mixed ration (E-TMR), or enzymes added to the barley-based concentrate (E-Conc). The enzyme product used was a proprietary blend that contained relatively high xylanase and low cellulase activities (Biovance Technol. Inc., Omaha, NE). An enzyme solution (50 mg of enzyme powder dissolved into 20 ml of water) was sprayed onto each kilogram of total mixed ration (dry matter basis) before feeding. Alternatively, 73 g of enzyme powder, dissolved in 20 L of water, was added per tonne of concentrate (50 mg of enzyme/kg of diet dry matter). The total mixed rations contained 24% corn silage, 14% alfalfa hay, and 62% concentrate (dry matter basis) and were offered ad libitum. In vitro gas production assays and two experiments using sheep were conducted to measure the effects of enzyme treatment on digestibility. Dry matter intake (mean: 19.8 kg/d) was not affected by enzyme supplementation. Milk yield (kg/d) was higher for cows fed E-Conc (37.4) than for cows fed control (35.3) or E-TMR (35.2) with no effects on milk composition. Total tract digestibility (%) of dry matter was higher for E-Conc (66.6%) than for the control diet (63.9%) and intermediate for E-TMR (65.7%) when measured in dairy cows. However, the digestibility of the diets was substantially higher when measured in sheep than in dairy cows, with no effects of enzyme supplementation. The results indicate that fibrolytic enzymes have the potential to increase digestibility and milk production in dairy cows because digestion is low relative to potential digestibility. When digestion is higher, as was observed in lambs or in vitro, no improvement in digestibility occurs. Method of enzyme delivery must also be considered to maximize the benefits of using fibrolytic enzymes in dairy cow diets
Descriptors:dry matter digestibility; feed intake; lactation; milk: dairy product, production. Animal Husbandry (Agriculture); Nutrition. cellulase: dietary supplement; fibrolytic enzymes: dietary supplement; xylanase: dietary supplement
Organism Descriptors:cattle (Bovidae): breed-Holstein, dairy animal, female; sheep (Bovidae)

Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Nutrition
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:Comparison of models for describing the lactation curve of Latxa sheep and an analysis of factors affecting milk yield
View Article: Journal of Dairy Science. 83 (11). November, 2000. 2709-2719
CD Volume:319
Print Article: Pages: 2709-2719
Author(s):Ruiz R Oregui L M Herrero M
Author Affiliation:Basque Institute for Agricultural Research and Development, NEIKER S.A., Granja Modelo de Arkaute, E-01080, Vitoria-Gasteiz: rruiz@neiker.net
Language:English
Language of Summary:English (EN)
Abstract:The objectives of this work were 1) to compare the goodness-of-fit of empirical models of the lactation curve and 2) to analyze the factors affecting the shapes of the lactation curves, the parameters describing them, and the overall milk yield of Latxa dairy sheep. A total of 14,699 records from 2711 ewes, collected during three consecutive years (1995 to 1997) by the milk recording program of the Latxa ewe of the Basque Country (Spain), were used. Six mathematical models and three fitting procedures were compared. The estimation of model parameters by nonlinear fitting procedures was superior to that by linear regression methods. A nonlinear variable decay model fitted the data better than the other models, as judged by lower mean square prediction error, residual sums of squares, and a lack of first-order positive autocorrelation as assessed by the Durbin Watson coefficient. The effects of the flock, flock-year interaction, month of lambing, length of lactation nested within month of lambing, parity, and number of live lambs born had significant effects on the parameters of the model and the total milk yield ($P < 0.01$). The prediction of milk yield from the selected model was similar to the estimates obtained with the Fleischmann method currently used by the national breeding program for the Latxa breed
Descriptors:flock effects; flock-year interaction; lactation curve; lactation length; lambing; milk: dairy product, yield; parity.
Animal Husbandry (Agriculture); Models and Simulations (Computational Biology)
Organism Descriptors:sheep (Bovidae): breed-Latxa, dairy animal, ewe, female
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Models and Simulations (Computational Biology)
ISSN:0022-0302
Year:2000
Journal Title:Journal of Dairy Science

Title:A sandwich enzyme-linked immunosorbent assay for the detection of almonds in foods
View Article: Journal of Food Protection. 63 (2). Feb., 2000. 252-257

CD Volume:320
Print Article: Pages: 252-257
Author(s):Hlywka Jason J Hefle Susan L Taylor Steve L
Author Affiliation:Food Allergy Research and Resource Program, Department of Food Science and Technology, University of Nebraska, Lincoln, NB, 68583- 0955
Language:English
Language of Summary:English (EN)
Abstract:An enzyme-linked immunosorbent assay was developed to detect almonds as potential allergenic contaminants in food. Polyclonal antibodies directed against roasted almonds were partially purified from immunized sheep and rabbits and used as capture and secondary antibodies, respectively, in a sandwich-type, 96-well plate format. Food samples and almond-spiked samples were extracted 1:10 in phosphate-buffered saline at 60degreeC for 2 h, centrifuged, and applied to wells coated with sheep anti-almond antibody. After incubation, washing, and the addition of rabbit anti-almond antibody, the amount of almond present was detected with the subsequent addition of goat anti-rabbit immunoglobulin G-alkaline phosphatase conjugate and p-nitrophenyl phosphate substrate. Plate absorbances were read at 410 nm, and standard curves were developed in all matrices to quantify unknowns. Antibodies developed were specific for almond; however, some cross-reactivity was observed with extracts of some tree nuts and sesame seeds. Sodium dodecylsulfate-polyacrylamide gel electrophoresis and Western immunoblotting indicated that sheep anti-almond antibody recognized proteins extracted from black walnuts, Brazil nuts, cashews, hazelnuts, macadamia nuts, pistachios, and sesame seeds in addition to those from almond. The assay was optimized to detect less than 1 ppm of almond and was used successfully to determine almond residues in cereal and chocolate without cross-reacting interferences. A retail survey of 20 brands of cereal demonstrated that the assay produced statistically consistent results. This assay provides a useful quality control tool for the food industry for the protection of consumers allergic to almonds
Descriptors:almonds: food contaminant, nut; cereal: breakfast cereal; chocolate: candy; quality control. Foods; Methods and Techniques. proteins: allergen
Subject Codes:Foods; Methods and Techniques
ISSN:0362-028X
Year:2000
Journal Title:Journal of Food Protection

Title:Species origin of milk in Italian mozzarella and Greek feta cheese
View Article: Journal of Food Protection.. 63 (3). March, 2000. 408-411
CD Volume:320
Print Article: Pages: 408-411
Author(s):Branciari Raffaella Nijman Isaac J Plas Martijn E Di Antonio Eraldo Lenstra Johannes A
Author Affiliation:Istituto di Ispezione degli Alimenti di Origine Animale, Perugia University, Via S. Costanzo, 06126, Perugia
Language:English
Language of Summary:English (EN)
Abstract:Several animal species such as cattle, goats, sheep, and water buffalo provide milk for dairy products. We describe a simple procedure for detecting the species origin of milk used for cheese production. DNA was isolated from Italian mozzarella or Greek feta by sequential organic extractions and resin purification. This DNA was analyzed by polymerase chain reaction-restriction fragment length

polymorphism as described previously for meat samples. This procedure differentiated mozzarella made from water buffalo milk and from less expensive bovine milk and also feta cheeses made from bovine, ovine, and caprine milk
Descriptors:Greek feta cheese: dairy product; Italian mozzarella cheese: dairy product; bovine milk: cheese ingredient, dairy product; caprine milk: cheese ingredient, dairy product; ovine milk: cheese ingredient, dairy product; water buffalo milk: cheese ingredient, dairy product. Foods; Methods and Techniques. DNA
Subject Codes:Foods; Methods and Techniques
ISSN:0362-028X
Year:2000
Journal Title:Journal of Food Protection

Title:Microbiological conditions of sheep carcasses from conventional or inverted dressing processes
View Article: Journal of Food Protection. 63 (9). September, 2000. 1291-1294
CD Volume:320
Print Article: Pages: 1291-1294
Author(s):Gill C O Bryant J Brereton D A
Author Affiliation:Agriculture and Agri-Food Canada Research Centre, 6000 C and E Trail, Lacombe, AB, T4L 1W1
Language:English
Language of Summary:English (EN)
Abstract:At a small abattoir, 25 sheep carcasses were dressed conventionally, with the carcass suspended by the rear legs, and 25 carcasses were dressed while inverted, with the carcasses suspended by the forelegs. Two swab samples were obtained from randomly selected sites on each carcass, and total aerobic, coliform, and Escherichia coli counts were enumerated for each sample. Each type of count was arranged in two sets of 25 counts for each type of dressing process, and a log mean number and/or log total number recovered was calculated for each set of counts. The log mean number of total aerobic counts for one set of counts from carcasses dressed while inverted was less than the corresponding log mean numbers for both sets from the conventionally dressed carcasses and the other set from the carcasses dressed while inverted, and differed from them by about 0.7 log units. The coliforms recovered from carcasses were largely E. coli. The log total numbers of coliform or E. coli counts recovered from carcasses dressed while inverted were about 1.5 log units less than the corresponding log total numbers recovered from conventionally dressed carcasses. Those data indicate that the substitution of inverted for conventional dressing might serve to reduce the numbers of E. coli on sheep carcasses by reducing the microbiological contamination of the hindquarters but that the general microbiological condition of the carcasses would be little improved unless some means of preventing or removing contamination of the forequarters was also used
Descriptors:sheep carcasses: meat, microbiological condition. Foods
Organism Descriptors:Escherichia coli (Enterobacteriaceae): food contaminant; aerobic bacteria (Bacteria): food contaminant; coliform (Enterobacteriaceae): food contaminant
Supplemental Descriptors:Bacteria: Microorganisms; Enterobacteriaceae: Facultatively Anaerobic Gram-Negative Rods, Eubacteria, Bacteria, Microorganisms. Bacteria; Eubacteria; Microorganisms
Subject Codes:Foods
ISSN:0362-028X
Year:2000

Journal Title:Journal of Food Protection

Title:A ten-year water balance of a mountainous semi-arid watershed
View Article: Journal of Hydrology (Amsterdam) 2000. 237 (1/2). 86-99
CD Volume:331
Print Article: Pages: 86-99
Author(s):Flerchinger G N Cooley K R
Author Affiliation:Northwest Watershed Research Center, USDA Agricultural Research Service, 800 Park Boulevard, Suite 105 Boise, ID 83712, USA
Language:English
Abstract:A water balance was computed using 10 years of data collected at the Upper Sheep Creek Watershed, a 26-ha semiarid mountainous sub-basin within the Reynolds Creek Experimental Watershed in southwest Idaho, USA. The approach computed a partial water balance for each of three landscape units and then computed an aggregated water balance for the watershed. Runoff and change in ground water storage were not distinguishable between landscape units. Precipitation, which occurs predominantly as snow, was measured within each landscape unit directly and adjusted for drifting. Spatial variability of effective precipitation was shown to be greater during years with higher precipitation. Evapotranspiration, which accounted for nearly 90% of the effective precipitation, was estimated using the Simultaneous Heat and Water Model and validated with measurements from Bowen ratio instruments. Runoff from the watershed was correlated to precipitation above a critical threshold of approximately 450 mm of precipitation necessary to generate runoff (r2=0.52). The average water balance error was 46 mm, or approximately 10% of the estimated effective precipitation for the ten-year period. The error was largely attributed to deep percolation losses through fractures in the basalt underlying the watershed. Simulated percolation of the water beyond the root zone correlated extremely well with measured runoff (r2=0.90), which is derived almost entirely from subsurface flow. Above a threshold of 50 mm, approximately 67% of the water percolating beyond the root zone produces runoff. The remainder was assumed to be lost to deep percolation through the basalt. This can have important ramifications in addressing subsurface flow and losses when applying a snowmelt runoff model to simulate runoff and hydrologic processes in the watershed
Descriptors:water-balance. watersheds. mountain-areas. semiarid-zones. precipitation. rangelands. evapotranspiration. models
Geographic Locator:USA. Idaho
Supplemental Descriptors:North-America. America. Developed-Countries. OECD-Countries. Mountain-States-of-USA. Western-States-of-USA. USA
Subject Codes:JJ300. PP200. PP500
Supplementary Info:33 ref
ISSN:0022-1694
Year:2000
Journal Title:Journal of Hydrology

Title:Surface tongue-and-groove contours on lens MIP facilitate cell-to-cell adherence
View Article: J Mol Biol 2000 Jul 21;300(4):779-89
CD Volume:308
Print Article: Pages: 779-789
Author(s):Fotiadis D Hasler L Muller DJ Stahlberg H Kistler J Engel A
Author Affiliation:M. E. Muller-Institute for Microscopy at the Biozentrum, University of Basel, Basel, CH-4056, Switzerland

Abstract:The lens major intrinsic protein (MIP, AQP0) is known to function as a water and solute channel. However, MIP has also been reported to occur in close membrane contacts between lens fiber cells, indicating that it has adhesive properties in addition to its channel function. Using atomic force and cryo-electron microscopy we document that crystalline sheets reconstituted from purified ovine lens MIP mostly consisted of two layers. MIP lattices in the apposing membranes were in precise register, and determination of the membrane sidedness demonstrated that MIP molecules bound to each other via their extracellular surfaces. The surface structure of the latter was resolved to 0.61 nm and revealed two protruding domains providing a tight "tongue-and-groove" fit between apposing MIP molecules. Cryo-electron crystallography produced a projection map at 0.69 nm resolution with a mirror symmetry axis at 45 degrees to the lattice which was consistent with the double-layered nature of the reconstituted sheets. These data strongly suggest an adhesive function of MIP, and strengthen the view that MIP serves dual roles in the lens
Descriptors:Aluminum Silicates. Animal. Binding Sites. Carboxypeptidases. *Cell Adhesion. Cryoelectron Microscopy. Crystallization. Cytoplasm. Eye Proteins. Intercellular Junctions. Lens Cortex, Crystalline. Lipid Bilayers. Microscopy, Atomic Force. Models, Molecular. Peptide Fragments. Protein Structure, Quaternary. Protein Structure, Tertiary. Sheep. Support, Non-U.S. Gov't. Support, U.S. Gov't, P.H.S.
Geographic Locator:ENGLAND
ISSN:0022-2836
Year:2000
Journal Title:Journal of Molecular Biology

Title:Activated charcoal attenuates bitterweed toxicosis in sheep
View Article: Journal of Range Management. 2000. 53 (1). 73-78
CD Volume:321
Print Article: Pages: 73-78
Author(s):Poage G W III Scott C B Bisson M G Hartmann F S
Author Affiliation:Department of Agriculture, Angelo State University, San Angelo, Texas, USA
Language:English
Language of Summary:spanish
Abstract:The potential of activated charcoal to attenuate bitterweed (Hymenoxys odorata) toxicosis was assessed in 3 trials. In Trial 1, lambs were offered a subacute level (.264% BW) of bitterweed and received either 0, .5, 1, or 1.5 g/kg BW of activated charcoal. In Trial 2, lambs were dosed (by gavage) with .264% BW of bitterweed and varying levels of activated charcoal followed by feeding milo (Sorghum sp.) immediately after dosing. A decrease in milo intake, which indicates aversive postingestive feedback, was interpreted to indicate that toxicosis occurred. In Trial 3, lambs were fed a 20% CP supplement with or without activated charcoal and then exposed to bitterweed and other forage species growing in pots; we counted the number of bites of each. In Trial 1, lambs refused to eat bitterweed after 10 days of exposure, thus the study was stopped. In Trial 2, lambs that received 1 or 1.5 g/kg BW of activated charcoal consumed more ($P<0.05$) milo than those receiving 0 g/kg BW. In Trial 3, lambs supplemented with activated charcoal took more ($P<0.05$) bites of bitterweed than lambs receiving a protein supplement alone. Lambs readily ate activated charcoal when added to a 20% crude protein supplement in a 10% mixture. Collectively, these results suggest activated charcoal will result in continued consumption of bitterweed which suggests avoidance of toxicosis. Activated charcoal also may be

effective in preventing bitterweed toxicosis when combined with a supplement
Descriptors:poisoning. lambs. activated-carbon. charcoal. intake. feed-supplements
Organism Descriptors:sheep. Hymenoxys-odorata. Sorghum
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Hymenoxys. Asteraceae. Asterales. dicotyledons. angiosperms. Spermatophyta. plants. Poaceae. Cyperales. monocotyledons
Subject Codes:LL120. FF500. LL950
Supplementary Info:43 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Nutrient distribution among metabolic fractions in 2 Atriplex spp
View Article: Journal of Range Management. 2000. 53 (1). 79-85
CD Volume:321
Print Article: Pages: 79-85
Author(s):Muhammad Islam Adams M A
Author Variant:Islam-M
Author Affiliation:Plant Sciences, Faculty of Agriculture, University of Western Australia, Nedlands, Western Australia 6907, Australia
Language:English
Language of Summary:spanish
Abstract:The seasonal variations in nitrogen and phosphorus fractions and cations in 2 species of Atriplex common to Western Australia (Atriplex amnicola and Atriplex nummularia) were investigated. Both species contain high concentrations of nitrogen (N) in winter as compared with summer when both species contain high concentrations of sodium. The sum of soluble protein-N, amino acid-N, nucleic acid-N and nitrate-N is about half of the total nitrogen. The remainder includes non-soluble protein-N and other N associated with cell membranes and walls. Phosphorus was more uniformly distributed among pools of inorganic-P, phytate-P, nucleic acid-P and other (residual) fractions. We suggest that interpretation of animal nutrition studies based on similar trichloroacetic acid (TCA) fractionations might be improved by independent estimation of soluble proteins. Fractionation using TCA provides valuable information about the subcellular distribution of both N and P in foliage tissues for studies of plant physiology and animal nutrition. Concentrations of major nutrients in foliage of both species were significantly and negatively correlated with monthly maximum temperature and significantly and positively correlated with monthly rainfall. In summer and early autumn the apparent nutritive value of both species is well below the basic requirement of sheep or other grazing ruminants such as goats
Descriptors:plant-composition. chemical-composition. nitrogen. sodium. proteins. amino-acids. nitrates. phosphorus. seasonal-variation. nutritive-value
Organism Descriptors:Atriplex-amnicola. Atriplex-nummularia. sheep. goats
Supplemental Descriptors:Atriplex. Chenopodiaceae. Caryophyllales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Capra
Subject Codes:FF007. FF040. PP350
Supplementary Info:47 ref
ISSN:0022-409X
Year:2000

Journal Title:Journal of Range Management

Title:Sagebrush ingestion by lambs: effects of experience and macronutrients
View Article: Journal of Range Management. 2000. 53 (1). 91-96
CD Volume:321
Print Article: Pages: 91-96
Author(s):Burritt E A Banner R E Provenza F D
Author Affiliation:Department of Rangeland Resources, Utah State University, Logan, Ut. 84322-5230, USA
Language:English
Language of Summary:spanish
Abstract:We investigated how experience early in life and macronutrient content of the diet influenced intake of mountain big sagebrush (Artemisia tridentata Nutt. ssp. vaseyana (Rydb.) Beetle) by sheep. In the first part of our study, 2-month-old lambs were exposed as a group for 2 months to a 70% barley-30% soybean meal ration (300 g/hd/day) that contained increasing amounts of sagebrush (1 to 20%). Control lambs received grain without sagebrush. All lambs had access to alfalfa hay and pellets ad libitum. When lambs were tested at 6 months of age, prior exposure had no effect on sagebrush consumption after the first 4 days of the trial. When sagebrush comprised 20% of an alfalfa/barley ration, lambs ate the sagebrush ration readily even when a nutritious alternative was offered indicating the flavor of sagebrush did not prevent lambs from feeding. Increasing the amount of sagebrush in the ration from 50% to 75% resulted in lambs eating less of the barley/sagebrush ration, but daily intake of sagebrush remained constant throughout the 4 day trial, presumably because toxins (terpenes) limited intake of sagebrush. In the second part of our study, lambs experienced with sagebrush were fed 250 g/hd/day of barley, and nutritional status was varied by offering alfalfa pellets at 33% or 80% of ad libitum (1.2 and 2.7 times maintenance, respectively) to determine if dietary energy levels affected intake of sagebrush. Each day lambs received a 50/50 sagebrush/barley supplement ad libitum for 1 hour. Lambs fed at 33% of ad libitum consumed more of the sagebrush/barley supplement than lambs fed at 80% of ad libitum. Thus, additional energy did not enable lambs to consume more sagebrush. In the last trial, lambs in both treatments were fed a basal ration of alfalfa pellets at 50% of ad libitum. Each morning for 1 hour, lambs were offered macronutrient supplements containing either 50% barley/50% sagebrush (high energy) or 25% barley/25% soybean meal/50% sagebrush (high energy and protein). Lambs consumed the same amount of sagebrush regardless of supplement. Thus, supplemental protein did not improve sagebrush consumption. We conclude lambs readily ingested a high-energy ration containing sagebrush, regardless of exposure early in life, suggesting toxins, not flavor, control intake of sagebrush. Further, supplementing lambs with energy or protein failed to improve intake of sagebrush, which suggests these macronutrients did not enhance detoxification of sagebrush
Descriptors:barley. intake. lambs. soyabeans. meal. feed-supplements. feeds. toxins. detoxification. terpenoids. lucerne
Organism Descriptors:Medicago-sativa. Artemisia-tridentata. Hordeum-vulgare. sheep. Glycine-(Fabaceae)
Supplemental Descriptors:Medicago. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Artemisia. Asteraceae. Asterales. Hordeum. Poaceae. Cyperales. monocotyledons. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:FF007. LL520. LL145. LL120

Supplementary Info:35 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Livestock grazing effects on forage quality of elk winter range
View Article: Journal of Range Management. 2000. 53 (1). 97-105
CD Volume:321
Print Article: Pages: 97-105
Author(s):Clark P E Krueger W C Bryant L D Thomas D R
Author Affiliation:USDA Agricultural Research Service, 800 Park Blvd., Plaza IV, Suite 105, Boise, Ida. 83712, USA
Language:English
Abstract:Carefully-managed livestock grazing has been offered as a tool to improve the forage quality of graminoids on big game winter range. Formal testing of this theory has thus far been done using hand clippers rather than livestock grazing. We report winter standing reproductive culm, crude protein, in vitro dry matter digestibility, and standing crop responses of bluebunch wheatgrass (Agropyron spicatum [Elymus spicatus]), Idaho fescue (Festuca idahoensis), and elk sedge (Carex geyeri) to late-spring domestic sheep grazing. The study was conducted in 1993 and 1994 on a big game winter range in the Blue Mountains of northeastern Oregon. Sheep grazing and exclusion treatments were applied to 20-ha plots at 3 sites on the study area. Targeted utilization for grazed plots was 50% graminoid standing crop removal during the boot stage of bluebunch wheatgrass. Grazing did not influence the number of standing reproductive culms per plant in bluebunch wheatgrass. Crude protein and in vitro dry matter digestibility of bluebunch wheatgrass in grazed plots increased by 1.0 and 4.3 percentage points, respectively, over ungrazed plots. Grazing reduced the standing crop of bluebunch wheatgrass by 116.9 kg ha-1 DM. Standing Idaho fescue reproductive culms decreased by 0.7 culms plant-1 under grazing. Crude protein of Idaho fescue in grazed plots was 1.3 percentage points greater than in ungrazed plots. Crude protein and in vitro dry matter digestibility responses of elk sedge were inconsistent between years and may be related to utilization or growth differences between years. The levels of forage quality improvement in bluebunch wheatgrass and Idaho fescue obtained in this study could benefit the nutritional status of wintering Rocky Mountain elk (Cervus elaphus nelsoni). More research is needed regarding the effects of grazing on the winter forage quality of elk sedge
Descriptors:forage. grazing. crude-protein. mountain-grasslands. plant-composition. digestibility. nutritive-value
Geographic Locator:USA. Oregon
Identifiers:Carex geyeri. Cervus elaphus nelsoni
Organism Descriptors:Elymus-spicatus. Cervus-elaphus. sheep. Festuca-idahoensis. red-deer
Supplemental Descriptors:Elymus. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Cervus. Cervidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. Festuca. Cervus-elaphus. North-America. America. Developed-Countries. OECD-Countries. Pacific-Northwest-States-of-USA. Pacific-States-of-USA. Western-States-of-USA. USA. deer
Subject Codes:FF007. PP350
Supplementary Info:28 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Seasonal chemical composition of saltbush in semiarid grasslands of Jordan
View Article: Journal of Range Management. 2000. 53 (2). 211-214
CD Volume:321
Print Article: Pages: 211-214
Author(s):El Shatnawi M K J Mohawesh Y M
Author Affiliation:Natural Resources and the Environment Department, Faculty of Agriculture, Jordan University of Science and Technology, PO Box 3030, Irbid, Jordan
Language:English
Language of Summary:spanish
Abstract:Saltbush (Atriplex halimus L.), a native shrub which is adapted to arid rangelands, was transplanted to the semiarid grassland at Jordan University of Science and Technology Campus in 1986. Our objective was to determine the seasonal changes in the chemical composition of the annual growth of leaves and stems of saltbush (Atriplex halimus L.) during 1995-96 and 1996-97. A strong positive correlation was found among P, Ca, crude protein, and nitrogen free extract and a strong negative correlation was found between fiber and P, Ca, crude protein, and nitrogen free extract. Nitrogen free extract (NFE) had a strong positive linear correlation with P, Ca, and crude protein. P, Ca, Ca:P ratio, crude protein, and NFE contents were found to be higher in leaves than in stems on all the occasions. Leaves had relatively higher concentrations of P, Ca, crude protein, and NFE during the growing season (February to April). Crude protein of leaves reached its maximum in March (22.7%). The concentrations decreased, however, to 15% during the dry period (June to October). Crude protein content of stems ranged from 11.3 to 12.2%. Fiber content of leaves was lowest during February and March (16.9 to 18%), and reached maximum values during August and October. It is concluded that saltbush is a good protein source for sheep during the dry season; however, P content would not meet nutritional requirements of ewes
Descriptors:chemical-composition. plant-composition. fibre-content. protein-content. crude-protein. mineral-content. fibre. seasonal-variation. ewes
Geographic Locator:Jordan
Organism Descriptors:Atriplex-halimus. sheep
Supplemental Descriptors:Atriplex. Chenopodiaceae. Caryophyllales. dicotyledons. angiosperms. Spermatophyta. plants. West-Asia. Asia. Middle-East. Developing-Countries. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:PP350. FF040. RR300
Supplementary Info:18 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Livestock guard dogs reduce predation on domestic sheep in Colorado
View Article: Journal of Range Management. 2000. 53 (3). 259-267
CD Volume:321
Print Article: Pages: 259-267
Author(s):Andelt W F Hopper S N
Author Affiliation:Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colo. 80523, USA
Language:English
Language of Summary:spanish

Abstract:We surveyed the effectiveness of livestock guard dogs for reducing predation on domestic sheep in Colorado during 1993. The number of producers using dogs increased from about 25 in 1986 to >159 in 1993. The proportion of sheep with dogs increased from about 7% in 1986 to about 68% in 1993. Producers with dogs, compared to producers without dogs, lost smaller proportions of their lambs to predators, especially coyotes (Canis latrans), and smaller proportions of ewes and lambs to black bears (Ursus americanus) and mountain lions (Felis concolor). Overall, producers who did not have guard dogs lost 5.9 and 2.1 times greater proportions of lambs to predators than producers who had dogs in 1986 and 1993, respectively. Proportions of sheep killed by predators decreased with the number of years that producers used guard dogs. Mortalities of ewes to predators regardless of type of operation and lamb mortality on open range decreased more from 1986 to 1993 for producers who obtained dogs between these years compared to producers who did not have dogs. Of 160 producers using dogs, 84% rated their dogs overall predator control performance as excellent or good, 13% as fair, and 3% as poor. More producers indicated effectiveness of their dogs did not change with time, compared to producers indicating effectiveness changed. More producers also indicated their dogs became more effective over time compared to producers indicating their dogs became less effective. Estimates provided by 125 producers indicate that their 392 dogs saved $891,440 of sheep from predation during 1993. A total of 154 of 161 (96%) producers recommend use of guard dogs to other producers
Descriptors:guard-dogs. predation. ewes. lambs. livestock. mortality. predators
Geographic Locator:Colorado. USA
Organism Descriptors:dogs. sheep. coyotes. Felis-concolor. Felis. lions. Ursus-americanus
Supplemental Descriptors:Canis. Canidae. Fissipeda. carnivores. mammals. vertebrates. Chordata. animals. Ovis. Bovidae. ruminants. Artiodactyla. ungulates. Felis. Felidae. Panthera. Ursus. Ursidae. Mountain-States-of-USA. Western-States-of-USA. USA. North-America. America. Developed-Countries. OECD-Countries. Great-Plains-States-of-USA
Subject Codes:PP350. LL180. LL120. LL145
Supplementary Info:27 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Supplemental barley and charcoal increase intake of sagebrush by lambs
View Article: Journal of Range Management. 2000. 53 (4). 415-420
CD Volume:321
Print Article: Pages: 415-420
Author(s):Banner R E Rogosic J Burritt E A Provenza F D
Author Affiliation:Department of Rangeland Resources, Utah State University, Logan, Utah 84322-5230, USA
Language:English
Language of Summary:spanish
Abstract:The influence of supplemental barley and activated charcoal on the intake of sagebrush by lambs in individual pens was determined. In 3 experiments, lambs were fed sagebrush (harvested and chopped to 2-3 cm) during the morning; they were fed a basal diet of alfalfa pellets in the afternoon. In the first experiment, lambs supplemented with activated charcoal+barley ate more A. tridentata ssp. vaseyana than lambs supplemented with barley (304 vs. 248 g;

P=.071). A second set of experiments, which consisted of 3 trials, determined the effects of activated charcoal, barley, and subspecies of sagebrush on intake of sagebrush. Lambs supplemented with activated charcoal+barley ate more A. tridentata ssp. vaseyana (Trial 1; 292 vs. 225 g; P=.086), and more A. tridentata ssp. tridentata (Trial 2; 371 vs. 255 g; P=.031) than lambs supplemented with barley. In Trial 3, lambs supplemented with barley ate more sagebrush than lambs that were not supplemented (480 vs. 318 g; P=.0002). A third set of experiments compared activated charcoal+barley, barley, and no supplement in 2 trials. In Trial 1, lambs supplemented with activated charcoal+barley or barley generally ate more A. tridentata ssp. vaseyana than lambs not supplemented (P=.017). In Trial 2, lambs supplemented with activated charcoal+barley ate slightly more A. tridentata ssp. vaseyana than lambs supplemented with barley, and they ate substantially more than lambs not supplemented (P=.032). Collectively, the results suggest that energy from supplemental barley increased intake of sagebrush by lambs fed a basal ration of alfalfa pellets which are high in protein, and that activated charcoal played a minor role in further increasing intake of sagebrush
Descriptors:barley. intake. lambs. diets. pellets. supplements. effects. charcoal. supplementary-feeding. lamb-production
Organism Descriptors:Artemisia-tridentata. sheep. Hordeum-vulgare
Supplemental Descriptors:Artemisia. Asteraceae. Asterales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Hordeum. Poaceae. Cyperales. monocotyledons
Subject Codes:LL500. LL120. LL145
Supplementary Info:27 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management

Title:Rearing conditions for lambs may increase tansy ragwort grazing
View Article: Journal of Range Management. 2000. 53 (4). 432-436
CD Volume:321
Print Article: Pages: 432-436
Author(s):Sutherland R D Betteridge K Fordham R A Stafford K J Costall D A
Author Affiliation:Ecology Group, Institute of Natural Resources, Massey University, Palmerston North, New Zealand
Language:English
Language of Summary:spanish
Abstract:Grazing by sheep is an accepted method of controlling tansy ragwort (Senecio jacobaea L.), but some flock members seldom eat it. A study was conducted in New Zealand to determine if pre-weaning exposure to tansy ragwort increases later consumption of the plant by lambs, and if confinement with ragwort-eating ewes after weaning facilitates ragwort eating. The sampling periods were Weeks 1, 3, and 12 following weaning. During each period grazing behaviour was observed for 1-hour each day and the 24-hour reduction in ragwort volume measured on each of 4 or 5 consecutive days. Lambs exposed to ragwort before weaning removed more ragwort than ragwort-naive lambs during the first 2 sampling periods (P<0.05). Lambs that grazed with ewes for 11 weeks following weaning ate ragwort more frequently during direct observation, than lambs without ewes during Weeks 3 and 12 (P<0.05). The ragwort-eating of all lamb groups increased markedly between Weeks 1 and 12 (P<0.05). This may indicate an increased ability of lambs to consume ragwort with increasing age or an acclimation period during which most lambs come to accept ragwort.

Behavioural interventions aimed at increasing the consumption of weeds by lambs may need to take into account age-related differences in toxin tolerances. Exposing lambs to ragwort before weaning and grazing newly-weaned lambs with older ragwort-eating sheep after weaning may increase later ragwort-eating by lambs
Descriptors:grazing. ewes. lambs. weeds. weed-control. pastures. grasslands
Geographic Locator:New-Zealand
Organism Descriptors:sheep. Senecio-jacobaea
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Senecio. Asteraceae. Asterales. dicotyledons. angiosperms. Spermatophyta. plants. Australasia. Oceania. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:FF007. FF500. HH100
Supplementary Info:26 ref
ISSN:0022-409X
Year:2000
Journal Title:Journal of Range Management
Copyright:Copyright CAB International

Title:Involvement of matrix metalloproteinases 2 and 9, tissue inhibitor of metalloproteinases and apoptosis in tissue remodelling in the sheep placenta
View Article: Journal of Reproduction and Fertility. 2000. 118 (1). 19-27
CD Volume:321
Print Article: Pages: 19-27
Author(s):Riley S C Webb C J Leask R McCaig F M Howe D C
Author Affiliation:Department of Obstetrics and Gynaecology, Centre for Reproductive Biology, University of Edinburgh, Edinburgh, UK
Language:English
Descriptors:apoptosis. metalloproteinases. enzyme-inhibitors. placenta. pregnancy. ewes. proteinase-inhibitors. immunohistochemistry. trophoblast
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:26 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility
Copyright:Copyright CAB International

Title:Effects of the Booroola Fec gene on ovarian follicular populations in superovulated Romanov ewes pretreated with a GnRH antagonist
View Article: Journal of Reproduction and Fertility. 2000. 118 (1). 85-94
CD Volume:321
Print Article: Pages: 85-94
Author(s):Dufour J J Cognie Y Mermillod P Mariana J C Romain R F
Author Affiliation:Departement des sciences animales, Faculte des sciences de l'agriculture et de l'alimentation, Cite Universitaire, Sainte-Foy, Quebec, G1K 7P4, Canada
Language:English
Abstract:Endocrine control of follicular growth was studied in mature Romanov ewes carrying (RF+) or not carrying (R++) the Booroola Fec gene during an oestrous cycle after gonadotropin-dependent follicles were suppressed by treatment with GnRH antagonist (Antarelix, 0.5 mg

per day) for 10 days or ewes were treated with saline (control). Purified pig FSH (pFSH, containing <1 micro g LH per 150 micro g FSH) was injected i.m. twice daily (08.00 and 17.00 h) in decreasing doses over 3 days in saline-treated (20 mg pFSH from day 12 to day 14) or 4 days for Antarelix-treated (36 mg pFSH from day 11 to day 14) ewes. The left ovary was removed after saline or Antarelix treatment and the right ovary was removed at the end of the superovulatory treatment. Ewes of both genotypes treated with Antarelix had lower plasma LH concentrations than did controls from day 0 to day 10. This inhibitory effect increased with day of treatment. The variability in FSH concentrations during the initial 10 days was reduced by Antarelix treatment in both genotypes. Plasma FSH concentrations were higher in RF+ than in R++ ewes. In both genotypes, FSH concentrations varied significantly with day of treatment, with the lowest concentrations on day 8 and the highest on day 5. RF+ ewes had a greater total and atretic number of antral follicles 0.62-1.12, 1.12-2.00 and 2.00-3.00 mm in diameter (for classes 2, 3 and 4 respectively) than did R++ ewes before and after superovulatory treatment. After superovulatory treatment, the total number of atretic and non-atretic follicles >3.00 mm in diameter (class 5) increased in both genotypes. Superovulatory treatment also increased the number of total and atretic class 4 follicles in RF+ ewes only. Conversely, superovulatory treatment decreased the mean number of class 3 follicles in both genotypes, while the number of atretic follicles was decreased only in R++ ewes. Antarelix significantly reduced the percentage of follicles >2.00 mm in diameter in RF+ but not in R++ ewes. Antarelix treatment before superovulation increased the total number of class 4 follicles in both genotypes but the increase was significantly greater in RF+ than in R++ ewes. It is concluded that Antarelix pretreatment favours a greater superovulatory response in Romanov ewes carrying the Fec gene because ovulatory follicles are recruited from a wider range of follicular size classes
Descriptors:ewes. GnRH. ovaries. Romanov. genes. ovarian-follicles. FSH. genotypes. inhibition. oestrous-cycle. LH. antagonists. biotechnology
Geographic Locator:Canada
Identifiers:Booroola
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. North-America. America. Developed-Countries. Commonwealth-of-Nations. OECD-Countries
Subject Codes:LL250. LL240. WW000
Supplementary Info:22 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Fatty acid composition of lipids in immature cattle, pig and sheep oocytes with intact zona pellucida
View Article: Journal of Reproduction and Fertility. 2000. 118 (1). 163-170
CD Volume:321
Print Article: Pages: 163-170
Author(s):McEvoy T G Coull G D Broadbent P J Hutchinson J S M Speake B K
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Language:English

Abstract:Cattle, pig and sheep oocytes isolated from healthy cumulus-oocyte complexes were pooled, within species, to provide samples of immature denuded oocytes with intact zona pellucida (n = 1000 per sample) for determination of fatty acid mass and composition in total lipid, constituent phospholipid and triglyceride. Acyl-containing lipid extracts, trans-methylated in the presence of a reference penta-decanoic acid (15:0), yielded fatty acid methyl esters which were analysed by gas chromatography. Mean fatty acid content in samples of pig oocytes (161 plus or minus 18 micro g per 1000 oocytes) was greater than that in cattle (63 plus or minus 6 micro g; P<0.01) and sheep (89 plus or minus 7 micro g; P<0.05) oocytes. Of 24 fatty acids detected, palmitic (16:0; 25-35%, w/w), stearic (18:0; 14-16%) and oleic (18:1n-9; 22-26%) acids were most prominent in all 3 species. Saturated fatty acids (mean = 45-55%, w/w) were more abundant than mono- (27-34%) or polyunsaturates (11-21%). Fatty acids of the n-6 series, notably linoleic (18:2n-6; 5-8%, w/w) and arachidonic acid (20:4n-6; 1-3%), were the most abundant polyunsaturates. Phospholipid consistently accounted for a quarter of all fatty acids in the 3 species, but ruminant oocytes had a lower complement of polyunsaturates (14-19%, w/w) in this fraction than pig oocytes (34%, w/w) which, for example, had a 3- to 4-fold greater linoleic acid content. 74 ng of fatty acid was sequestered in the triglyceride fraction of individual pig oocytes compared with 23-25 ng in ruminant oocytes (P<0.01). It is concluded that the greater fatty acid content of pig oocytes is primarily due to more abundant triglyceride reserves. This species-specific difference, and that in respect of polyunsaturated fatty acid reserves, may underlie the contrasting chilling, culture and cryopreservation sensitivities of embryos derived from pig and ruminant (cattle, sheep) oocytes
Descriptors:oocytes. zona-pellucida. arachidonic-acid. esters. extracts. fatty-acids. linoleic-acid. polyenoic-fatty-acids. phospholipids. triacylglycerols. palmitic-acid. oleic-acid. stearic-acid
Organism Descriptors:cattle. pigs. sheep
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Sus-scrofa. Sus. Suidae. Suiformes. Ovis
Subject Codes:LL250
Supplementary Info:60 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Influence of season and low-level oestradiol immunoneutralization on episodic LH and testosterone secretion and testicular steroidogenic enzymes and steroidogenic acute regulatory protein in the adult ram
View Article: Journal of Reproduction and Fertility. 2000. 118 (2). 251-262
CD Volume:321
Print Article: Pages: 251-262
Author(s):Price C A Cooke G M Sanford L M
Author Affiliation:Centre de recherche en reproduction animale, Faculte de medecine veterinaire, Universite de Montreal, St-Hyacinthe, Quebec, J2S 7C6, Canada
Language:English
Abstract:The regulation of LH-dependent and -independent increases in testosterone secretion by key proteins in the testes of adult rams was investigated. Serial blood samples were collected from groups of 4 control and passively immunized (oestradiol antiserum for 3 weeks)

rams and the animals were gonadectomized in the non-breeding season (April) or the breeding season (September). LH pulse frequency and basal (interpulse) concentrations were several times greater (P<0.01) in the breeding than in the non-breeding season. Neither of these parameters nor LH pulse amplitude were affected by oestradiol immunization. Parameters of testosterone episodic secretion and response to an injection (i.v.) of 15 micro g NIH-LH-S25 were also greater (P<0.05) in the breeding season and, with the exception of pulse frequency, in immunized rams vs. controls. Substrate utilization showed that testosterone biosynthesis was predominantly via the 5-ene pathway. Increases in blood testosterone concentration in the breeding season were associated with a 5-fold higher (P<0.01) activity of cytochrome P450 17 alpha -hydroxylase/C-17,20 lyase (P45017 alpha) and a 65% higher (P<0.05) relative amount of mRNA for cytochrome P450 cholesterol side-chain cleavage enzyme complex (P450scc) in the testis. Of the steroidogenic enzyme activities examined, only that for 17 beta -hydroxysteroid dehydrogenase (17 beta -HSD) tended to be increased by oestradiol immunization. Blood concentrations of cholesterol lipoproteins and expression of the testicular low density lipoprotein receptor were not affected by season or immunization. The amount of steroidogenic acute regulatory protein (StAR) mRNA was 65% higher (P<0.01) in the breeding season and 20% higher (P<0.01) in immunized rams than in controls. It is concluded that greater LH stimulation may increase testosterone biosynthesis in the breeding season by increasing StAR mRNA (and presumably delivery of cholesterol to P450scc) and the activity of P45017 alpha ' and possibly that of P450scc (activity not measured). More moderate increases in StAR mRNA and 17 beta -HSD activity may explain, in part, the increases in testosterone secretion with oestradiol immunization
Descriptors:enzymes. estradiol. testes. testosterone. sex-hormones. biosynthesis. hydroxysteroid-dehydrogenase. breeding-season. cholesterol. cytochrome-P-450. enzyme-activity. immunization. blood. lipoproteins. messenger-RNA. rams. hydrolases. receptors. LH
Identifiers:regulatory proteins
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:71 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Effect of nutrition and superovulation on oocyte morphology, follicular fluid composition and systemic hormone concentrations in ewes
View Article: Journal of Reproduction and Fertility. 2000. 118 (2). 303-313
CD Volume:321
Print Article: Pages: 303-313
Author(s):O'Callaghan D Yaakub H Hyttel P Spicer L J Boland M P
Author Affiliation:Faculty of Veterinary Medicine, University College, Dublin, Irish Republic
Language:English
Abstract:The effect of dietary intake on follicle and oocyte morphology in unstimulated and superovulated ewes was investigated. 54 ewes were fed grass meal at 0.5, 1.0 or 2.0 times maintenance energy requirements (M) for 32 days. Oestrous cycles were synchronized using progestogen pessaries and unstimulated or

superovulated with 200 mg pig FSH. The ewes were killed and ovaries were collected 36 or 12 h before the anticipated LH surge. Serum progesterone concentrations in ewes on day 10 after withdrawal of the pessary were lower (P<0.05) in ewes fed 2.0M than in those fed 0.5M or 1.0M. LH pulse frequency tended to be higher in ewes fed 2.0M than 1.0M (1.0 plus or minus 0.3 vs. 0.3 plus or minus 0.2 pulses per 8 h) on day 6 after removal of the pessary but the effect was not significant. In unstimulated ewes, more (P<0.05) follicles (more than or equal to 3 mm in diameter) were observed in ewes fed 2.0M (3.5 plus or minus 0.3) than in those fed 0.5M (2.4 plus or minus 0.3) or 1.0M (2.4 plus or minus 0.5). Fewer (P<0.05) follicles were observed in superovulated ewes on 0.5M (7.5 plus or minus 1.2) than in those on 1.0M (12.0 plus or minus 0.5) or 2.0M (12.3 plus or minus 1.4). Follicular fluid progesterone concentrations were higher (P<0.05) in ewes fed 0.5M than in those fed 1.0M or 2.0M. Insulin-like growth factor (IGF)-I concentrations were higher (P<0.05) in follicular fluid from ewes on 1.0M than from those on 0.5M or 2.0M, whereas IGF-II concentrations were lower (P<0.05) in follicular fluid from ewes on 2.0M than from those on 1.0M or 0.5M. Superovulation increased (P<0.01) follicular fluid progesterone, oestradiol, IGF-I and IGF-II concentrations. Concentrations of the 34, 22 and 20 kDa IGF binding proteins were lower (P<0.05) in follicles from superovulated than in those from unstimulated ewes. Oocytes from superovulated ewes showed abnormalities such as premature activation of cumulus expansion and vacuolation of the nucleolus and increased frequency of detachment of interchromatin-like granules from the nucleolar remnant. It is concluded that both high and low dietary intakes can alter systemic and follicular fluid hormone concentrations. Relative to dietary effects, the effects of superovulation were greater and involved substantial increases in follicular fluid hormone concentrations and abnormal oocyte morphology
Descriptors:ewes. hormones. follicular-fluid. nutrition. superovulation. abnormalities. binding-proteins. energy-requirements. ovarian-follicles. FSH. growth-factors. insulin-like-growth-factor. estradiol. oocytes. ovaries. progesterone. feed-intake. reproduction. biotechnology
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600. WW000. LL510
Supplementary Info:73 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Effect of a high maternal dietary intake during mid-gestation on components of the utero-placental insulin-like growth factor (IGF) system in adolescent sheep with retarded placental development
View Article: Journal of Reproduction and Fertility. 2000. 118 (2). 407-416
CD Volume:321
Print Article: Pages: 407-416
Author(s):Gadd T S Aitken R P Wallace J M Wathes D C
Author Affiliation:Department of Veterinary Basic Sciences, Royal Veterinary College, Boltons Park, Hawkshead Road, Potters Bar, Hertfordshire EN6 1NB, UK
Language:English
Abstract:The effects of administering a high-plane diet during early to mid-gestation on the uterine and placental insulin-like growth factor (IGF) system and on systemic IGF-I concentrations were studied

in pregnant adolescent ewes with restricted placental growth. Embryos recovered from superovulated ewes inseminated by a single sire were transferred in singleton to the uterus of adolescent recipients. After transfer, ewes were offered a high (H) or moderate (M) amount of a complete diet calculated to promote rapid or normal maternal growth rates, respectively. Five ewes from each group were switched from M to H or H to M diets on day 52 of gestation. Maternal and fetal blood samples and placental tissues were collected from all sheep on day 104. Ewes on the high-plane diet from mid-gestation (HH, MH groups) had restricted placental mass (P<0.01) and tended to have smaller fetuses. This was associated with increased maternal plasma IGF-I concentrations (P<0.001). The pattern of expression of components of the IGF system in the uterus and placenta was studied by in situ hybridization. IGF-I mRNA concentrations were below the limit of detection. IGF-II mRNA expression was high in the fetal mesoderm and present in maternal stroma, but was not influenced by nutritional treatment. In contrast, IGF binding protein 1 (IGFBP-1) mRNA expression was higher (P<0.05) and IGFBP-3 mRNA expression was lower (P<0.05) in the endometrial glands of ewes in HH and MH groups. In the fetal trophoblast, IGFBP-3 mRNA expression was higher in the MH group. Type 1 IGF receptor expression was increased (P<0.01) in the luminal epithelium of the HM group and IGFBP-2 mRNA expression was highest in the placentome capsule of ewes in the HH group. Together, these results indicate that re-programming of the uterine and placental IGF axis by maternal nutrition could contribute to placental growth retardation in growing adolescent sheep
Descriptors:diets. growth-factors. insulin-like-growth-factor. placenta. blood. embryos. epithelium. ewes. fetus. pregnancy. growth-retardation. messenger-RNA. effects. uterus. plane-of-nutrition. nutrition. reproduction. young-animals. age
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL520. LL600
Supplementary Info:54 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Novel approach to cell sampling from preimplantation ovine embryos and its potential use in embryonic genome analysis
View Article: Journal of Reproduction and Fertility. 2000. 119 (2). 309-314
CD Volume:321
Print Article: Pages: 309-314
Author(s):Leoni G Ledda S Bogliolo L Naitana S
Author Affiliation:Department of Animal Biology, University of Sassari, 07100 Sassari, Italy
Language:English
Abstract:The major obstacle in the extensive analysis of the embryonic genome is the small number of cells typically obtained after the embryo biopsy. The object of the present study was to develop a simple approach that would allow the collection of a sufficient number of cells from a single embryo for use in further analyses. A micromanipulator was used to make a hole in the zona pellucida of 28 compacted ovine morulae, 27 early ovine blastocysts and 31 expanded ovine blastocysts. After further culture, the trophoblastic cells, which herniated through this hole, were cut and cultured in vitro for different periods and used for embryo sexing. The results showed that biopsies can be taken successfully from 96.3%

of early blastocysts, compared with 67.7% of expanded blastocysts and from 71.4% of compacted morulae. The trophoblastic vesicles contained 20.8 plus or minus 6.7 cells (mean plus or minus SEM) and, when cultured, formed a confluent monolayer. The sex of cells cultured was assayed by PCR and the 12 lambs born after transfer of biopsied embryos confirmed its 100% accuracy. Moreover, no significant differences were found in the viability rates in vitro among blastocysts vitrified immediately after biopsy (77.8%), blastocysts biopsied and vitrified after 24 h culture (76.9%) and blastocysts vitrified without manipulation (88.5%). In experiments in vivo, the lambing rate of biopsied and vitrified blastocysts was significantly ($P<0.05$) lower (40.0%) compared with vitrified control embryos (68.7%). This new approach to the biopsy of preimplantation embryos is a useful good model in the assisted reproductive technologies of domestic, wild and human species
Descriptors:biopsy. blastocyst. embryo-transfer. embryos. genome-analysis. lambing-rate. lambs. morula. preimplantation-period. trophoblast. zona-pellucida. sex-determination. vitrification. techniques. analytical-methods
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240. LL250. ZZ900. WW000
Supplementary Info:34 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility
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Title:Increase in 15-hydroxyprostaglandin dehydrogenase activity in the ovine placentome at parturition and effect of oestrogen
View Article: Journal of Reproduction and Fertility. 2000. 119 (2). 329-338
CD Volume:321
Print Article: Pages: 329-338
Author(s):Riley S C Leask R Selkirk J V Kelly R W Brooks A N Howe D C
Author Affiliation:Department of Reproductive and Developmental Sciences, Obstetrics and Gynaecology Section, University of Edinburgh, Edinburgh, UK
Language:English
Descriptors:enzyme-activity. estradiol. fetal-membranes. fetus. myometrium. oestrogen-receptors. oxidoreductases. parturition. placenta. pregnancy. prostaglandins. muscle-tissue. cervix. trophoblast
Identifiers:hydroxyprostaglandin dehydrogenase
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:66 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility
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Title:Metabolic factors affecting the reproductive axis in male sheep
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 1-11
CD Volume:321
Print Article: Pages: 1-11
Author(s):Blache D Chagas L M Blackberry M A Vercoe P E Martin G B

Author Affiliation:Faculty of Agriculture (Animal Science), University of Western Australia, Nedlands, WA 6907, Australia
Language:English
Abstract:Changes in feed intake affect the reproductive axis in both sexes, and the nutritional signals involved and the sites that receive those signals are now beginning to be unravelled. Studies focused on the mature male sheep, a model in which high feed intake stimulates GnRH-LH pulse frequency for only 10-20 days but continues to promote testicular growth over several months. Different signals and different target organs seem to be responsible for these short- and long-term responses. Short-term dietary treatments lead to changes in blood concentrations of glucose, fatty acids, insulin and leptin, and concentrations of glucose, insulin, leptin and some amino acids in cerebrospinal fluid. It seems unlikely that amino acids affect GnRH-LH secretion directly in sheep. Intracerebroventricular infusions of insulin specifically increase LH pulse frequency, but intravenous, intra-abomasal or intracerebroventricular infusions of glucose have no effect, despite their effects on cerebrospinal fluid insulin concentrations. The addition of fatty acids to the diet also increases LH pulse frequency, but does not affect the concentrations of insulin or leptin in the cerebrospinal fluid. It appears that acute responses to changes in nutrition involve a range of alternative pathways, possibly including interactions among insulin, leptin and energy substrates. Effects of long-term dietary treatments on testicular size are only partly dependent on the GnRH-LH system (that is, on brain control) and so must also depend on other, as yet unknown, pathways. Concepts of 'metabolic sensing and integration' are being developed from the basis of existing knowledge of the central control of appetite and reproduction
Descriptors:sheep-feeding. rams. appetite. brain. fatty-acids. feed-intake. insulin. leptin. reproduction. testes. GnRH. LH. blood-composition
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL520. LL250
Supplementary Info:2 pp. of ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Immunohistochemical localization of prostaglandin G/H synthase 1 and 2 in sheep placenta after glucocorticoid-induced and spontaneous labour
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 33-39
CD Volume:321
Print Article: Pages: 33-39
Author(s):McLaren W J Young I R Rice G E
Author Affiliation:Department of Pharmacology, Monash University, Clayton, Victoria, Australia
Language:English
Descriptors:localization. placenta. prostaglandins. prostaglandin-synthase. ewes. glucocorticoids
Identifiers:parturition induction
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:29 ref

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Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Control of ovarian follicular growth and maturation by the corpus luteum and the placenta during pregnancy in sheep
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 151-158
CD Volume:321
Print Article: Pages: 151-158
Author(s):Driancourt M A Fevre J Martal J Al Gubory K H
Author Affiliation:Unite Ovocyte et Developpement, INRA, 37380 Nouzilly, France
Language:English
Abstract:Ovarian follicular growth and maturation and its control throughout pregnancy have not been described fully in sheep. Experiment 1 characterized the size and maturation (steroid production in vitro and aromatase activity) of ovarian follicles obtained at days 20, 50, 80 and 110 of pregnancy compared with those obtained at day 12 of the oestrous cycle. There was no difference in the number of small follicles (<3 mm in diameter) between cyclic and pregnant ewes, regardless of the stage of pregnancy. There was a marked reduction (P<0.01) in the number of medium follicles (3-5 mm) starting at day 80 of pregnancy. Large follicles (>5 mm) were not detected at day 110 of pregnancy. In vitro testosterone output by follicles was constant throughout pregnancy. Oestradiol output remained steady until day 80, but decreased markedly at day 110 of pregnancy. This decrease was associated with a reduction in aromatase activity in follicles obtained at this stage. Experiment 2 examined the effect of administration of high concentrations of progesterone between day 100 and day 120 after mating on resumption of follicular growth in ewes that underwent Caesarean section at day 99 of pregnancy. In ewes that underwent caesarean section, progesterone supplementation was successful in mimicking the profile found in pregnant ewes, but did not prevent re-initiation of follicular growth, as demonstrated by the presence of large follicles (>5 mm) at day 120 after mating. Experiment 3 examined the effects of PG-induced regression of the corpus luteum (CL) of day 100 of pregnancy on resumption of follicular growth. High concentrations of PG (0.28 mg/kg body weight) administered at day 100 of pregnancy were required to initiate regression of the CL. At day 120 after mating, the mean (plus or minus SEM) diameter of the largest follicle in PG-treated ewes (3.40 plus or minus 0.47 mm) was greater (P<0.05) than that in control pregnant ewes (2.52 plus or minus 0.34 mm). Experiment 4 examined the effect of removal of the fetus and of the CL at day 100 of pregnancy on resumption of ovulation. Removal of the CL by PG treatment at the time of removal of the fetus resulted in earlier occurrence of short luteal phases (27.8 vs. 40.6 days, PG-treated vs. non-treated) but did not alter the timing of the first normal luteal phases (41 days). It is concluded that placental compounds play a major role in inhibiting follicular growth and maturation during late pregnancy in sheep
Descriptors:corpus-luteum. maturation. ovaries. caesarean-section. ovarian-follicles. placenta. pregnancy. prostaglandins. ewes. fetus. mating. estradiol. hormone-secretion. oestrous-cycle. ovulation. progesterone. steroids. testosterone. sex-hormones. timing
Identifiers:aromatases. follicle development. in vitro secretion
Organism Descriptors:sheep

Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600
Supplementary Info:45 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Effects of recent sexual experience and melatonin treatment of rams on plasma testosterone concentration, sexual behaviour and ability to induce ovulation in seasonally anoestrous ewes
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 169-176
CD Volume:321
Print Article: Pages: 169-176
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Author Affiliation:Department of Agriculture, University of Reading, Whiteknights, P.O. Box 236, Reading RG6 6AT, UK
Language:English
Abstract:The aim of this study was to determine whether advancing the seasonal changes associated with rams by treatment with exogenous melatonin and allowing the rams previous sexual experience would increase the proportion of anoestrous ewes ovulating in early July. North Country Mule ewes (n = 225) were grouped by live body weight and body condition score and allocated randomly to the following treatments: (1) isolated from rams (control; n = 25); (2) introduced to rams (treatment 2); (3) introduced to rams that had mated with ewes during the previous 2 days (treatment 3); (4) introduced to rams implanted with melatonin (treatment 4); and (5) introduced to rams that were implanted with melatonin and had mated with ewes during the previous 2 days (treatment 5). Treatments 2-5 were replicated (2 x 25 ewes) and 2 rams were introduced to each replicate group. Introductions began on 4 July and were completed by 11 July. The rams were withdrawn from the ewes after 8 days. Melatonin was administered as a subcutaneous implant (Regulin) on 22 May and again on 20 June. Blood samples were taken from all rams to determine plasma melatonin and testosterone concentrations (19 samples in 6 h). The behaviour of the sheep was videotaped continuously during the first 3 h after the ram was introduced. Ovulation was detected by an increase in plasma progesterone concentrations from <0.5 ng/ml to >0.5 ng/ml. Mean plus or minus SE plasma melatonin concentrations were 649.7 plus or minus 281.4 and 18.3 plus or minus 2.4 pg/ml in rams with and without melatonin implants respectively (P<0.001). Melatonin implants also increased plasma testosterone concentrations from 4.30 plus or minus 1.88 to 10.10 plus or minus 1.10 ng/ml (P<0.01), the libido of the rams and the proportion of ewes that ovulated in response to the rams (43 and 56% (treatments 4 and 5) vs. 24% (treatments 2 and 3)). It is concluded that implanting rams with melatonin before introducing them to seasonally anoestrous ewes increases the proportion of ewes that ovulate in response to introduction of a ram, but previous sexual experience of rams appears to have little or no effect
Descriptors:ewes. melatonin. ovulation. rams. sexual-behaviour. animal-behaviour. testosterone. sex-hormones. anoestrus. body-condition. libido. progesterone. seasons
Geographic Locator:UK
Identifiers:ram effect. ovulation induction
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. British-Isles.

Western-Europe. Europe. Developed-Countries. Commonwealth-of-Nations. European-Union-Countries. OECD-Countries
Subject Codes:LL250. LL600. LL300
Supplementary Info:29 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Effects of bromocriptine administration during the follicular phase of the oestrous cycle on prolactin and gonadotrophin secretion and follicular dynamics in Merino monovular ewes
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 177-186
CD Volume:321
Print Article: Pages: 177-186
Author(s):Picazo R A Gonzalez de Bulnes A Gomez Brunet A Campo A del Granados B Tresguerres J Lopez Sebastian A
Author Variant:de-Bulnes-A-Gonzalez. del-Campo-A
Author Affiliation:Departmento de Reproduccion Animal, INIA, Avda. Puerta de Hierro Km. 5, 9. 28040-Madrid, Spain
Language:English
Abstract:Two experiments using Spanish Merino ewes were conducted to investigate whether the secretion of prolactin during the follicular phase of the sheep oestrous cycle was involved in the patterns of growth and regression of follicle populations. In both experiments, oestrus was synchronized with 2 cloprostenol injections which were administered 10 days apart. Concurrent with the second injection (time 0), ewes (n = 6 per group) received 1 of the following treatments every 12 h from time 0 to 72 h: (1) vehicle injection (control); (2) 0.6 mg bromocriptine (0.03 mg/kg per day); and (3) 1.2 mg bromocriptine (0.06 mg/kg per day). In experiment 1, blood samples were collected every 3 h from 0 to 72 h, and also every 20 min from 38 to 54 h to measure prolactin, LH and FSH concentrations. In experiment 2, transrectal ultrasonography was carried out every 12 h from time 0 until oestrus, and blood samples were collected every 4 h to measure prolactin, LH and FSH concentrations. Ovulation rates were determined by laparoscopy on day 4 after oestrus. Bromocriptine markedly decreased prolactin secretion, but did not affect FSH concentrations, the mean time of the LH preovulatory surge or LH concentrations in the preovulatory surge. Both doses of bromocriptine caused a similar decrease in LH pulse frequency before the preovulatory surge. The highest bromocriptine dose led to a reduction ($P<0.01$) in the number of 2-3 mm follicles detected in the ovaries at each time point. However, bromocriptine did not modify the total number or the number of newly detected 4-5 mm follicles at each time point, the number of follicles >5 mm or the ovulation rate. It is concluded that the effects of bromocriptine on gonadotropin and prolactin secretion and on the follicular dynamics during the follicular phase of the sheep oestrous cycle indicate that prolactin may influence the viability of gonadotropin-responsive follicles shortly after luteolysis
Descriptors:bromocriptine. ewes. Spanish-Merino. gonadotropins. oestrous-cycle. prolactin. cloprostenol. prostaglandins. hormone-secretion. ovarian-follicles. FSH. LH. laparoscopy. luteolysis. oestrus. ovaries. ovulation-rate. ultrasonography. hormone-antagonists
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL600

Supplementary Info:60 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Regulation of oxytocin receptor gene expression in sheep: tissue specificity, multiple transcripts and mRNA editing
View Article: Journal of Reproduction and Fertility. 2000. 120 (1). 187-200
CD Volume:321
Print Article: Pages: 187-200
Author(s):Feng H C Bhave M Fairclough R J
Author Affiliation:Centre For Bioprocessing and Food Technology, Victoria University of Technology, P.O. Box 14428, MCMC Melbourne, Victoria 8001, Australia
Language:English
Descriptors:gene-expression. messenger-RNA. oxytocin. ewes. receptors. nucleotide-sequences. complementary-DNA. DNA-amplification. uterus. endometrium
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL240. WW000
Supplementary Info:51 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Pulsatile GnRH secretion from primary cultures of sheep olfactory placode explants
View Article: Journal of Reproduction and Fertility. 2000. 120 (2). 391-396
CD Volume:321
Print Article: Pages: 391-396
Author(s):Duittoz A H Batailler M
Author Affiliation:Neuroendocrinologie UFR Sciences et Techniques Universite Francois Rabelais, Parc de Grandmont F37200 Tours, France
Language:English
Abstract:The aim of this study was to investigate the development of pulsatile GnRH secretion by GnRH neurones in primary cultures of olfactory placodes from ovine embryos. Culture medium was collected every 10 min for 8 h to detect pulsatile secretion. In the first experiment, pulsatile secretion was studied in two different sets of cultures after 17 and 24 days in vitro. In the second experiment, a set of cultures was tested after 10, 17 and 24 days in vitro to investigate the development of pulsatile GnRH secretion in each individual culture. This study demonstrated that (i) primary cultures of GnRH neurones from olfactory explants secreted GnRH in a pulsatile manner and that the frequency and mean interpulse duration were similar to those reported in castrated ewes, and (ii) pulsatile secretion was not present at the beginning of the culture but was observed between 17 and 24 days in vitro, indicating the maturation of individual neurones and the development of their synchronization
Descriptors:embryos. GnRH. in-vitro-culture. neurons. olfactory-organs
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL700

Supplementary Info:33 ref
ISSN:0022-4251
Year:2000
Journal Title:Journal of Reproduction and Fertility

Title:Effects of manure-fertilizer schedules on the yield and uptake of nutrients by cereal fodder crops and on soil fertility
View Article: Journal of the Indian Society of Soil Science. 2000. 48 (3). 510-515
CD Volume:323
Print Article: Pages: 510-515
Author(s):Vasanthi D Kumaraswamy K
Author Affiliation:Department of Soil Science and Agricultural Chemistry, Agricultural College and Research Institute (TNAU), Madurai, 625104, India
Language:English
Abstract:In field experiments conducted during 1993 and 1994 in Tamil Nadu, India, on a clay loam soil, three cereal crops of sorghum (Co. 27), maize (African tall) and pearl millet (Co. 8) were grown in main plots with eighteen subplots treatments involving four manures (poultry manure, sheep-goat manure, biogas manure and FYM) at 5 and 10 t ha-1 and NPK at 50 and 100% of recommended levels (60-40-20 kg of N, P2O5 and K2O ha-1). The green and dry fodder yields of the cereal fodders, the soil fertility status, and the content and uptake of N, P and K were significantly higher in the treatments that received poultry manure or sheep-goat manure at 10 t ha-1 with 50% of the recommended NPK schedule than the yields in the treatment that had received NPK alone. Among the manures, poultry manure and sheep-goat manure seemed to be more efficacious than the other two
Descriptors:application-rates. biogas. clay-loam-soils. crop-yield. farmyard-manure. maize. manures. NPK-fertilizers. nutrient-uptake. nutrients. pearl-millet. plant-composition. poultry-manure. sheep-manure. soil-fertility
Geographic Locator:India. Tamil-Nadu
Organism Descriptors:Pennisetum-glaucum. sorghum. Zea-mays
Supplemental Descriptors:Pennisetum. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Zea. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India
Subject Codes:JJ600. FF040. FF005. JJ700. XX100. FF061
Supplementary Info:10 ref
ISSN:0019-638X
Year:2000
Journal Title:Journal of the Indian Society of Soil Science

Title:Comparison of rumen fermentation patterns and in situ degradation of grazed herbage in Churra and Merino sheep
View Article: Livestock Production Science. 2000. 62 (2). 193-204
CD Volume:331
Print Article: Pages: 193-204
Author(s):Ranilla M J Carro M D Giraldez F J Mantecon A R Gonzalez J S
Author Affiliation:Departamento de Produccion Animal I, Universidad de Leon, 24071 Leon, Spain
Language:English
Abstract:The aim of this experiment was to study the effect of breed (Churra and Merino) and advancing season (middle June, late July and early October) on rumen fermentation in sheep grazing a continuously stocked grass/white clover pasture. Six mature sheep (three Churra and three Merino) fitted with rumen cannulae were used. During each

grazing period, samples of the grazed herbage (obtained using three oesophageal-cannulated sheep from each breed) and grass hay were incubated in situ. Rumen pH, ammonia-N and volatile fatty acids concentrations were determined in ruminal samples at 11.00, 14.00, 17.00 and 21.00 h. Breed did not affect (P>0.05) any of the dry matter (DM) degradation parameters of grazed herbage during July, but potential DM degradability and effective DM degradability were higher (P<0.05) in Merinos than in Churras during June and lower (P<0.05) during October. On the contrary, there were no differences (P>0.05) between breeds in the effective degradability of either DM or neutral-detergent fibre from grass hay. Differences between breeds in rumen degradation parameters of grazed herbage are discussed in relation to seasonal changes in the composition of the grazed herbage and to changes in rumen parameters in both breeds
Descriptors:fermentation. herbage. rumen. rumen-fermentation. clovers. composition. dry-matter. fatty-acids. fibre. grazing. hay. breeds. pastures. seasons. volatile-fatty-acids
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL120. LL145. FF007. RR000
Supplementary Info:36 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science
Copyright:Copyright CAB International

Title:Embryo transfer in small ruminants: the method of choice for health control in germplasm exchanges
View Article: Livestock Production Science. 2000. 62 (3). 253-270
CD Volume:331
Print Article: Pages: 253-270
Author(s):Thibier M Guerin B
Author Affiliation:Agence Francaise de Securite Sanitaire des Aliments, BP 19, 23 Avenue du General de Gaulle, 94701 Maisons Alfort, France
Document Editor:Thibier-M
Conference Title:Special issue. Reproductive biotechnologies and disease control. Papers presented at joint EAAP/OIE annual conference, Zurich, Switzerland, 22-26 August, 1999
Language:English
Descriptors:embryo-transfer. disease-transmission. disease-prevention. disease-control
Organism Descriptors:ruminants. goats. sheep. deer
Supplemental Descriptors:Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Capra. Bovidae. ruminants. Ovis. Cervidae
Subject Codes:LL821. LL250
Supplementary Info:3 pp. of ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science
Copyright:Copyright CAB International

Title:Effects of gastro-intestinal and lungworm nematode infections on ewe productivity in farm flocks under variable rainfall conditions in Syria
View Article: Livestock Production Science. 2000. 63 (1). 65-75
CD Volume:331
Print Article: Pages: 65-75

Author(s):Thomson E F Gruner L Bahhady F Orita G Termanini A Ferdawi A K Hreitani H
Author Affiliation:International Center for Agricultural Research in the Dry Areas (ICARDA), P.O. Box 5466, Aleppo, Syria
Language:English
Abstract:10 flocks of Awassi sheep in north-west Syria were monitored over 4 years from February 1987 to determine the effect of gastro-intestinal and lungworm nematode infections on ewe productivity. Rainfall varied considerably between the different years (below average rainfall in 2 years contributed to low levels of infection even in untreated ewes). A group of ewes in each flock served as controls, and the others were treated with a high dose of fenbendazole (625 mg, given twice, 14 days apart) in the autumn and again in the spring. The flocks were visited each month to start with, and every 3 months later in the trial, to collect faecal samples, and recordings were made of ewe and lamb live weight, ewe body condition score, changes in flock inventory and supplementary feeding practices. Treated ewes had generally lower numbers of eggs and larvae in their faeces. Treatment had no beneficial effect on ewe fertility, mortality or survival, but in spring treated ewes were heavier and generally had better body condition than untreated ewes ($P<0.01$ in some years), and this was associated with heavier lambs at birth and at weaning ($P<0.01$ in some years). Stepwise regression analysis suggested that better management, such are more rigorous culling, resulted in higher ewe fertility and survival. The overall effect of treatment on annual ewe productivity was small, equivalent to 0.5-1.0 kg additional lamb weaned per ewe exposed to rams, but this covered the cost of the treatment. The trial demonstrated that useful studies on nematode parasites can be conducted in farm flocks, and this gives the results added value for predicting the impact of treatment on other flocks in north-west Syria
Descriptors:lungworms. nematode-infections. rain. body-condition. ewes. fenbendazole. female-fertility. lambs. mortality. supplementary-feeding. survival. climatic-factors. domestic-animals. livestock. animal-parasitic-nematodes. animal-diseases. Awassi. gastrointestinal-diseases. anthelmintics. drug-therapy. disease-control. body-weight. liveweight. flocks. animal-production. performance. losses. parasites. helminths. sheep-diseases
Geographic Locator:Syria
Organism Descriptors:sheep. Nematoda
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. invertebrates. West-Asia. Asia. Mediterranean-Region. Middle-East. Developing-Countries. Threshold-Countries
Subject Codes:LL822. HH405
Supplementary Info:22 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Effect of two commercial yeast cultures with Saccharomyces cerevisiae on ruminal fermentation and digestion in sheep fed sugar cane tops
View Article: Livestock Production Science. 2000. 63 (2). 153-157
CD Volume:331
Print Article: Pages: 153-157
Author(s):Arcos Garcia J L Castrejon F A Mendoza G D Perez Gavilan E P

Author Affiliation:Universidad Nacional Autonoma de Mexico, Facultad de Medicina Veterinaria y Zootecnia, Departamento de Nutricion Animal, Cd. Universitaria, Mexico, D.F. 04510, Mexico
Language:English
Abstract:A feeding trial was conducted to evaluate the effect of two direct-fed microbial cultures containing S. cerevisiae, on rumen fermentation and digestibility of diets based on sugar cane tops. Three Suffolk ewes (30 kg body weight) with ruminal cannula were used in a Latin square design, where treatments were control group (CG); 3 g/day of Yea-Sacc1026 (YS, 1x108 CFU/g) and 1 g/day of Levucell (LC, 20x109 CFU/g). The cultures were added to the rumen. Diet was based on sugar cane tops (50%), sorghum grain (21%), wheat bran (15%), molasses (12%) and urea (2%). Ruminal pH was highest (P<0.05) in CG (6.05), and lower (P<0.05) with YS than with LC (5.85 vs. 5.96). Total volatile fatty acid (VFA) concentration was greater (P<0.05) with yeast cultures (LC, 107.6 mM; YS 105.5 mM) than in CG (97.3 mM). However, no effects were detected in VFA molar proportion, protozoa population, or total tract digestibility. In situ DM and NDF degradation was not affected by treatments. Neither direct-fed microbial culture with S. cerevisiae improved either fermentation or digestion in sheep fed sugar cane tops
Descriptors:waste-utilization. feed-additives. rumen-microorganisms. rumen-protozoa. volatile-fatty-acids. digestion. rumen-fermentation. rumen. sugarcane-tops. cultures. fermentation. sugarcane. diets. digestibility. ewes. feeding. molasses. urea. wheat. wheat-bran
Organism Descriptors:yeasts. sheep. Saccharomyces. Sorghum. Saccharum. Triticum
Supplemental Descriptors:Eumycota. fungi. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Endomycetales. Ascomycotina. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR130. LL510. XX200
Supplementary Info:21 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Effects of live weight, maturity and genotype of sheep fed a hay-based diet, on intake, digestion and live weight gain
View Article: Livestock Production Science. 2000. 63 (3). 291-296
CD Volume:331
Print Article: Pages: 291-296
Author(s):Lourenco A L G Dias da Silva A A Fonseca A J M Azevedo J T
Author Affiliation:Universidade de Tras-os-Montes e Alto Douro, Department of Animal Production, Apartado 202, 5001 Vila Real Codex, Portugal
Language:English
Abstract:The effects of initial live weight (LW; 18 and 30 kg), maturity (40 and 65% mature LW) and genotype on dry matter intake (DMI), LW gain (LWG), organic matter digestibility (OMD), rumen outflow rate of solid phase and urinary allantoin-N excretion were examined in 14 and 21 female lambs from the local breed Churra da Terra Quente (CH) and Ile-de-France (IF), respectively. LW at 40 and 65% maturity was 18 and 30 kg and 30 and 49 kg for CH and IF lambs, respectively. Lambs were individually fed coarsely ground meadow hay (4 cm) ad libitum supplemented with a protein concentrate for 12 weeks. DMI (g kg-1 LW0.75) and rumen outflow rate were higher and OMD lower (P<0.01) in CH than in IF lambs, irrespective of LW or degree of maturity. Daily allantoin-N excretion (mg kg-1 LW) was higher in

CH than in IF lambs (P<0.10) at the same degree of maturity. LWG was unaffected by LW or maturity and was higher in IF than in CH lambs (P<0.001; 92.3 vs. 47.1 g day-1). Regression analysis of LWG on digestible organic matter intake suggests that energy requirements for maintenance of CH lambs are higher than for IF lambs. It is suggested that differences between breeds in digestive ability and outflow rate should be confirmed at the same level of intake. Experiments should also be designed to measure energy retention and more closely estimate energy requirements for maintenance of the two breeds
Descriptors:sheep-feeding. feeding. maturity. feed-intake. digestion. genotypes. weight-gain. digestibility. dry-matter. energy-requirements. energy-retention. excretion. hay. Ile-de-France. body-weight. body-measurements. lambs. growth. protein-concentrates. retention. rumen. supplements
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL520. LL510. LL240
Supplementary Info:14 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:The energy and protein requirements of pregnant and lactating dairy goats: The Agriculture and Food Research Council report
View Article: Livestock Production Science. 2000. 64 (1). 3-8
CD Volume:331
Print Article: Pages: 3-8
Author(s):Sutton J D Alderman G
Author Affiliation:Department of Agriculture, University of Reading, Earley Gate, Reading RG6 6AT, UK
Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Language of Summary:french
Abstract:The basis for the recently published estimates of the requirements of lactating goats for ME and metabolisable protein (MP) in the Agriculture and Food Research Council Report (Agriculture and Food Research Council Report (AFRC), 1998. The Nutrition of Goats. CAB International, Wallingford, UK) are presented and the values are compared with the earlier estimates of allowances from the Institut National de la Recherche Agronomique (Institut National de la Recherche Agronomique (INRA), 1988. Alimentation des Bovins, Ovins, et Caprins. INRA, Paris; Institut National de la Recherche Agronomique (INRA), 1989. Ruminant Nutrition: Recommended Allowances and Feed Tables. Jarrige, R. (Ed), John Libbey, London) in terms of Unite Fourragere Lait (UFL) and Proteines Digestibles dans l'Intestin (PDI). It is concluded that good agreement exists between the recommendations for the energy and protein requirements of lactating goats for maintenance, milk production and LW change but there are serious differences regarding pregnancy. Principal areas of uncertainty or disagreement were identified as: composition of liveweight change (LWC), particularly protein; ME and MP requirements for pregnancy; and activity factors
Descriptors:reviews. energy-requirements. requirements. protein. energy. pregnancy. protein-requirement. composition. milk. milk-yield. guidelines. feeding
Geographic Locator:UK
Organism Descriptors:goats

Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. British-Isles. Western-Europe. Europe. Developed-Countries. Commonwealth-of-Nations. European-Union-Countries. OECD-Countries
Subject Codes:LL500. LL110
Supplementary Info:EAAP Publication No. 2/2000. 9 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Recent progress in the assessment of mineral requirements of goats
View Article: Livestock Production Science. 2000. 64 (1). 9-14
CD Volume:331
Print Article: Pages: 9-14
Author(s):Meschy F
Author Affiliation:Laboratoire de Nutrition et d'Alimentation INRA INA-PG, 16, rue Claude Bernard F-75231 Paris Cedex 05, France
Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Abstract:Recent goat mineral nutrition studies are reviewed with the intention of proposing more suitable mineral dietary recommendations. Macro- and microelements are discussed separately, particularly as each employs different methodologies in order to determine requirement levels
Descriptors:reviews. minerals. requirements. absorption. calcium. copper. mineral-nutrition. trace-elements. deficiency. diets. dry-matter. fibre. pregnancy. guidelines. selenium
Organism Descriptors:goats
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL500
Supplementary Info:EAAP Publication No. 2/2000. 40 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:How forage characteristics influence behaviour and intake in small ruminants: a review
View Article: Livestock Production Science. 2000. 64 (1). 15-28
CD Volume:331
Print Article: Pages: 15-28
Author(s):Baumont R Prache S Meuret M Morand Fehr P
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Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Language of Summary:french
Abstract:Small ruminant production systems vary widely, from high producing dairy goats to suckling ewes on rangelands. However, in all environments feed characteristics influence animals' motivation to eat, dietary choices and ultimately nutrient intake. This review highlights the common feed factors that influence feeding behaviour and intake in sheep and goats, although their expression and consequences depend on the environment. The main characteristics of feeding behaviour are described in terms of the satiation process and motivation to eat. The main feed factors that influence intake are

then reviewed. The relationship between the nutritive value of forages and their voluntary intake is well established. The relationship between nutritive value and palatability of feeds is discussed in the light of recent work on how feed characteristics are learned. At pasture, ease of prehension of the sward influences rate of intake and dietary choices. On heterogeneous resources, animals graze selectively and choose a diet of higher quality than that on offer. Recently more effort has been made to model intake and foraging decisions. Management of the grazing circuit has become an important factor in a heterogeneous environment. Modelling and predicting intake for small ruminants in different environments are also briefly discussed
Descriptors:reviews. behaviour. forage. diet. diets. ewes. feeding. feeding-behaviour. feeds. grazing. models. nutritive-value. palatability. pastures. quality. rangelands. livestock-farming. suckling
Organism Descriptors:ruminants. sheep. goats
Supplemental Descriptors:Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. ruminants. Capra
Subject Codes:LL300. LL500
Supplementary Info:EAAP Publication No. 2/2000. 3 pp. of ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Diet effect on the daily feeding behaviour, frequency and characteristics of meals in dairy goats
View Article: Livestock Production Science. 2000. 64 (1). 29-37
CD Volume:331
Print Article: Pages: 29-37
Author(s):Abijaoude J A Morand Fehr P Tessier J Schmidely P Sauvant D
Author Affiliation:Laboratoire de Nutrition et Alimentation INRA de l'INAPG, 16 rue Claude Bernard, 75231 Paris Cedex 05, France
Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Abstract:An experiment of 4 x 3 weeks was carried out to analyse intake level and rate, number of meals and chewing activities of dairy goats. Four pairs of Alpine and Saanen goats in mid lactation were fed ad libitum on 4 complete diets CR, CS, FR and FS in a Latin square design. Forage/concentrate ratio in these diets was low (C=30/70) or high (F=55/45) and starch, rapidly (R) or slowly (S) degradable in the rumen (barley and maize, respectively). The goats were housed in stalls and fitted with jaw movement recorders. Intake levels were also recorded over 4 x 48 h. Diets were distributed twice daily. Total daily intake was higher ($P<0.01$) on R diets (+ 200 g DM/day). Intake rates during main meals were 12.6, 12.2, 9.1 and 8.7 g/min, respectively, on CR, CS, FR and FS ($P<0.05$). The number of secondary meals decreased with increase in forage content. Intake during secondary meals was 0.84, 0.88, 0.83 and 0.70 kg DM/day, respectively, on CR, CS, FR and FS. Chewing during eating and rumination depended on the type of diet (less than 740 min/day on C and more than 820 min/day on F: $P<0.05$). Goats seem to adapt their feeding behaviour to the kind of diet they receive
Descriptors:feeds. feeding-frequency. composition. behaviour. feeding. feeding-behaviour. barley. diets. forage. lactation. maize. rumen. rumination. stalls. starch
Organism Descriptors:goats. Zea-mays. Hordeum-vulgare
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae.

Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Hordeum
Subject Codes:LL300. LL500. RR300
Supplementary Info:EAAP Publication No. 2/2000. 29 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Utilization of low quality resources by small ruminants in Mediterranean agro-pastoral systems: the case of browse and aftermath cereal stubble
View Article: Livestock Production Science. 2000. 64 (1). 39-49
CD Volume:331
Print Article: Pages: 39-49
Author(s):Landau S Perevolotsky A Bonfil D Barkai D Silanikove N
Author Affiliation:Department of Natural Resources, Institute of Field and Garden Crops, Israel
Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Language of Summary:french
Abstract:Browse and cereal stubble represent the two most important resources for grazing small ruminants in dry Mediterranean areas. The purpose of the present review is to provide updated information regarding their nutritional value. In a mixed Mediterranean environment, browse represents at least 40% of goat's diet. Most browse species in the Mediterranean are rich in tanniferous phenolic substances. Polyethylene glycol (PEG) can bind tannins irreversibly over a wide range of pH and is efficient in alleviating the negative effects of tannins. Supplementing with PEG improves intake and digestibility in grazing goats and sheep and has the potential to be economically profitable. The chemical composition of wheat stubble is affected by the cultivar of wheat and climate, but not tillage management. The quality of stubble from early maturing is lower than from late maturing cultivars. Stubble contains more protein in years of lower rainfall. If grains escaped from the harvest combine (2% of grain yield) are included, digestibility of OM from different components ranges between about 80% (grain) to about 40% (stem). Also, the energy requirement of sheep grazing on stubble may be 70% higher than in shaded feedlot. Therefore, the body condition changes of sheep grazing on stubble exhibit a cyclic pattern consequent with temporal changes in nutritive quality. Because stubble grazing is concurrent with the onset of oestrous season, supplementation with grains from legume species (rich in degradable protein) is needed to prevent impairment of body condition. Supplementing browsing goats with PEG, and sheep grazing cereal stubble with moderate amounts of legume grain, may enable the use of these traditional resources in the frame of sustainable production systems
Descriptors:wheat. antinutritional-factors. reviews. browse. quality. stubble. body-condition. climate. composition. cultivars. digestibility. energy-requirements. feedlots. grazing. nutritive-value. polyethylene. polyethylene-glycol. supplementary-feeding. tannins. crop-residues
Geographic Locator:Mediterranean-Region
Organism Descriptors:goats. sheep. Triticum
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:RR300
Supplementary Info:EAAP Publication No. 2/2000. 2 pp. of ref

ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Deactivation of condensed tannins in Acacia cyanophylla [Acacia saligna] Lindl. foliage by polyethylene glycol in feed blocks effect on feed intake, diet digestibility, nitrogen balance, microbial synthesis and growth by sheep
View Article: Livestock Production Science. 2000. 64 (1). 51-60
CD Volume:331
Print Article: Pages: 51-60
Author(s):Salem H B Nefzaoui A Salem L B Tisserand J L
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Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Abstract:Unmolassed feed blocks were used as supplement of A. saligna (acacia)-based diets. They were made, on the basis of crude weight, with olive cake (42.2%), wheat bran (26.7%), wheat flour (10.7%), quicklime (10.7%), urea (4.4%), salt (4.4%) and a mineral and vitamin supplement (0.9%). Polyethylene glycol (PEG, molecular weight 4000) was introduced in these feed blocks at 5 increasing levels (0 (control), 6, 12, 18 and 24% on the basis of ingredient mixture before moulding) to deactivate acacia condensed tannins. The five dietary treatments (levels of PEG) were evaluated simultaneously and each diet was tested on 6 yearling male Barbarine sheep (average initial weight 19 plus or minus 1.5 kg) and five Barbarine rams (average initial weight 47 plus or minus 3.0 kg). Animals were held in individual pens and metabolism cages, respectively. They were adapted to experimental conditions for 10 and 21 days, respectively, before the commencement of the measurement periods. Freshly cut foliage of acacia was distributed ad libitum and the feed block was permanently available in the trough. Feed intake and daily gain were measured on yearlings during a 60-day period. Feed intake, in vivo diet digestibilities, nitrogen balance and microbial nitrogen synthesis using urinary excretion of allantoin were measured on rams during 10 consecutive days. DM intake (DMI) of feed blocks ranged from 13.7 and 16.5 g/kg0.75 for yearling sheep and from 15.5 and 24.3 g/kg0.75 for rams. PEG had no effect on feed block intake. Acacia DMI by sheep given feed blocks without PEG was low (37.7 and 39.9 g/kg0.75, respectively, for yearlings and rams). Supplementation with feed blocks containing 6, 12, 18 or 24% PEG increased acacia DMI by 25, 50, 56 and 45%, respectively, for yearling sheep and 22, 25, 56 and 71%, respectively, for rams. Providing PEG in feed blocks at a rate of 6, 12, 18 or 24% increased digestible organic matter intake (DOMI) by 3.4, 4.3, 9.4 and 18.2 g/kg0.75 and digestible CP intake by 17, 12, 23 and 36 g/day, respectively. The higher the rate of PEG introduced in feed blocks the greater N retention and urinary excretion of allantoin. Estimated microbial N (g/kg DOMI) was increased by 37, 94, 135 and 153% with feed blocks containing 6, 12, 18 and 24% of PEG, respectively. The clear-cut improvement of the nutritive value of acacia-based diets following PEG supply resulted in a linear increase of the growth rate of sheep. The optimum responses of acacia intake, nitrogen retention, microbial N yield and daily gain were obtained in sheep given feed blocks with 18% of PEG which corresponded to a PEG consumption of about 23 g/day. It is concluded that feed blocks may be used as carrier of PEG for improving the nutritive value of tannin-rich diets

Descriptors:antinutritional-factors. digestibility. feed-blocks. feed-intake. liveweight-gain. leaves. browse. nitrogen-balance. polyethylene-glycol. synthesis. tannins. feeding. sheep-feeding. allantoin. crude-protein. diets. dry-matter. excretion. nitrogen-retention. nutritive-value. rams. retention. supplementary-feeding. urea. fodder
Organism Descriptors:Acacia. Acacia-saligna. sheep
Supplemental Descriptors:Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Acacia. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL520. LL500. RR130. LL510. KK600. KK540
Supplementary Info:EAAP Publication No. 2/2000. 22 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Effect of nutritional factors on fatty acid composition of lamb fat deposits
View Article: Livestock Production Science. 2000. 64 (1). 61-79
CD Volume:331
Print Article: Pages: 61-79
Author(s):Bas P Morand Fehr P
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Document Editor:Morand-Fehr-P. Treacher-T.T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Language of Summary:french
Abstract:A literature review is presented of the influence of nutritional factors on the fatty acid composition of fat deposits and muscles of lambs. A bibliographic data base, containing 979 observations from 108 papers, was made up in such way that one observation corresponded to one group of lambs in one experiment. Each nutritional factor was studied only when number of observations was sufficient. Consequently, special emphasis was given to the effect of dietary ingredients supplying energy or nitrogen on the fatty acid composition of subcutaneous (SC) and perirenal adipose (PR) tissues and in muscles of lambs. Regardless of sex, breed and breeding conditions, all the tissues examined showed a similar pattern of modification in fatty acid composition with diets. In milk fed lambs the pattern of fatty acids largely reflected the dietary fat pattern. The fatty acid of stored fats before weaning had an influence on fatty acid composition of fat deposits and muscle, several months after weaning. When the diets were rich in beet pulp or in fish meal the proportion of C18:1 was significantly increased and the proportions of C18:0, C18:2 and C18:3 decreased in fat tissues. Inclusion of maize in diet resulted in an increase in linoleic acid content in fat deposits. Inclusion of cotton meal increased linoleic and stearic acids in fat deposits. Grass-based diets increased C18:0 and C18:3 in lamb tissues. Melting point of both SC and PR were strongly associated with differences in C18:0 percentages. This approach underlined difficulties in understanding the diet effects on fatty acid composition of fat deposits and muscles without taking feeding and other management aspects into account. This study supported the extent to the modification of the fatty acid composition of lamb carcasses by choice of dietary ingredients despite the ruminal hydrogenation of dietary fat
Descriptors:composition. beet-pulp. carcasses. nutrition. diets. fats. meat-composition. adipose-tissue. reviews. fatty-acids.

feeding. fish-meal. lambs. linoleic-acid. maize. modification. muscles. weaning
Organism Descriptors:sheep. Zea-mays
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510
Supplementary Info:EAAP Publication No. 2/2000. 5 pp. of ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Protein and sulphur amino acid nutrition of hair fibre-producing Angora and Cashmere goats
View Article: Livestock Production Science. 2000. 64 (1). 81-93
CD Volume:331
Print Article: Pages: 81-93
Author(s):Galbraith H
Author Affiliation:Department of Agriculture, University of Aberdeen, 581 King Street, Aberdeen AB24 5UA, UK
Document Editor:Morand-Fehr-P. Treacher-T-T
Conference Title:Special issue. Nutrition of sheep and goats
Language:English
Language of Summary:french
Abstract:The results from a number of studies are presented which investigated responses in fibre production of British Cashmere and Angora goats to variation in protein and sulphur amino acid nutrition under conditions of active fibre growth. Requirements for amino acids were considered in the context of the concentration of amino acids, including cysteine and methionine, in rumen microbial protein and in dietary protein supplements compared with the amino acid composition of hair fibre. Increases in fibre yield and diameter were consistently observed in Angora goats given good quality protein supplements or rumen-protected intestinally-available methionine (Smartamine TMM, Rhone-Poulenc). Cashmere yield was not influenced by urea or white fish meal supplementation but responded positively (in contrast to other studies in the literature) to additional dietary methionine. While responses in cashmere production have been recorded in response to protein supplementation at sub-maintenance levels of nutrition, it is suggested that one component of the absent or reduced response at above maintenance may be the smaller quantitative synthesis of this fibre compared with mohair production by Angora goats. The results are considered in the context of studies from the sheep literature in which protein and amino acid supplementation were shown to stimulate proliferation of hair forming cells in the wool follicle and to increase deposition of protein fractions containing high concentrations of sulphur-containing amino acids. Results from an in vitro study suggested that methionine could support cashmere fibre growth (approximately 0.75) in the absence of cysteine and cysteine, providing evidence that methionine is essential for fibre production and that transulphuration occurs in isolated hair follicles. However, cysteine and cystine were also required to produce maximum growth. In the context of competition between the hair follicle and other body tissues, data are presented which illustrate the increases in nitrogen retention and/or anabolic growth response to protein or protected-methionine supplementation in non-integumental tissues of Cashmere and Angora goats also, despite the presence of lower concentrations of sulphur-containing amino acids in these tissues. The results confirm the value of a good quality protein supplement or more targeted supply of rumen-protected

intestinally-available methionine to correct a frequently apparent deficiency in sulphur amino acid supply for (a) growth of hair fibre by Angora goats and, less consistently, by Cashmere goats and (b) other body tissues in both genotypes
Descriptors:sulfur-amino-acids. reviews. requirements. protein-requirement. sulfur. composition. cysteine. cystine. deficiency. diets. genotypes. in-vitro. methionine. microbial-proteins. nitrogen-retention. protein-supplements. quality. retention. production. rumen. rumen-microorganisms. supplements. synthesis. urea. variation. cashmere. follicles. animal-fibres. breed-differences
Organism Descriptors:goats
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. LL520. LL240. LL510
Supplementary Info:EAAP Publication No. 2/2000. 38 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science
Copyright:Copyright CAB International

Title:Special issue. Nutrition of sheep and goats
View Article: Livestock Production Science. 2000. 64 (1). 93 pp
CD Volume:331
Print Article: Pages: 93
Document Editor:Morand-Fehr-P. Treacher-T-T
Language:English
Abstract:This special issue contains 2 papers on the nutrient requirements of goats, 4 papers on aspects of plant-animal relationships, including feeding behaviour and the use of pasture or Mediterranean rangelands by small ruminants, and 2 papers on product quality, fat composition of lamb meat and growth of Angora and Cashmere goat fibres
Descriptors:feeding-behaviour. nutrient-requirements. nutrition. meat-composition. meat. cashmere. production
Organism Descriptors:ruminants. goats. sheep
Supplemental Descriptors:Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Capra. Bovidae. ruminants. Ovis
Subject Codes:LL145. LL520. LL500
Supplementary Info:EAAP Publication No. 2/2000
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science
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Title:A comparative study of nutrient digestibility, kinetics of degradation and passage and rumen fermentation pattern in goats and sheep offered good quality diets
View Article: Livestock Production Science. 2000. 64 (2/3). 215-223
CD Volume:331
Print Article: Pages: 215-223
Author(s):Molina Alcaide E Martin Garcia A I Aguilera J F
Author Affiliation:Unidad de Nutricion Animal, Estacion Experimental del Zaidin (CSIC), Camino del Jueves, s/n. Armilla, Granada, Spain
Language:English
Abstract:In vivo digestibility, the rates of fermentation and passage and the rumen fermentation pattern were compared in Granadina goats and Segurena wethers fed alfalfa hay (AH), alfalfa hay/sugar beet pulp, 4:1 (AH/SB) and alfalfa hay/sugar beet pulp/oat grain, 3:1:1 (AH/SB/OG) at approximately maintenance level. The animals were at stall and no selectivity was practised. The nylon bag technique was

used to estimate the extent and fractional rate of degradation of the feed in the rumen. The fractional outflow rate of particles was determined with chromium as a marker. No significant interspecies differences in the nutrients digestibility were found. Values of potential and effective degradability and rates of degradation of both dry matter and protein were similar in goats and sheep. Also, the calculated values of the fractional rate of passage of the digesta out of the rumen were not significantly different between animal species. Ammonia-N concentrations were higher in the rumen liquor of goats than in sheep. No clear trend in the concentration of total and individual volatile fatty acids was observed when comparing goats and sheep with the exception of an increased proportion of valeric acid in the rumen liquor of sheep. From present and previous trials it is concluded that goats and sheep show equal capacities of digestion of medium to good quality diets when fed at energy maintenance level and feed selection is absent. This would validate extrapolations of feed evaluations, which implies a unique energy value
Descriptors:species-differences. diets. digestibility. fermentation. kinetics. quality. rumen. rumen-fermentation. beet-pulp. chromium. digesta. digestion. dry-matter. energy-value. fatty-acids. hay. nutrients. volatile-fatty-acids
Organism Descriptors:goats. sheep
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis
Subject Codes:LL510. LL240. LL500
Supplementary Info:29 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:In vivo estimation of body composition from the dilution space of deuterium oxide in fat-tailed Barbary ewes
View Article: Livestock Production Science. 2000. 65 (1/2). 39-45
CD Volume:331
Print Article: Pages: 39-45
Author(s):Atti N Bocquier F Theriez M Khaldi G Kayouli C
Author Affiliation:Laboratoire de Recherche Ovine et Caprine, INRAT 2080 Ariana, Tunisia
Language:English
Abstract:16 dry ewes of the fat-tailed Barbary breed were used to formulate prediction equations of body water, fat, protein and energy content from the live body weight (BW) and the dilution space of deuterium oxide (SD2O). Ewes were injected with 0.5 g D2O/kg BW and 4 blood samples collected after infusion. The D2O content of blood water was determined by infra-red spectrometry. Ewes were weighed, body condition scored and then slaughtered. The body water, fat, protein, ash and energy were determined. At slaughter, ewes weighed 43.4 plus or minus 7.0 kg, and contained 26.0 plus or minus 2.6 kg of water and 9.3 plus or minus 4.2 kg of fat. A relative lack of variation in the fat-free empty body (FFEB) was confirmed in this particular breed (water percentage, 74.5 plus or minus 1.6). Adiposity (fat as percent empty BW; EBW) varied between 15.1 and 36.9%. There was a close negative relationship (R2 = 0.96; residual standard deviation (R.S.D.) = 1.4%) between the fat and the water content of EBW. Body water was significantly correlated with SD2O. The body fat and energy content prediction equations from SD2O and BW were similar to those published in a thin-tailed ewe breed (R2 = 0.92; R.S.D. = 1.4 kg). The body fat equation prediction from body

condition score and/or BW was significant (R2 = 0.81; R.S.D. = 1.9 kg) although not as precise as that using D2O
Descriptors:body-composition. ewes. body-condition. body-fat. deuterium-oxide. prediction. estimation. tropics
Geographic Locator:Tunisia
Identifiers:Barbary
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Maghreb. North-Africa. Africa. Mediterranean-Region. Developing-Countries. Threshold-Countries. Francophone-Africa
Subject Codes:LL600. LL120. ZZ900
Supplementary Info:25 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Protein and protein-free dry matter rumen degradability in buffalo, cattle and sheep fed diets with different forage to concentrate ratios
View Article: Livestock Production Science. 2000. 65 (1/2). 185-195
CD Volume:331
Print Article: Pages: 185-195
Author(s):Terramoccia S Bartocci S Amici A Martillotti F
Author Affiliation:Istituto Sperimentale per la Zootecnia, Via Salaria 31, 00016 Monterotondo Sc., Rome, Italy
Language:English
Abstract:The in sacco protein and protein-free DM rumen degradability of 3 feeds, concentrate, alfalfa [lucerne] hay and maize silage, was determined simultaneously in 4 Mediterranean buffalo (Bubalus bubalis) bulls, 4 Friesian bulls and 4 Delle Langhe rams, which received 4 diets differing in forage:concentrate ratio (87.5:12.5; 75.0:25.0; 62.5:37.5; 50.0:50.0) at 50 g DM/kg0.75 per day. The three feeds, which made up the 4 diets, were incubated in the rumen for 0, 2, 4, 8, 24, 48 and 72 (120 only for hay) h. The solids passage rate values k1, utilized to compute the effective degradability of the three feeds, were: 2.80, 2.42, 2.39 and 2.24 g/100 g/h for buffalo; 3.57, 2.82, 2.86 and 2.67 g/100 g/h for cattle; 3.07, 2.88, 2.84 and 2.57 g/100 g/h for sheep, obtained with the four diets. Significant differences were found among the three species with regard to crude protein and protein-free dry matter rumen degradability for the three feeds, with the exception of alfalfa hay for the last parameter. The lowest values were recorded in cattle and sheep compared to buffalo (crude protein rumen degradability: 58.8 and 62.8 vs. 64.8 g/100 g concentrate, 57.0 and 56.4 vs. 62.7 g/100 g hay, 58.7 and 60.7 vs. 68.6 g/100 g maize silage; protein-free dry matter rumen degradability: 64.1 and 69.0 vs. 70.0 g/100 g concentrate, 48.2 and 48.5 vs. 49.2 g/100 g hay; 56.0 and 58.6 vs. 64.8 g/100 g maize silage). The effective rumen degradability has also been calculated utilizing the theoretical passage rate constants (k1=3 g/100 g/h for forages and k1=6 g/100 g/h for concentrate); the estimation of differences among species was not affected by the use of experimental or theoretical k1 for both effective crude protein rumen degradability of utilized forages and effective protein-free dry matter rumen degradability of maize silage. Two correlations were considered: between degradation rate constant "c" and passage rate constant "k1" of solid or fluid values as well as between the degradable fraction degraded per unit of time "(b/100)c" and passage rate constant "k 1" of solid and fluid values. The largest number of significant values for crude protein was recorded in sheep and

buffalo while largest numbers were recorded in cattle for protein-free dry matter
Descriptors:species-differences. rumen-digestion. protein-degradation. degradation. concentrates. diets. dry-matter. forage. ratios. rumen. bulls. crude-protein. feeds. Friesian. hay. maize. maize-silage. rams. silage
Organism Descriptors:buffaloes. cattle. sheep. Zea-mays
Supplemental Descriptors:Bubalus. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Ovis. Zea. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants
Subject Codes:LL510. LL500. LL240
Supplementary Info:33 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Growth rates and testicular characteristics of Ethiopian highland sheep offered chickpea haulm supplemented with incremental levels of Leucaena leucocephala leaf hay
View Article: Livestock Production Science. 2000. 65 (3). 209-217
CD Volume:331
Print Article: Pages: 209-217
Author(s):Negussie Dana Teshome Shenkoru Azage Tegegne
Author Affiliation:Debre Zeit Agricultural Research Centre, P.O. Box 32, Debre Zeit, Ethiopia
Language:English
Abstract:A study was conducted to evaluate the effect of supplementing different levels of L. leucocephala leaves on reproductive capacity and growth of male highland sheep (Arsi type) in Debre Zeit Research Centre, Addis Ababa, Ethiopia. Animals were randomly allotted to one of 5 experimental rations. In treatment 1 (NS), animals were allowed to feed only on chickpea haulm. Treatments 2 (L100), 3 (L200) and 4 (L300) consisted of 100, 200 and 300 g/head per day of sun dried Leucaena leaf hay, while animals in treatment 5 (C300) received 300 g/head per day of concentrate mixture. The basal diet, chickpea haulm, was offered ad libitum to all groups. Leucaena supplementation significantly increased total DM intake without marked effect on intake of the basal diet. Live weight of sheep was found to have increased by 68, 88, 94 and 74% as a result of supplementation of 100, 200 and 300 g/head per day of sun dried Leucaena leaves and 300 g/head/day of concentrate mixture, respectively. Epididymal growth was retarded in animals maintained solely on chickpea haulm and improved with supplementation. Similar effects were noted in all the epididymal components of both the left and right testes. The scrotal circumference of non-supplemented sheep has been reduced by about 10% while addition of Leucaena to the diet increased testicular size by 20-24%. The diameters of the left and right testes were also affected positively by supplementation. It was concluded that supplementation of up to 300 g/head per day of Leucaena leaf hay improved body weight gain of sheep with concurrent increases in testicular and epididymal sizes without resulting in clinical symptoms of toxicity
Descriptors:chickpeas. feed-intake. growth-rate. haulms. hay. liveweight-gain. nutrition. reproductive-traits. supplementary-feeding. testes. leucaena-leaf-meal. Arsi. epididymis
Geographic Locator:Ethiopia
Organism Descriptors:Leucaena-leucocephala. sheep. Cicer-arietinum
Supplemental Descriptors:Leucaena. Mimosoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae.

ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Cicer. Papilionoideae. East-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries
Subject Codes:LL120. LL520. LL250. RR000
Supplementary Info:34 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:The relation between breeding management and 305-day milk production, determined via principal components regression and partial least squares
View Article: Livestock Production Science. 2000. 66 (1). 71-83
CD Volume:331
Print Article: Pages: 71-83
Author(s):Rougoor C W Sundaram R Arendonk J A M van
Author Variant:van-Arendonk-J-A-M
Author Affiliation:Research Station for Cattle, Sheep and Horse Husbandry, Runderweg 6, NL-8219PK Lelystad, Netherlands
Language:English
Abstract:A field study was set up to investigate the relation between breeding management and 305-day milk production on 39 dairy farms in the Netherlands. Second goal of the study was to investigate advantages and disadvantages of principal components regression (PCR) and partial least squares (PLS) for livestock management research. Multicollinearity was present in the data set and the number of variables was high compared to the number of observations. Out of 70 variables related to breeding management and technical results at dairy farms, 19 were selected for PLS and PCR, based on a correlation of more than or equal to 0.25 or less than or equal to -0.25 with 305-day milk production. Five principal components (PCs) were selected for PC-regression with 305-day milk production being the goal variable. Related variables were combined into one so-called synthetic factor. All synthetic variables were used in a path-analysis. The same path-analysis was worked out with PLS. PLS forms synthetic factors capturing most of the information for the independent X-variables that is useful for predicting the dependent Y-variable(s) while reducing the dimensionality. Both methodologies showed that milk production per cow is related to critical success factors of the producer, farm size, breeding value for production and conformation. Milk production per cow was the result of the attitude of the farmer as well as the genetic capacity of the cow. It was found that at high producing farms the producer put relatively much emphasis on the quality of the udder and less on the kg of milk. Advantages of PLS are the optimization towards the Y-variable, resulting in a higher R2, and the possibility to include more than 1 Y-variable. Advantages of PCR are that hypothesis testing can be performed, and that complete optimization is used in determining the PCs. It is concluded that PLS is a good alternative for PCR when relations are complex and the number of observations is small
Descriptors:breeding-value. conformation. cows. dairy-farms. milk-production. statistical-analysis. management
Organism Descriptors:cattle
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL110. LL240. ZZ100
Supplementary Info:26 ref
ISSN:0301-6226
Year:2000

Journal Title:Livestock Production Science
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Title:Aspects of gastrointestinal motility in relation to the development of digestive function in neonates
View Article: Livestock Production Science. 2000. 66 (2). 133-139
CD Volume:331
Print Article: Pages: 133-139
Author(s):Laerke H N Lesniewska V Hedemann M S Jensen B B Pierzynowski S G
Author Affiliation:Danish Institute of Agricultural Sciences, Department of Animal Nutrition and Physiology, P.O. Box 50, DK-8830 Tjele, Denmark
Conference Title:Physiological, genetic and nutritional aspects of tissue growth in farm animals: Papers presented at the 50th EAAP Annual Meeting Animal Physiology and Animal Nutrition Commissions, Zurich, Switzerland, 22-26 August, 1999.
Language:English
Abstract:Gastrointestinal motility is responsible for mixing and transport of digesta and elimination of undigested residues. The basis for the motility is the electrical activity of the gastrointestinal smooth muscle, which has a recurring pattern. In the small intestine of mature animals, this pattern is associated with periodic fluctuations of mesenteric blood flow, and gastric, pancreatic and biliary secretion, and with intestinal absorption. In general, feeding disrupts the cyclic pattern in the stomach and small intestine, replacing it with a continuous post-feeding pattern, and the duration of the post-feeding pattern is dependent on animal species, composition of the diet and feeding regime. The perinatal and weaning periods manifest drastic changes in digestive function and, thus, in gastrointestinal motility. Due to difficulties in performing studies in perinatal and neonatal animals, only few data on the development of gastrointestinal motility, and its synchronisation with other digestive functions, are available. Whereas some studies in the literature indicate that the development of gastrointestinal motility follows the maturation of the regulatory mechanisms, recent data also suggest that changes in gastrointestinal motility around birth and weaning reflect changes in nutrient supply. This review deals with some aspects of gastrointestinal motility, primarily in the gastric antrum and small intestine, of neonatal animals (dogs, sheep, pigs, cattle, rabbits). Changes in gastrointestinal motility in early life could be of paramount importance for proper digestive function and this research area requires further attention
Descriptors:reviews. digestive-tract-motility. digestive-tract. development. digestion. motility. intestinal-absorption. conferences. newborn-animals. smooth-muscle. blood-circulation. nutrients. transport. stomach. small-intestine. morphology. weaning
Organism Descriptors:cattle. pigs. dogs. sheep. rabbits
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Sus-scrofa. Sus. Suidae. Suiformes. Canis. Canidae. Fissipeda. carnivores. small-mammals. Ovis. Leporidae. Lagomorpha
Subject Codes:LL510. LL400
Supplementary Info:53 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science
Copyright:Copyright CAB International

Title:How does the foetal gastrointestinal tract develop in preparation for enteral nutrition after birth?
View Article: Livestock Production Science. 2000. 66 (2). 141-150
CD Volume:331
Print Article: Pages: 141-150
Author(s):Sangild P T Fowden A L Trahair J F
Author Affiliation:Division of Animal Nutrition, Royal Veterinary and Agricultural University of Copenhagen, Gronnegardsvej 3, DK-1870 Frederiksberg C, Denmark
Conference Title:Physiological, genetic and nutritional aspects of tissue growth in farm animals: Papers presented at the 50th EAAP Annual Meeting Animal Physiology and Animal Nutrition Commissions, Zurich, Switzerland, 22-26 August, 1999.
Language:English
Abstract:A review. At birth, the gastrointestinal tract (GIT) must be able to cope with the shift from parenteral nutrition before birth (via the placenta) to enteral nutrition after birth (oral colostrum/milk intake). In preparation for this event, the GIT grows and matures very rapidly in the weeks before birth. A series of studies in foetal pigs and sheep have shown that both hormonal and luminal factors influence this rapid phase of GIT development in farm animals. Among the potential hormonal regulators of development, cortisol plays a pivotal role. Thus, the normal developmental increases in stomach acid and gastrin secretion, and in certain enzyme activities (chymosin, pepsin, amylase, lactase, aminopeptidases), are stimulated by circulating cortisol. Cortisol also affects the intestinal absorption of immunoglobulins at birth but has limited effects on the GIT in the postnatal period. Ingestion of amniotic fluid by the foetus and of colostrum by the neonate also modulates GIT growth and enzyme activities. These effects may be mediated via luminal actions of growth factors, hormones and nutrients present in the fluids. However, luminal influences on the developing GIT are less pronounced in the foetus than in the neonate. In conclusion, both circulating and luminal factors affect prenatal GIT development to ensure that the foetal GIT is sufficiently mature to support the dramatic changes in nutrition that occur at birth
Descriptors:digestive-tract. development. conferences. hormones. regulation. intestinal-absorption. nutrition. enzymes. secretions. colostrum
Organism Descriptors:pigs. sheep
Supplemental Descriptors:Sus-scrofa. Sus. Suidae. Suiformes. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Bovidae. ruminants
Subject Codes:QQ010. LL510. LL400
Supplementary Info:67 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Estimation of genetic parameters for production traits of Chios sheep using a multitrait animal model
View Article: Livestock Production Science. 2000. 66 (3). 217-221
CD Volume:331
Print Article: Pages: 217-221
Author(s):Ligda Ch Gabriilidis G Papadopoulos Th Georgoudis A
Author Affiliation:Faculty of Agriculture, Department of Animal Production, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece
Language:English

Abstract:Genetic parameters for commercial milk yield, litter size at birth and mean litter weight at weaning of Chios sheep were estimated. The data originated from the Agricultural Research Station of Chalkidiki, Greece, and included 5343 lactations of 2315 ewes with lambings from 1977 until 1996. Variance components were estimated using restricted maximum likelihood, fitting a multitrait animal model. The random effects included in the model were the additive genetic effect of the animal, the effect of the permanent environment of the animal and the residuals. Heritability estimates were 0.23 plus or minus 0.015, 0.16 plus or minus 0.011 and 0.16 plus or minus 0.010, for commercial milk yield, litter size at birth and mean litter weight at weaning, respectively. In the same sequence the repeatabilities of the traits were 0.38, 0.18 and 0.16. Genetic correlations were 0.03 plus or minus 0.040 between milk yield and litter size, -0.77 plus or minus 0.036 between litter size at birth and mean litter weight at weaning and -0.06 plus or minus 0.037 between milk yield and mean litter weight at weaning
Descriptors:Chios. ewes. genetic-correlation. genetic-effects. genetic-parameters. genotype-environment-interaction. heritability. lactation. litter-size. litter-weight. milk-yield. weaning-weight
Geographic Locator:Greece
Organism Descriptors:sheep
Supplemental Descriptors:Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL110. LL240. LL250. QQ010
Supplementary Info:23 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Repeated superovulation of high-prolificacy Rasa Aragonesa ewes before culling as an inexpensive way to obtain high-quality embryos
View Article: Livestock Production Science. 2000. 66 (3). 263-269
CD Volume:331
Print Article: Pages: 263-269
Author(s):Forcada F Abecia J A Lozano J M Zuniga O
Author Affiliation:Departamento de Produccion Animal y Ciencia de los Alimentos, Universidad de Zaragoza, Miguel Servet, 177, 50013 Zaragoza, Spain
Language:English
Abstract:The purpose of this study was to assess the ovulatory response and embryo production after repeated superovulation of selected high-prolificacy Rasa Aragonesa ewes at the end of their reproductive life. A total of 211 superovulatory treatments were performed during the breeding seasons of 3 consecutive years at the University of Zaragoza, Spain. Ewes were given the same gonadotrophin treatment up to 3 times at intervals of at least 50 days. They were synchronized with intravaginal progestagen sponges and treated with ovine follicle stimulating hormone (oFSH) equivalent to a total dose of 176 NIH-FSH-S1 units in 8 decreasing doses administered at 12-h intervals from 72 h before sponge removal. Embryos were recovered by laparotomy 7 days after the onset of oestrus. There was no effect of year on the superovulatory response as measured by the percentages of ewes in oestrus (80%) or ovulating (67%). An average of 4 freezable embryos (compacted morulae and blastocysts) were recovered at each treatment from the 141 ewes, with no significant differences amongst years, although the process seemed to be less efficient after the 3rd treatment than after the 1st or 2nd ones (2.4 vs. 4.1 ($P<0.10$) or

4.5 (P<0.05) freezable embryos, respectively). This was primarily attributable to a lower ovulation rate (three fewer corpora lutea; P<0.10). Results indicate that the methodology used in the present study could be an efficient and inexpensive way to obtain high-quality embryos from selected high-prolificacy animals before culling
Descriptors:Aragonese. embryos. ewes. FSH. oestrus. progestogens. superovulated-females. superovulation
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL250. LL860. WW000. ZZ900
Supplementary Info:27 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Effects of heat stress on the welfare of extensively managed domestic ruminants
View Article: Livestock Production Science. 2000. 67 (1/2). 1-18
CD Volume:331
Print Article: Pages: 1-18
Author(s):Nissim Silanikove
Author Affiliation:Institute of Animal Science, Agricultural Research Organization, The Volcani Centre, P.O. Box 6, Bet Dagan 50250, Israel
Language:English
Descriptors:heat-stress. animal-welfare. environmental-temperature. thermoregulation. body-temperature. reviews
Organism Descriptors:ruminants. cattle. sheep
Supplemental Descriptors:Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Bos. Bovidae. ruminants. Ovis
Subject Codes:LL810. LL600. LL180
Supplementary Info:Many ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Investigation of direct and maternal genetic effects on birth and weaning weight of Chios lambs
View Article: Livestock Production Science. 2000. 67 (1/2). 75-80
CD Volume:331
Print Article: Pages: 75-80
Author(s):Ligda C Gabriilidis G Papadopoulos T Georgoudis A
Author Affiliation:Department of Animal Production, Faculty of Agriculture, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece
Language:English
Abstract:Direct additive and maternal genetic effects on birth and weaning weight of Chios lambs were investigated. The data originated from the Agricultural Research Station of Chalkidiki and comprised 7318 lambs, raised over the period from 1977 to 1992. Variance components were estimated using restricted maximum likelihood, fitting 6 animal models, by including or excluding maternal effects. The direct heritability (h2d) for birth weight decreased from 0.38 to 0.13 when maternal genetic effects were included in the model, while h2d for weaning weight decreased from 0.29 to 0.15. The maternal heritability (m2) for birth weight was 0.33 when only maternal genetic effects were included in the model and ranged from 0.13 to 0.19 when the permanent environment of the dam (c2) was added. The respective values of m2 for weaning weight ranged from 0.14 to 0.16

and 0.05 to 0.07. The permanent environmental effect of the dam was significant for both traits. Negative genetic covariance between direct and maternal genetic effects (sigma am) was observed, which was significant only for birth weight
Descriptors:maternal-effects. genetic-effects. birth-weight. variance-components. weaning-weight. lambs. Chios. sheep-breeds. maximum-likelihood. heritability. dams-(mothers). ewes. genetic-covariance
Geographic Locator:Greece
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries
Subject Codes:LL240. LL250. LL600. LL120
Supplementary Info:14 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Genetic and phenotypic relationships between milk production and body weight in Chios sheep and Damascus goats
View Article: Livestock Production Science. 2000. 67 (1/2). 81-87
CD Volume:331
Print Article: Pages: 81-87
Author(s):Mavrogenis A P Papachristoforou C
Author Affiliation:Agricultural Research Institute, P.O. Box 22016, 1516 Nicosia, Cyprus
Language:English
Abstract:Data on 2087 lactations from 737 Chios ewes collected between 1978 and 1989, and 1611 lactations from 486 Damascus goats collected from 1982 to 1998 at the experimental station of the Agricultural Research Institute were utilized. The ewes were the progeny of 101 sires (mean sire family size 7.3) and the goats of 101 sires (mean sire family size 4.8). A mixed linear model that accounted for the year and season of lambing/kidding and parity of ewes or goats (fixed effects) and sires within years (random effects) was used. Phenotypic and genetic variance and covariance estimates were obtained from paternal halp sib correlations. The study was conducted to investigate genetic and phenotypic relationships between milk production (90-day and total milk) and live weight at mating. Year effects were significant (P<0.01) for all traits studied, while season of parturition significantly affected (P<0.01) only milk production (part and total). Parity had a significant quadratic effect (P<0.01) on all traits examined; the highest response in milk production was reached in the third parity and the highest body weight at mating in the fifth parity. Heritability estimates for 90-day (0.44 plus or minus 0.08 and 0.45 plus or minus 0.11) and total milk yield (0.54 plus or minus 0.09 and 0.49 plus or minus 0.11) for sheep and goats, respectively, were high, indicating that genetic progress from direct selection on either trait would be effective. Heritability of body weight at mating, unadjusted or adjusted to mature equivalent, was high in both species (sheep: 0.79 plus or minus 0.09 and 0.76 plus or minus 0.09, respectively; goats: 0.79 plus or minus 0.11 and 0.80 plus or minus 0.11, respectively). Genetic and phenotypic correlations between part and total lactation yield were both high and positive, justifying selection on early measures of milk production. The genetic associations between production traits and body weight at mating were very low in both species. It was positive in sheep and negative in goats, but no or

extremely small correlated responses could be expected in body weight from selection on milk production. Increased body size, when expressed, should be the consequence of better feeding and improved management practices during periods of stress
Descriptors:goat-breeds. Damascus-(goat-breed). milk-production. sheep-breeds. Chios. ewes. genetic-variance. genetic-parameters. body-weight. mating. parturition. lambing-season. kidding-season. parity. reproduction. heritability. species-differences
Geographic Locator:Cyprus
Identifiers:ewe milk yield. goat milk yield. goat lactation. ewe lactation. body size
Organism Descriptors:goats. sheep
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Mediterranean-Region. Middle-East. Developing-Countries. Threshold-Countries. Commonwealth-of-Nations. Ovis
Subject Codes:LL110. LL240. LL600. LL250
Supplementary Info:30 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Selection strategies in sire referencing schemes in sheep
View Article: Livestock Production Science. 2000. 67 (1/2). 129-141
CD Volume:331
Print Article: Pages: 129-141
Author(s):Lewis R M Simm G
Author Affiliation:Animal Biology Division, SAC, King's Buildings, Edinburgh EH9 3JG, UK
Language:English
Abstract:In sire referencing, genetic links are created among flocks by the mutual use of some rams (reference sires). These connections allow for across-flock genetic evaluations offering a larger pool of candidates for selection. Using stochastic simulation, the effect of 3 characteristics of the design of such schemes on rates of genetic response and inbreeding were investigated. We considered (i) the selection intensity for reference sires (highest ranking, or from the top sixth or top third of available candidates), (ii) the criteria on which reference sires were chosen (BLUP breeding value or phenotypic performance), and (iii) the extent to which the reference sires were used. For the latter, the number of reference sires used (1, 2 or 3) and the number of ewes mated to each reference sire (a total of 10, 15 or 30 ewes per flock or approx equal to 15, 30 and 45% of the population) was assessed. 15 flocks of different sizes (ranging from 40 to 140 ewes) were simulated. Reference sires were picked from a team of 6 rams of which half were replaced each year. Surplus ewes were mated to rams born within the flock and unrelated rams born outside the scheme. The mating of full and half-sibs was avoided. When selection was most intensive (highest ranking) the rate of genetic progress per annum was 1.51-1.73 as great as when it was least intensive (from top sixth or top third). Selection on BLUP breeding values achieved 1.25-1.31 times the genetic response of phenotypic selection. When more ewes (30) were mated to reference sires, progress was as much as 1.14 times as large that when fewer ewes were mated (20 and less). The average inbreeding coefficient after 15 years of selection was at most doubled in schemes where genetic improvement was more rapid. Even so, the rate of inbreeding was always lower than 0.3% per annum (less than 1% per generation). By optimising the selection strategy for a sire referencing scheme,

genetic progress can be substantially improved with acceptable levels of inbreeding
Descriptors:sires. rams. selection. sire-evaluation. ewes. mating. simulation-models. inbreeding. selection-responses. breeding-value. genetic-gain. Best-Linear-Unbiased-Prediction. phenotypes. genetic-improvement
Geographic Locator:UK
Identifiers:sire ranking
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. British-Isles. Western-Europe. Europe. Developed-Countries. Commonwealth-of-Nations. European-Union-Countries. OECD-Countries
Subject Codes:LL120. LL240. LL250
Supplementary Info:19 ref
ISSN:0301-6226
Year:2000
Journal Title:Livestock Production Science

Title:Fatty acid composition and sensory characteristics of lamb carcasses from Britain and Spain
View Article: Meat Science. 2000. 54 (4). 339-346
CD Volume:335
Print Article: Pages: 339-346
Author(s):Sanudo C Enser M E Campo M M Nute G R Maria G Sierra I Wood J D
Author Affiliation:Department of Animal Production, University of Zaragoza, 50013-Zaragoza, Spain
Language:English
Abstract:Fatty acid composition of intramuscular fat in longissimus was measured in 32 Rasa Aragonesa (RA) [Aragonese], Merino (ME) and Welsh Mountain (WM) lamb carcasses purchased in Spain and in the UK. The lambs grown in Spain (RA and ME) were concentrate fed and slaughtered at a lighter weight and lower age than those grown in the UK (WM). The UK lamb carcasses purchased in Spain were of a similar weight to the Spanish lambs but were lighter than the lamb carcasses purchased in the UK. The UK lambs were grass fed. Relationships between fatty acid (FA) composition and sensory attributes were examined following sensory testing of all lambs by both UK and Spanish taste panels. The production system was shown to be more important than breed in determining FA composition. UK lambs had higher percentages, within total fatty acids, of 18:0, 18:3 (n-3) and long chain polyunsaturated n-3 FA and lower percentages of 18:2 (n-6) and long chain polyunsaturated n-6 FA than Spanish lambs. The amounts of these FA in muscle tissue (mg/100 g) were also different between the UK and Spanish groups, not only because the UK lambs had more total fat. For both taste panels, odour and flavour intensity were positively correlated with the amounts and percentages of 18:0 and 18:3 and negatively correlated with those of 18:2. This was explained by the fact that both panels gave higher odour and flavour intensity scores to the grass-fed UK lamb with high 18:3 levels and lower scores to the concentrate-fed Spanish lamb with high 18:2 levels. However, 18:0 and 18:3 were positively correlated with flavour quality and overall appraisal for the UK panel and negatively for the Spanish panel. Conversely, 18:2 was a positive contributor to flavour and overall preference for the Spanish panel and was negative for the UK panel
Descriptors:carcasses. carcass-composition. fatty-acids. feeding. intramuscular-injection. lambs. Merino. muscles. Aragonese. Welsh-Mountain. diets. breed-differences. sheep-breeds

Geographic Locator:Spain. UK
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Southern-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries. British-Isles. Western-Europe. Commonwealth-of-Nations
Subject Codes:LL120. QQ030. QQ500. LL520. LL240
Supplementary Info:20 ref
ISSN:0309-1740
Year:2000
Journal Title:Meat Science
Copyright:Copyright CAB International

Title:Fatty acid composition and eating quality of lamb types derived from four diverse breed X production systems
View Article: Meat Science.. 55 (2). June, 2000. 141-147
CD Volume:335
Print Article: Pages: 141-147
Author(s):Fisher A V Enser M Richardson R I Wood J D Nute G R Kurt E Sinclair L A Wilkinson R G
Author Affiliation:Division of Food Animal Science, School of Veterinary Science, University of Bristol, Langford, Bristol, BS40 5DU
Language:English
Language of Summary:English (EN)
Abstract:Carcass composition, muscle fatty acids and eating quality of loin chops were examined in ram lambs from four diverse breed X production system groups: pure Welsh Mountain off upland flora, pure Soays off lowland grass, Suffolk crosses off lowland grass and Suffolk crosses off concentrates. The two Suffolk groups had heavier and better muscled carcasses than the others and Soays were particularly lean. Fatty acid composition was different between the groups. The forage-fed lambs all had high concentrations of n-3 polyunsaturated fatty acids (PUFA) including
Descriptors:breed effect; loin chops: eating quality, fatty acid composition, flavor, meat; lowland grass grazing; upland flora grazing. Animal Husbandry (Agriculture); Foods. alpha-linolenic acid; arachidonic acid; eicosapentanoic acid; linoleic acid
Organism Descriptors:sheep (Bovidae): breed-Soay, breed-Suffolk, breed-Welsh Mountain, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:The effects of diet and breed on the volatile compounds of cooked lamb
View Article: Meat Science.. 55 (2). June, 2000. 149-159
CD Volume:335
Print Article: Pages: 149-159
Author(s):Elmore J S Mottram D S Enser M Wood J D
Author Affiliation:Department of Food Science and Technology, The University of Reading, Whiteknights, Reading, RG6 6AP
Language:English
Language of Summary:English (EN)

Abstract:The effect of varying the n-3 polyunsaturated fatty acid (PUFA) composition of lamb muscle on the formation of aroma volatiles during cooking has been examined. The meat was obtained from four groups of Suffolk and Soay lambs fed different supplementary fats: a palm-oil based control; bruised whole linseed, which increased muscle levels of alpha-linolenic acid (C18:3 n-3); fish oil, which increased eicosapentaenoic acid (EPA, C20:5 n-3) and docosahexaenoic acid (DHA, C22:6 n-3); and equal quantities of linseed and fish oil (fat basis). Higher quantities of lipid oxidation products were found in the aroma volatiles of lamb muscle from animals fed fish oil, compared to the control. In particular, unsaturated aldehydes, unsaturated hydrocarbons and alkylfurans increased up to fourfold. These compounds derived from the autoxidation of PUFAs during cooking. Although some of these volatiles were increased in meat from animals fed the linseed supplement, the effect was not as great as with the fish oil fed lambs. Levels of volatiles derived from the Maillard reaction, such as pyrazines and sulfur compounds, were up to four times higher in Soays than Suffolks
Descriptors:Maillard reaction; bruised whole linseed: dietary supplement, vegetable; fish oil: dietary supplement, fats and oils; lamb muscle: meat, volatile composition; palm-oil: dietary supplement, fats and oils. Animal Husbandry (Agriculture); Foods; Nutrition. alkylfurans; alpha-linolenic acid; docosahexanoic acid; eicosapentanoic acid; pyrazines; sulfur compounds; unsaturate aldehydes; unsaturated hydrocarbons
Organism Descriptors:sheep (Bovidae): breed-Soay, breed-Suffolk, lamb
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods; Nutrition
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:Ash and calcium as measures of bone in meat and bone mixtures
View Article: Meat Science. 55 (3). July, 2000. 255-264
CD Volume:335
Print Article: Pages: 255-264
Author(s):Field R A
Author Affiliation:University of Wyoming, Laramie, WY, 82071-3684
Language:English
Language of Summary:English (EN)
Abstract:Bone content of mechanically recovered meat is usually controlled by setting calcium limits, but these limits may allow more bone in some products because calcium content of fresh bone is variable. Studies involving deposition of energy, nutrients, and minerals are also dependent on ash or calcium to determine bone content of carcasses. However, ash and calcium, which is 37% of bone ash, varies by age of animal, presence or absence of tissues such as marrow or cartilage that are associated with bone, and state of bone hydration. Literature that reports ash content of bone and factors associated with its variability is the focus of this review. Based on the literature reviewed, a conversion factor of 4.5 for calcium percentage to fresh cortical bone percentage from round bones of cows, fed beef, lambs, pigs and hens is recommended. A conversion factor of calcium percentage to fresh bone percentage of 5.0 is recommended for all veal and broiler bones and for flat bones
Descriptors:ash content; cow; mechanically recovered meat: bone content, meat. Foods. calcium

Organism Descriptors:chicken (Galliformes): hen; cow (Bovidae); pig (Suidae); sheep (Bovidae): lamb. bone: skeletal system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Galliformes: Aves, Vertebrata, Chordata, Animalia; Suidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Birds; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Foods
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:Comparison of different magnesium sources on lamb muscle quality
View Article: Meat Science. 55 (4). August, 2000. 443-449
CD Volume:335
Print Article: Pages: 443-449
Author(s):Apple J K Watson H B Coffey K P Kegley E B Rakes L K
Author Affiliation:Department of Animal Science, University of Arkansas, Fayetteville, AR, 72701
Language:English
Language of Summary:English (EN)
Abstract:Wether lambs (n=20) were used to compare the effect of dietary magnesium oxide (MgO), unweathered Magnesium Mica(R) (UMM) and weathered Magnesium Mica(R) (WMM) on muscle quality. Lambs were fed a corn-based, control diet (Ctrl), or the Ctrl supplemented with either MgO, UMM, or WMM for 95 days before harvest. Following a 24- h chill, carcasses were fabricated, and L*, a* and b* values were determined on the triceps brachii (TB), longissimus thoracis (LT), semimembranosus (SM), and semitendinosus (ST) muscles. Supplemental magnesium had no ($P > 0.10$) effect on live and carcass weights, fat thickness, loin eye area, and USDA yield grade. Carcasses from lambs supplemented with MgO had higher ($P < 0.10$) flank streaking scores and USDA quality grades than those from lambs fed diets containing UMM. Although magnesium-supplementation had no ($P > 0.10$) effect on marbling scores, the LT from Ctrl-fed lambs had more ($P < 0.05$) intramuscular lipid than lambs fed diets containing UMM or WMM. Lambs supplemented with UMM had greater ($P < 0.05$) LT shear force values than lambs fed MgO or WMM. Magnesium- supplementation had no ($P > 0.10$) effect on muscle color; however, supplementing finishing diets with UMM may result in less palatable lamb
Descriptors:corn-basd control diet; lamb muscle: meat, quality; muscle quality. Animal Husbandry (Agriculture); Foods; Nutrition. magnesium oxide: dietary; unweathered Magnesium Mica: dietary supplement; weathered Magnesium Mica: dietary supplement
Organism Descriptors:sheep (Bovidae): breed-Wether, lamb. longissimus thoracis muscle: muscular system; semimembranous muscle: muscular system; semitendinosus muscle: muscular system; triceps brachii muscle: muscular system
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Animal Husbandry (Agriculture); Foods; Nutrition
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:The effects of dietary alpha -tocopheryl acetate supplementation and modified atmosphere packaging (MAP) on the quality of lamb patties
View Article: Meat Science. 2000. 56 (1). 61-66
CD Volume:335
Print Article: Pages: 61-66
Author(s):Kerry J P O'Sullivan M G Buckley D J Lynch P B Morrissey P A
Author Affiliation:Department of Food Science and Technology, University College Cork, National University of Ireland, Cork, Irish Republic
Language:English
Abstract:The effects of dietary alpha -tocopheryl acetate supplementation and/or packaging on the quality of lamb patties were investigated. Ewes (n=12) were selected and scanned to assess pregnancy. They were divided into two groups. The control group was fed a non-supplemented diet of 20 mg alpha -tocopheryl acetate/kg feed/day for 9 weeks ante-parturition and 3 weeks post-parturition. The lambs were weaned at 3 weeks and fed either the non-supplemented or supplemented diet for 10 weeks prior to slaughter. The m. longissimus dorsi from each carcass from each dietary group was stored at -20 deg C for 7 months. Patties were formed from supplemented or control minced m. longissimus dorsi and held in either modified atmosphere packs (MAP) under atmospheres of 70:30, 80:20 or 90:10 CO2: O2, under vacuum or in overwrapped trays. All packs were held under refrigerated (4 deg , 616 lux) display for a period of 10 days. Patties were assessed for oxidative and colour stability on days 0, 2, 4, 6, 8 and 10. With each type of pack, dietary alpha -tocopheryl acetate supplementation significantly increased oxidative and colour stability compared to control patties. As oxygen concentrations increased in MAP packs, colour stability was enhanced but the rate of lipid oxidation increased. Vacuum packaged patties had ($P<0.05$) higher Hunter 'a' values, lower proportions of metmyoglobin and lower TBARS numbers than those held under all other forms of packaging. Aerobically packaged patties had lower Hunter 'a' values, higher proportions of metmyoglobin and lower TBARS numbers compared to MAP patties
Descriptors:meat-quality. vitamin-E-acetate. tissues. muscles. diets. packaging. quality. supplementary-feeding. diet. ewes. lambs. pregnancy. stability. storage
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL510. LL520
Supplementary Info:21 ref
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:Effect of electrical stunning on meat quality of lamb
View Article: Meat Science. 56 (4). December, 2000. 345-349
CD Volume:335
Print Article: Pages: 345-349
Author(s):Vergara H Gallego L
Author Affiliation:Departamento de Ciencia y Tecnologia Agroforestal, Escuela Tecnica Superior de Ingenieros Agronomos, Universidad de Castilla- La Mancha, Campus Universitario, 02071, Albacete
Language:English
Language of Summary:English (EN)

Abstract:The effects of stunning on both initial and up to 2 weeks post mortem storage meat quality of Spanish Manchega breed lamb were studied. Twenty-four lambs were distributed into two groups. The first group (US; n = 12) were slaughtered without previous stunning. In the second group (ES; n = 12) animals were electrically stunned. Meat quality was assessed by examining pH, colour as L*, a*, b* values, water holding capacity (WHC) and shear force (SF). Stunning did not affect any parameter studied in the first 24 h post mortem. There were increasing differences between groups in pH ($P < 0.001$) from 5 days onwards. In general stunning did not have an effect on WHC, SF and colour parameters. Ageing of meat affected SF in the ES group but not in the US one; however, there were no significant differences between treatments at any of the ageing times
Descriptors:lamb: color, meat, pH, quality, shear force, water holding capacity. Foods
Organism Descriptors:sheep (Bovidae): breed-Spanish Manchega
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Foods
ISSN:0309-1740
Year:2000
Journal Title:Meat Science

Title:Diet overlap among ruminants in Fennoscandia
View Article: Oecologia (Berlin). 124 (1). July, 2000. 130-137
CD Volume:322
Print Article: Pages: 130-137
Author(s):Mysterud Atle
Author Affiliation:Department of Biology, Division of Zoology, University of Oslo, Blindern, 0316, Oslo
Language:English
Language of Summary:English (EN)
Abstract:Information on overlap in resource use is central to understanding of interspecific exploitation competition and resource partitioning. Despite this, measures of diet overlap among northern ruminants in Fennoscandia is limited to one earlier study (reindeer and sheep). Diet overlap between sympatric moose and roe deer calculated with Schoener's index was 20.7% and 33.6% during summer (data from one area) and winter (data from two areas), respectively, whereas average diet overlap between moose and red deer was 32.0% during winter (data from four areas). Diet overlap between a coastal island population of red deer and sheep was 59.3% during summer and 63.9% during winter. Summer diet overlap between a sheep and a goat population and a sheep and a reindeer population calculated with data on main types of forage plants was 77.0% and 55.1%, respectively. However, overlap calculated with main plant groups was sometimes considerably higher than when calculated for individual forage species. Neither difference in feeding type nor body mass successfully predicted diet overlap between species pairs (n=9), although there tended to be negative correlation ($r_p=-0.586$, $P=0.098$) between diet overlap of main plant groups (calculated across studies) and difference in feeding type
Descriptors:body mass; diet breadth; diet overlap; feeding type; interspecific exploitation competition; resource partitioning. Ecology (Environmental Sciences)
Geographic Locator:Fennoscandia (Europe, Palearctic region)
Organism Descriptors:goat (Bovidae); moose (Cervidae); red deer (Cervidae); roe deer (Cervidae); ruminants (Artiodactyla); sheep (Bovidae)

Supplemental Descriptors:Artiodactyla: Mammalia, Vertebrata, Chordata, Animalia; Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Cervidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Ecology (Environmental Sciences)
ISSN:0029-8549
Year:2000
Journal Title:Oecologia

Title:The herbivores' dilemma: Trade-offs between nutrition and parasitism in foraging decisions
View Article: Oecologia (Berlin). 124 (2). August, 2000. 242-251
CD Volume:322
Print Article: Pages: 242-251
Author(s):Hutchings Michael R Kyriazakis Ilias Papachristou Thomas G Gordon Iain J Jackson Frank
Author Affiliation:Animal Biology Division, Scottish Agricultural College, Penicuik, Bush Estate, Midlothian, EH26 0PH
Language:English
Language of Summary:English (EN)
Abstract:An experiment was carried out using a trade-off framework to determine the rules of sward selection, in relation to gastrointestinal parasite dispersion, used by mammalian herbivores, and the effect of level of feeding motivation and parasitic status on these rules. Twenty-four sheep divided into four animal treatment groups resulting from two levels of feeding motivation (high and moderate) and two parasitic states (parasitised with Ostertagia circumcincta and non-parasitised) were presented with pairs of experimental swards which varied in N content (high and low), sward height (tall and short) and level of contamination with faeces and thus parasites (contaminated and non-contaminated). The selection for tall swards outweighed both the selection for N-rich swards and the avoidance of faecal contaminated swards. The selection for N-rich swards could not completely overcome faecal avoidance. Parasitism in animals with a moderate feeding motivation reduced their bite rates and grazing depths, thereby probably reducing the rate of ingestion of parasitic larvae. In contrast, highly feeding-motivated animals (including those parasitised) increased their bite rates and grazing depths, thereby increasing the rate of ingestion of parasites. The inclusion of parasite distributions, both in the environment and within herbivore host populations, is likely to advance optimal foraging theory by enhancing its predictive power
Descriptors:bite rates; diet selection; fecal contamination; feeding motivation; grazing; herbivory; ingestion; nutrition; optimal foraging theory; parasitism; swards: food. Behavior; Parasitology. nitrogen
Organism Descriptors:Ostertagia circumcincta (Nematoda): larva, parasite; sheep (Bovidae): grazer, herbivore, parasite host
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Nematoda: Aschelminthes, Helminthes, Invertebrata, Animalia. Animals; Artiodactyls; Aschelminths; Chordates; Helminths; Invertebrates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Behavior; Parasitology
ISSN:0029-8549
Year:2000
Journal Title:Oecologia

Title:Costs of incubation and immunocompetence in the collared flycatcher
View Article: Oecologia (Berlin). 125 (3). November, 2000. 453-457
CD Volume:322
Print Article: Pages: 453-457
Author(s):Cichon M
Author Affiliation:Institute of Environmental Sciences, Jagiellonian University, Gronostajowa 3, 30-387, Krakow
Language:English
Language of Summary:English (EN)
Abstract:This paper investigates the costs of incubation in terms of reduced reproductive success and investigates whether incubation competes with immune function for resources. I performed a clutch size manipulation experiment in which two eggs were either removed from or added to the nests of collared flycatchers, Ficedula albicollis, for 1 week during incubation and subsequently returned to their original nests before hatching. To induce immune response, the females were challenged with sheep red blood cells. While the duration of incubation, hatching success and fledgling number did not differ between experimental groups, fledgling condition was significantly lower in broods that had been enlarged during incubation. Neither the females' condition nor their ability to respond to a novel antigen differed between treatments. The relationship between antibody production and female condition was significantly positive, but only among females incubating reduced clutches. I conclude that the costs of incubation in the collared flycatcher are not negligible and are manifested only at the chick-rearing phase
Descriptors:antibody production; chick-rearing phase; clutch size; fledgling number; hatching success; immunocompetence; incubation costs; reproductive success. Immune System (Chemical Coordination and Homeostasis); Evolution and Adaptation; Reproduction
Organism Descriptors:Ficedula albicollis [collared flycatcher] (Passeriformes): female; sheep (Bovidae). red blood cells: blood and lymphatics
Supplemental Descriptors:Bovidae: Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Passeriformes: Aves, Vertebrata, Chordata, Animalia. Animals; Artiodactyls; Birds; Chordates; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Vertebrates
Subject Codes:Immune System (Chemical Coordination and Homeostasis); Evolution and Adaptation; Reproduction
ISSN:0029-8549
Year:2000
Journal Title:Oecologia

Title:Temporal changes in C, P and N concentrations in soil solution following application of synthetic sheep urine to a soil under grass
View Article: Plant and Soil. 2000. 222 (1/2). 1-13
CD Volume:309
Print Article: Pages: 1-13
Author(s):Shand C A Williams B L Smith S Young M E
Author Affiliation:Macaulay Land Use Research Institute, Craigiebuckler, Aberdeen, AB15 8QH, UK
Language:English
Abstract:Temporal changes were determined in the concentration of dissolved organic carbon (DOC) and P and N components in soil solution following application of synthetic sheep urine (500 kg N ha-1) to a brown forest soil in boxes sown with Agrostis capillaris. Three contrasting defoliation treatments (no cutting, single cut before urine application and regular cutting twice per week) plus a

fallow soil were studied. The synthetic urine contained 15N labelled urea and was P-free. Intact soil cores were taken after 2, 7, 14, 21 and 56 d and centrifuged to obtain soil solution. The urea in the synthetic urine was rapidly hydrolysed in the soil, increasing soil solution pH, DOC and total dissolved phosphorus (TDP) concentrations. For the regularly defoliated sward, DOC and P reached maximum concentrations (4000 mg DOC litre-1 and 59 mg TDP litre-1) on day 7. From their peak values, pH and DOC and P concentrations generally decreased with time and at day 56 were near those of the control. Concentrations of NH4+ and NO3- in the no-urine treatments fluctuated and the greatest treatment differences were between the fallow soil and the soil sown with grass. Adding synthetic urine increased NH4+ concentrations during the first week, but NO3- concentrations decreased. This was consistent with the 15N labelling of the NO3- pool which required 3 weeks to reach that of 15NH4+. Dissolved organic nitrogen (DON) reached a maximum value at day 7 with a concentration of 409 mg N litre-1. The DON in soil solution contained no detectable amounts of 15N label indicating that it was derived from sources in the soil. Differences in soil solution composition related to the effect of the other cutting treatments and the fallow treatment were small compared to the effect of synthetic urine addition
Descriptors:soil-solution. urine. brown-forest-soils. carbon. composition. defoliation. fallow. labelling. nitrogen. organic-carbon. organic-nitrogen. phosphorus. treatment. urea. application-rates. pH. ammonium. nitrate. soil. grassland-soils
Identifiers:dissolved organic carbon
Organism Descriptors:grasses. sheep. Agrostis. Agrostis-capillaris. Poaceae
Supplemental Descriptors:Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Agrostis
Subject Codes:JJ200. JJ700. XX100. FF100
Supplementary Info:32 ref
ISSN:0032-079X
Year:2000
Journal Title:Plant and Soil
Copyright:Copyright CAB International

Title:Influence of synthetic sheep urine on the microbial biomass, activity and community structure in two pastures in the Scottish uplands
View Article: Plant and Soil. 2000. 225 (1/2). 175-185
CD Volume:309
Print Article: Pages: 175-185
Author(s):Williams B L Grayston S J Reid E J
Author Affiliation:Macaulay Land Use Research Institute, Craigiebuckler, Aberdeen, AB15 8QH, UK
Language:English
Abstract:The impact of urine on the microbial biomass, activity and community structure was compared in the soil beneath two pastures in the Scottish uplands; Fasset, a natural Agrostis capillaris-Festuca ovina-Galium saxatile grassland and Strathfinella, a semi-natural grassland, improved with fertilizer addition. Community level physiological profiles were used to characterize the microbial communities. The utilization of sugars, oligosaccharides, alcohols, carboxylic acids, long chain aliphatic acids, acidic, basic and neutral amino acids, amide N, phenolic acids and long chain aliphatic acids was used to compare the soils and the impact of synthetic urine addition. In the untreated soils, the utilization of all the

substrates decreased from the first week in May through to October. Averaged over all times and urine treatment, the potential utilization of all substrates except for phenolic acids, long chain aliphatic acids and carboxylic acids was greater in the improved and more intensively grazed Strathfinella site. When averaged over all sample times, urine increased the utilization of sugars, oligosaccharides, basic amino acids and amide N and the increases were greater in the unimproved, less intensively grazed, Fasset soil than that at Strathfinella. The effect of urine tended to be greatest during the period between 2 and 5 weeks after urine addition when utilization of alcohols, acidic and neutral amino acids was also increased. Microbial biomass C in the control soils was 155.9 and 112.7 g C m-2 at Fasset and Strathfinella, respectively. Values did not change significantly with time and were unchanged by the addition of urine. However, urine addition significantly increased basal respiration rates at Fasset and decreased them at Strathfinella. Urine also increased bacterial numbers in both soils, but had no consistent effect on fungi or yeasts. The significance of these findings for studies of soil microbial community structure and activity in grazed upland grasslands is discussed
Descriptors:urine. microorganisms. biomass. communities. soil. pastures. grasslands. fertilizers. utilization. grazing. sugars. oligosaccharides. amino-acids. nitrogen. intensive-farming. grassland-soils. respiration. upland-areas
Geographic Locator:UK. Scotland
Identifiers:microbial biomass
Organism Descriptors:sheep. Agrostis-capillaris. Festuca-ovina. Galium-saxatile. bacteria
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Agrostis. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Festuca. Galium. Rubiaceae. Rubiales. dicotyledons. prokaryotes. British-Isles. Western-Europe. Europe. Developed-Countries. Commonwealth-of-Nations. European-Union-Countries. OECD-Countries. Great-Britain. UK
Subject Codes:JJ100. PP350. JJ700. FF061
Supplementary Info:35 ref
ISSN:0032-079X
Year:2000
Journal Title:Plant and Soil

Title:Digestive-tract strongyle fecal egg counts in cattle, sheep and goats of Sao Tome Island in relation to local climate, season and breeding management
View Article: Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux. 2000. 53 (3). 263-266
CD Volume:372
Print Article: Pages: 263-266
Author(s):Neto Padre L Afonso Roque M M Fazendeiro I Refega S Cabaret J
Author Affiliation:Faculdade de Medicina Veterinaria, Centro de Veterinaria e Zootecnia (ICCT), Rua Prof. Cid dos santos-Alto da Ajuda, 1300-477 Lisboa Codex, Portugal
Language:English
Language of Summary:spanish. french
Abstract:Individual faecal sampling was performed in 84 cattle. Faecal samples were pooled in each of the 51 sheep farms and 64 goat farms. Sampling was performed in adult hosts in four climatic zones (subarid, subhumid, humid and very humid) during the 1994 dry season, and 1993 and 1995 rainy seasons of Sao Tome,France. Strongyle faecal

egg counts, expressed in eggs per gram of faeces (EPG), were measured. The prevalence was 43 plus or minus 11%, 86 plus or minus 10% and 90 plus or minus 8% in cattle, sheep and goats, respectively. Climate affected cattle EPGs only. Extensive husbandry was associated with low EPGs in cattle (95), perhaps because of the low stocking rate and use of anthelmintics. On the other hand, high EPGs were observed in goats (1207). No influential factor could be related to sheep EPGs (785)
Descriptors:breeding-programmes. climatic-zones. faeces. seasonal-variation. surveys
Geographic Locator:France
Identifiers:prevalence
Organism Descriptors:cattle. goats. sheep. Strongylidae
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Western-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries. Capra. Ovis. Nematoda. invertebrates
Subject Codes:LL180. LL822
Supplementary Info:15 ref
ISSN:0035-1865
Year:2000
Journal Title:Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux

Title:Evaluation of the feeding value of forages and byproducts used for feeding small ruminants
View Article: Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux. 2000. 53 (3). 279-284
CD Volume:372
Print Article: Pages: 279-284
Author(s):Nantoume H Kouriba A Togola D Ouologuem B
Author Affiliation:Centre regional de recherche agronomique de Same, BP 281 Kayes, Mali
Other Title:Mesure de la valeur alimentaire de fourrages et de sous-produits utilises dans l'alimentation des petits ruminants
Language:French
Language of Summary:english. spanish
Abstract:The feeding values of six forages locally available in France were determined through two digestibility trials, using Toronke sheep. Bush haulm and sorghum stovers were studied in the first trial. Dry matter (DM) intakes were 62 and 51 g DM/kgp0,75 for bush haulm and sorghum stovers, respectively. The energy values were 0.71 and 0.60 UFL/kg DM for bush haulm and sorghum stovers, respectively. Digestible crude protein (DCP) contents were 3 and 1 g/kg DM for bush haulm and sorghum stovers, respectively. Energy values were rather high, whereas crude protein values were very low; they represent a major constraint to animal production in Mali. In the second trial, groundnut haulm, Lablab purpureus haulm, corn stovers and millet stovers were studied. Dry matter intakes were 97, 99, 40 and 35 g DM/kgp0,75 for groundnut haulm, Lablab purpureus haulm, corn stovers and millet stovers, respectively. Digestibility was higher in stalks than in stovers except for crude fibre. DCP contents of corn and millet stovers were negative. They were 67 and 58 g/kg DM for groundnut haulm and Lablab purpureus, respectively. The energy values of the feeds were 0.76, 0.63, 0.50 and 0.42 UFL/kg DM for groundnut haulm. Lablab purpureus haulm, corn stovers and millet stovers, respectively. Stovers had a low energy value and zero DCP content. The feeding value of the cereal stovers may be improved with legume haulms as supplements, given the latters high total CP, digestibility and intake coefficients

Descriptors:byproducts. crude-fibre. crude-protein. cultivars. digestibility. dry-matter. energy-value. feed-intake. forage. groundnuts. maize. nutritive-value
Geographic Locator:France
Identifiers:Schizachyrium exile
Organism Descriptors:Arachis-hypogaea. Lablab-purpureus. Pennisetum-glaucum. Schoenefeldia-gracilis. sheep. Sorghum-bicolor. Zea-mays
Supplemental Descriptors:Arachis. Papilionoideae. Fabaceae. Fabales. dicotyledons. angiosperms. Spermatophyta. plants. Western-Europe. Europe. Mediterranean-Region. Developed-Countries. European-Union-Countries. OECD-Countries. Lablab. Pennisetum. Poaceae. Cyperales. monocotyledons. Schoenefeldia. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Sorghum. Zea
Subject Codes:FF007. LL510. RR000
Supplementary Info:19 ref
ISSN:0035-1865
Year:2000
Journal Title:Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux

Title:Survey on camel husbandry in Qassim region, Saudi Arabia: herding strategies, productivity and mortality
View Article: Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux. 2000. 53 (3). 293-298
CD Volume:372
Print Article: Pages: 293-298
Author(s):Abbas B Al Qarawi A A Al Hawas A
Author Affiliation:Department of Veterinary Medicine, King Saud University, PO Box 1482, Buraydah, Saudi Arabia
Language:English
Language of Summary:spanish. french
Abstract:A small survey was carried out on 38 camel herds in Qassim region of Saudi Arabia to study production and reproduction parameters, herding strategies, offtake and constraints to camel production during September to November 1999. The study also recorded the rate of mortality and causes of mortality in the surveyed herds over one year. Four distinct herding strategies were discovered. Type one herders were companies or merchants who kept large herds (mean=1260 camels) in semi-intensive operations and who marketed milk, meat and young camels on a regular basis. Type two herders were unspecialized merchants who kept medium-sized herds (mean=86 camels) for family use without apparent commercial benefit. The third type of herders consisted of pastoralists or agropastoralists who kept smaller herds (mean=14 camels) always with other animals (mainly sheep and goats, and occasionally cattle). Type four herders were classical camel merchants who also kept a relatively small group of camels (mean=17 camels) in a feedlot for sale at a profit at the first opportunity. The calving rate was 68%, the mean age at first calving was four years and four months and the mean intercalving interval was 20 months. The highest mortality was recorded in the period from birth to one year of age and averaged 17% in all the data. In large commercial herds, an additional age group with high mortality was the two- to three-year-old females in which up to 9% mortality was recorded. Most of the male camels were sold for meat at around one year of age and only 4.3% of males remained in the herds
Descriptors:age-at-first-calving. animal-husbandry. calving-interval. calving-rate. camel-meat. camel-milk. herds. livestock-numbers. mortality. productivity. reproductive-performance

Geographic Locator:Saudi-Arabia
Organism Descriptors:Camelus
Supplemental Descriptors:Camelidae. Tylopoda. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Asia. Asia. Middle-East. Developing-Countries
Subject Codes:EE110. LL180
Supplementary Info:22 ref
ISSN:0035-1865
Year:2000
Journal Title:Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux

Title:The dilemma of extensive sheep production systems in the highlands of the semiarid Northwest of Tunisia
View Article: Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux. 2000. 53 (4). 377-385
CD Volume:372
Print Article: Pages: 377-385
Author(s):Rekik M Mahouachi M Gharbi M Attia W Medhioub L
Author Affiliation:Laboratoire de production animale, Ecole superieure d'agriculture du Kef, 7100 Le Kef, Tunisia
Other Title:Le dilemme de l'elevage ovin extensif dans les regions elevees du nord-ouest, semi-aride tunisien
Language:French
Language of Summary:english. spanish
Abstract:To characterize extensive sheep production systems in the semiarid bioclimate of Northwest Tunisia, two mountain sites were selected. The production systems were sedentary and in close relationship with cereal production. Barley, along with the practice of fallowing on low-fertility sloping lands, had replaced rangelands. The flocks were usually small and increasingly confined to smaller spaces. They were dependent on poorly efficient feed strategies and characterized by low technical-economical performances. In addition, farmers' financial support of their flocks was precarious and the farmers themselves depended on climatic and economical changes. Faced with the space extension and small flock size problems, it seems necessary to increase sheep productivity in these areas. Recommendations that take into account the particular geographical, technical and economical context of the farms are proposed
Descriptors:cereals. farming-systems. semiarid-climate
Geographic Locator:Tunisia
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Maghreb. North-Africa. Africa. Mediterranean-Region. Developing-Countries. Threshold-Countries. Francophone-Africa
Subject Codes:LL180. PP300
Supplementary Info:15 ref
ISSN:0035-1865
Year:2000
Journal Title:Revue d'Elevage et de Medecine Veterinaire des Pays Tropicaux

Title:Sensory characteristics of meat and composition of carcass fat from sheep fed diets containing various levels of broiler litter
View Article: South African Journal of Animal Science. 2000. 30 (1). 26-32
CD Volume:323
Print Article: Pages: 26-32

Author(s):Mavimbela D T Webb E C Ryssen J B J van Bosman M J C
Author Affiliation:University of Swaziland, P.O. Luyengo, Swaziland
Language:English
Abstract:The effect of high levels of broiler litter in the diets of sheep on sensory characteristics and composition of fat in mutton was evaluated. Thirty-six South African Mutton Merino wethers weighing about 41 kg were randomly allocated to four treatment diets containing 0, 28, 56 or 85% broiler litter. All wethers were slaughtered at a target body mass of 55 kg. Dressing percentage was calculated and the composition of fatty acids in the subcutaneous fat was analysed. An analytical sensory panel evaluated sensory characteristics of carcass samples and loin sample characteristics. High sensory scores (7 out of 10) were obtained for all dietary treatments. Compared with the other treatments, a high inclusion level (85%) of broiler litter in the diet reduced ($p<0.05$) the flavour and overall acceptability of sensory samples, decreased concentrations of myristic acid (C14:0) and margaric acid (C17:0) in subcutaneous fat and increased linolenic acid (C18:3) concentrations. It was concluded that the inclusion of broiler litter in diets for sheep at levels of up to 56% should not adversely affect the sensory characteristics of the meat, but higher inclusion levels might have a slight adverse affect on subcutaneous fat composition and sensory characteristics
Descriptors:meat-quality. sheepmeat. carcass-composition. adipose-tissue. organoleptic-traits. litter. poultry. animal-wastes. carcass-yield. fatty-acids. composition
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:RR000. QQ500. QQ030. LL520. XX100
Supplementary Info:35 ref
ISSN:0375-1589
Year:2000
Journal Title:South African Journal of Animal Science

Title:Growth, carcass and sensory characteristics of m. longissimus lumborum from wethers fed silage diets made from maize or various sorghum varieties
View Article: South African Journal of Animal Science. 2000. 30 (1). 36-42
CD Volume:323
Print Article: Pages: 36-42
Author(s):Bosman M J C Webb E C Cilliers H J Steyn H S
Author Affiliation:Department of Nutrition, Potchefstroom University for Christian Higher Education, Potschefstroom 2520, South Africa
Language:English
Abstract:Growth, carcass characteristics and eating quality of meat from South African Mutton Merino wethers fed maize or different sorghum silage diets were studied. Forty newly weaned wethers (20 kg) were randomly allocated to 10 dietary treatments: non-bird-resistant grain sorghum silage (NGS), maize silage (MS), bird-resistant grain sorghum silage (BGS), forage sorghum silage (FSS) and a standard non-silage control diet consisting of equal proportions of maize meal and milled lucerne hay (C). Silage was included at 50 or 70% of the total diet on a dry matter basis. Average daily gains of wethers were recorded from weaning to slaughter at 45 kg live mass. Carcass mass, dressing percentage, subcutaneous fat thickness and carcass length were recorded. Samples from the left m. longissimus lumborum were minced and stewed to determine foreign odours and flavours, while samples from the right m. longissimus lumborum were oven-roasted for

subsequent sensory evaluation by an analytical sensory panel. Growth responses did not differ between wethers fed MS, NGS or BGS at inclusion levels of 50% or 70%. FSS at the 70% inclusion level resulted in poorer growth rates ($p<0.05$) and longer feeding periods ($p<0.05$) compared with the other silage diets. The best feed conversion efficiencies and shortest finishing periods were recorded by feeding MS at either the 50% or the 70% inclusion level, NGS at the 50% inclusion level, or BGS at the 50% inclusion level. Dressing percentages and subcutaneous fat thicknesses of wethers fed BGS and FSS at a 70% inclusion level were lower ($p<0.05$) compared to those fed the other silage diets. No significant differences in sensory characteristics or cooking losses and no sensory defects were observed among wethers fed different silage diets
Descriptors:growth. performance. sheep-feeding. liveweight-gain. carcass-weight. carcass-yield. backfat. body-measurements. muscles. meat-quality. sheepmeat. organoleptic-traits. maize-silage. sorghum-silage
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:FF020. LL520. QQ500. QQ030. RR000
Supplementary Info:22 ref
ISSN:0375-1589
Year:2000
Journal Title:South African Journal of Animal Science

Title:Relationship between performance measurements and sale price of Dorper rams in the northern Cape Veld-Ram Club
View Article: South African Journal of Animal Science. 2000. 30 (2). 128-132
CD Volume:323
Print Article: Pages: 128-132
Author(s):Fourie P J Neser F W C Westhuizen C van der
Author Variant:van-der-Westhuizen-C
Author Affiliation:Department of Agriculture, Technikon Free State, Private Bag X20539, Bloemfontein, 9300, South Africa
Language:English
Abstract:The sale prices of 1609 Dorper rams sold between 1990 and 1999 were compared with their measured performances. An analysis of variance was carried out in order to determine which variables influenced sale price. The most important factors were classification (stud vs. commercial), auction weight and coat type (hair, wool or a mixture). Buyers seem to show a preference for animals with hair and a mixture of hair and wool over those with predominantly woollen coats. Buyers recognise the importance of performance data in the selection of breeding rams
Descriptors:rams. Dorper. prices. wool-production. performance. fleece. body-weight
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. EE110
Supplementary Info:15 ref
ISSN:0375-1589
Year:2000
Journal Title:South African Journal of Animal Science

Title:A nonparametric Bayesian approach for genetic evaluation in animal breeding

View Article: South African Journal of Animal Science. 2000. 30 (2). 138-148
CD Volume:323
Print Article: Pages: 138-148
Author(s):Pretorius A L Merwe A J van der
Author Variant:van-der-Merwe-A-J
Author Affiliation:Department of Mathematical Statistics, P.O.Box 339, University of the Free State, Bloemfontein, 9300, South Africa
Language:English
Abstract:This article proposes the Bayesian approach to solve problems arising in animal breeding theory. General elements of Bayesian inferences, e.g. prior and posterior distributions, likelihood functions, and the solving of the random effects in the case of the mixed linear model are discussed. Since the random effects are typically assumed to be normally distributed in both the Bayesian and Classical models, a Bayesian procedure is provided which allows these random effects to have a nonparametric Dirichlet process prior distribution. In the case of the Dirichlet process, the Gibbs sampler is introduced to overcome some computational difficulties in solving the genetic parameters of the mixed linear model. To illustrate the application of these techniques, data from the Elsenburg Dormer sheep stud and data from a simulation experiment are utilized
Descriptors:mathematical-models. statistical-analysis. animal-breeding. Bayesian-theory. genetic-parameters
Identifiers:Gibbs sampler
Organism Descriptors:sheep
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL240. ZZ100
Supplementary Info:23 ref
ISSN:0375-1589
Year:2000
Journal Title:South African Journal of Animal Science

Title:Application of neural network and time series techniques in wool growth modeling
View Article: Transactions of the ASAE. 2000. 43 (1). 139-144
CD Volume:323
Print Article: Pages: 139-144
Author(s):Hong F Tan J McCall D G
Author Affiliation:Dept. of Biological and Agricultural Engineering, University of Missouri, Columbia, MO 65211, USA
Language:English
Abstract:An application of neural network and time series techniques in animal system modelling is presented, which sheds light on strategies to deal with some typical peculiarities in biological system data. A neural network model was developed to describe the multi-input and multi-output relationship from liveweight gain, age, breed, and rearing status to monthly wool growth rates of sheep. Constrained synaptic weights were imposed to avoid logically unrealistic functional relationships. ARMAX models were developed to describe the dynamics in wool growth rate and to analyse the time relationship between live weight gain and wool growth rate. The recursive least-squares parameter estimation algorithm was employed for effective use of short-term and multi-subject data in developing time series models
Descriptors:models. wool. algorithms. growth-rate. weight-gain. neural-networks
Organism Descriptors:sheep

Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates
Subject Codes:LL145. ZZ100
Supplementary Info:31 ref
ISSN:0001-2351
Year:2000
Journal Title:Transactions of the ASAE
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Title:Costs and returns of camels, cattle and small ruminants in pastoral herds in eastern Ethiopia
View Article: Tropical Animal Health and Production. 2000. 32 (2). 113-126
CD Volume:309
Print Article: Pages: 113-126
Author(s):Baars R M T
Author Affiliation:Department of Animal Sciences, Alemaya University of Agriculture, PO Box 138, Dire Dawa, Ethiopia
Language:English
Language of Summary:spanish. french
Abstract:Two questionnaire surveys were conducted among 88 pastoral households, using three grazing management systems. The average number of Tropical Livestock Units (250 kg) was 4.0 per member of the household. Milk production was the most important source of revenue (66% of the total) followed by sale of livestock (17%) and transport (16%). High mortality rates were recorded for all livestock. About 27% of the milk was sold fresh or as butter. Sedentary and transhumant grazing management systems showed similar levels of income, but nomads had a 2.6-fold higher overall net income. The average total gross income from the entire herd amounted to US$ 6382 per household per year. The calculated costs were 29% of the gross returns. The contribution to the total gross revenues of camels, cattle and small ruminants was 58%, 25% and 17%, respectively
Descriptors:returns. production-costs. grazing. households. income. livestock-farming. milk. surveys. pastoralism. nomadism. production-economics
Geographic Locator:Ethiopia
Organism Descriptors:cattle. Camelus. ruminants. sheep. goats
Supplemental Descriptors:Bos. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Camelidae. Tylopoda. Ovis. Capra. East-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries
Subject Codes:PP350. LL180. LL110. EE110
Supplementary Info:11 ref
ISSN:0049-4747
Year:2000
Journal Title:Tropical Animal Health and Production
Copyright:Copyright CAB International

Title:The extent and impact of sheep pox and goat pox in the state of Maharashtra, India
View Article: Tropical Animal Health and Production. 2000. 32 (4). 205-223
CD Volume:309
Print Article: Pages: 205-223
Author(s):Garner M G Sawarkar S D Brett E K Edwards J R Kulkarni V B Boyle D B Singh S N
Author Affiliation:National Office of Animal and Plant Health, Department of Agriculture, Fisheries and Forestry, Australia
Language:English
Language of Summary:spanish. french

Abstract:A survey of sheep and goat producers in the state of Maharashtra, India, was undertaken to ascertain the extent and economic impact of sheep pox and goat pox (SGP). Of 1116 owners interviewed 80 (7.2%) had experienced an outbreak of the disease in the previous 6 years. The results showed that, while producers ranked SGP below other infectious diseases such as foot-and-mouth disease, rinderpest and enterotoxaemia, when SGP occurred it had a major impact, with average morbidity and mortality rates of 63.5% and 49.5%, respectively. Modelling studies suggested it would take about 6 years for a flock or herd to recover from an outbreak, with average annual losses in income of 30-43%, depending on flock type and the owner's actions. Statewide, it is estimated that around 5000 flocks and herds are affected by SGP annually in Maharashtra, costing up to INR 107.5 million. The highest losses occurred in the Aurangabad region
Descriptors:sheep-pox. economic-impact. statistics. disease-prevalence. disease-surveys
Geographic Locator:India. Maharashtra
Organism Descriptors:goats. sheep. sheep-pox-virus
Supplemental Descriptors:Capra. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ovis. Capripoxvirus. Chordopoxvirinae. Poxviridae. viruses. South-Asia. Asia. Developing-Countries. Commonwealth-of-Nations. India
Subject Codes:LL821
Supplementary Info:16 ref
ISSN:0049-4747
Year:2000
Journal Title:Tropical Animal Health and Production

Title:Diversity of ectoparasites in sheep flocks in Sao Paulo, Brazil
View Article: Tropical Animal Health and Production. 2000. 32 (4). 225-232
CD Volume:309
Print Article: Pages: 225-232
Author(s):Madeira N G Amarante A F T Padovani C R
Author Affiliation:Departamento de Parasitologia, Instituto de Biociencas, Universidade Estadual Paulista (UNESP), Botucatu, Sao Paulo, Brazil
Language:English
Language of Summary:spanish. french
Abstract:Sheep production used to be a predominantly family activity in the state of Sao Paulo (Brazil), but it began to become a commercial activity in the past decade. Thus, information about the ectoparasites existing in sheep flocks has become necessary. The present data were obtained by means of questionnaires sent to all sheep breeders belonging to the 'Associacao Paulista de Criadores de Ovinos' (ASPACO; Sao Paulo State Association of Sheep Breeders). Response reliability was tested by means of random visits paid to 10.6% of the respondents. Most of the properties (89.5%) reported the presence of one or more ectoparasites. Screw-worm (Cochliomyia hominivorax) was the most frequent ectoparasite (72.5%), followed by bot fly larvae (Dermatobia hominis, 45.0%), ticks (Amblyomma cajennense) and (Boophilus microplus, 31.3%) and finally lice (Damalinia ovis, 13.8%). Combined infestations also occurred, the commonest being screw-worm with bot fly larvae (36.0%) followed by bot fly larvae with ticks (13.9%), screw-worm with ticks (9.3%), bot fly larvae with lice (6.9%), and ticks with lice (5.0%). The commonest triple combination was screw-worm, bot fly larvae and ticks (12.8%). Breeds raised for meat or wool were attacked by bot fly larvae and ticks more often than other breeds. Lice were only absent

from animals of indigenous breeds. The relationships among these ectoparasites are discussed in terms of sheep breeds, flock size, seasonality and the ectoparasitic combinations on the host
Descriptors:ectoparasites. questionnaires. seasonality. sheep-breeds
Geographic Locator:Brazil. Sao-Paulo
Organism Descriptors:sheep. Amblyomma. Amblyomma-cajennense. Boophilus-microplus. Cochliomyia. Cochliomyia-hominivorax. Damalinia. Bovicola-ovis. Bovicola. Dermatobia. Dermatobia-hominis. Metastigmata
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Ixodidae. Metastigmata. Acari. Arachnida. arthropods. invertebrates. Amblyomma. Boophilus. Calliphoridae. Diptera. insects. Cochliomyia. Trichodectidae. Ischnocera. Mallophaga. Phthiraptera. Bovicola. Cuterebridae. Dermatobia. South-America. America. Developing-Countries. Threshold-Countries. Latin-America. Brazil
Subject Codes:LL822
Supplementary Info:16 ref
ISSN:0049-4747
Year:2000
Journal Title:Tropical Animal Health and Production

Title:The effect of strategic anthelmintic treatment on internal parasites in communally grazed sheep in a semi-arid area as reflected in the faecal nematode egg count
View Article: Tropical Animal Health and Production. 2000. 32 (5). 295-302
CD Volume:309
Print Article: Pages: 295-302
Author(s):Bakunzi F R Serumaga Zake P A E
Author Affiliation:Faculty of Agriculture, University of the North-West, Private Bag X2046, Mmabatho, 2735, South Africa
Language:English
Language of Summary:spanish. french
Abstract:Communally grazed sheep were dosed at 4-, 12-, 24- or 48-week intervals for one year. Dosing every 4 weeks proved to be the most effective ($p<0.05$), as reflected in a lower worm egg count compared to the 12-, 24- or 48-week intervals. Since most nematode life cycles lie between 3 and 6 weeks, the treatment has to be given during this critical period if maximum economic advantage is to be gained from deworming. However, treating communally grazed sheep every 12 weeks was found to keep worm egg numbers relatively low and may be advantageous in providing seasonal control, especially in semi-arid environments. Dosing communally grazed sheep once or twice a year under the same conditions is not recommended because reinfection appeared to result in similar faecal egg counts to those from the untreated animals ($p>0.05$)
Descriptors:treatment. drug-therapy. semiarid-zones. anthelmintics
Identifiers:faecal egg counts
Organism Descriptors:sheep. Nematoda
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. invertebrates
Subject Codes:LL822. HH405
Supplementary Info:20 ref
ISSN:0049-4747
Year:2000
Journal Title:Tropical Animal Health and Production

Title:Economics of prophylaxis against peste des petits ruminants and gastrointestinal helminthosis in small ruminants in north Cameroon
View Article: Tropical Animal Health and Production. 2000. 32 (6). 391-403
CD Volume:309
Print Article: Pages: 391-403
Author(s):Awa D N Njoya A Ngo Tama A C
Author Variant:Tama-A-C-N
Author Affiliation:Institute of Agricultural Research for Development (IRAD), P.O. Box 1073, Garoua, Cameroon
Language:English
Language of Summary:spanish. french
Abstract:Data on reproduction and mortality were collected over 1 year from 5100 sheep and 13 300 goats in treated and control flocks in northern Cameroon. Treated animals received vaccination against peste des petits ruminants (PPR; caused by Morbillivirus) and anthelmintics twice a year. Productivity parameters (fecundity and mortality rates) obtained with and without prophylaxis were fitted into a benefit-cost economic analysis model and run for project lifespans varying from 1 to 5 years. At a 7% discount rate, the overall benefits for a project lifespan of 5 years were estimated as over 15 million FCFA and 11 million FCFA for sheep and goats, respectively. The benefit-cost ratio ranged from 2.26 to 3.27 in goats and 3.01 to 4.23 in sheep, depending on the project lifespan. It was concluded that PPR and gastrointestinal helminthoses are important causes of economic losses in small ruminants in Cameroon. A national or regional vaccination campaign against PPR and strategic anthelmintic treatment of small ruminants are recommended
Descriptors:viral-diseases. helminths. helminthoses. nematode-infections. animal-parasitic-nematodes. livestock. domestic-animals. reproduction. mortality. immunization. anthelmintics. drug-therapy. vaccination. control-programmes. disease-control. fecundity. cost-benefit-analysis. costs. gastrointestinal-diseases. losses
Geographic Locator:Cameroon
Identifiers:small ruminants
Organism Descriptors:pest-of-small-ruminants-virus. Morbillivirus. sheep. goats
Supplemental Descriptors:Morbillivirus. Paramyxoviridae. viruses. Central-Africa. Africa-South-of-Sahara. Africa. Developing-Countries. ACP-Countries. Francophone-Africa. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Capra
Subject Codes:LL822. LL821. HH600. HH405. EE117
Supplementary Info:17 ref
ISSN:0049-4747
Year:2000
Journal Title:Tropical Animal Health and Production

Title:Botanical composition and nutritive value of forage consumed by sheep during the rainy season in a Sudano-guinean savanna (central Benin)
View Article: Tropical Grasslands. 2000. 34 (1). 43-47
CD Volume:324
Print Article: Pages: 43-47
Author(s):Michiels B Babatounde S Dahouda M Chabi S L W Buldgen A
Author Affiliation:Departement de Production Animale, Faculte des Sciences Agronomiques, Universite Nationale du Benin, Abomey-Calavi, Benin
Language:English

Abstract:The experiment was conducted during the early (March-May) and the late (August-October) rainy seasons in 1997. A botanical inventory of forage selected by Djallonke sheep grazing Sudano-guinean savannas in central Benin was developed by observation and hand-plucking. Chemical composition of hand-plucked material was determined. From March to May, just after the first rains, the forage selected had a high nutritive value (digestible crude protein of 64.7 g/kg DM and metabolizable energy of 9.2 MJ/kg DM). The most consumed material was young regrowth of Poaceae (Hyparrhenia sp., Loudetia arundinacea, Andropogon sp., Brachiaria sp., Heteropogon sp.) and Cyperaceae (Cyperus spp., Kyllinga squamulata). During the late rainy season, the frequencies of the consumed species were significantly different ($P<0.01$). The proportion of Poaceae in the samples decreased, while the proportions of woody and gramineous dicotyledons increased. Despite the great selectivity of the sheep during this season, these changes greatly influenced the chemical composition and nutritive value of the diet. Digestible crude protein fell to 41.9 g/kg DM while fibre levels increased. Nevertheless, the metabolizable energy level still reached 9.1 MJ/kg DM
Descriptors:forage. nutritive-value. savannas. chemical-composition. crude-protein. grazing. regrowth. selective-grazing
Geographic Locator:Benin
Identifiers:Loudetia arundinacea. Killynga squamulata
Organism Descriptors:sheep. Andropogon. Brachiaria. Cyperaceae. Cyperus. Heteropogon. Hyparrhenia. Poaceae
Supplemental Descriptors:Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Cyperaceae. West-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries. Francophone-Africa. Loudetia
Subject Codes:FF007. LL500. LL300. LL120. LL145
Supplementary Info:16 ref
ISSN:0049-4763
Year:2000
Journal Title:Tropical Grasslands

Title:Effect of season and concentrate feeding on the eating behaviour of sheep grazing a mixed pasture of Panicum maximum var. C1 and Brachiaria ruziziensis
View Article: Tropical Grasslands. 2000. 34 (1). 48-55
CD Volume:324
Print Article: Pages: 48-55
Author(s):Michiels B Babatounde S Lihounhinto F Chabi S L W Buldgen A
Author Affiliation:Departement de Production Animale, Faculte des Sciences Agronomiques, Universite Nationale du Benin, Abomey-Calavi, Benin
Language:English
Abstract:Thirty West African Dwarf sheep (14.4 kg LW) grazed a mixed pasture of Panicum maximum var. C1 (guinea grass) and Brachiaria ruziziensis (ruzi grass) in south Benin during the short dry season and the short rainy season 1997 (July-October). One group of 15 sheep (supplemented group) received cassava peels and cotton seeds ad libitum when they returned to the sheepfold. The other 15 sheep were used as control animals and received no supplement. The quality of the forage selected by sheep in each group was estimated by the hand-plucking method. The different activities of the sheep in the pasture and in the sheepfold were recorded regularly during the 2 seasons. Digestible crude protein concentrations of the diet varied from 9.7-16.9% DM and were higher during the morning ($P<0.001$) than in the

afternoon and during the short dry season (P<0.001) than the short rainy season. Concentrate supplementation did not influence the quality of the forage selected. In the pasture, the time spent grazing, ruminating and resting ranged from 233-288, 27-62, and 45-69 min/d, respectively. Supplementation significantly (P<0.01) decreased time spent grazing. The time devoted to the different activities varied between the morning and the afternoon. During the short dry season, more time was spent grazing ruzi grass (P<0.001) than grazing guinea grass
Descriptors:feeding. grazing. pastures. supplements. concentrates. forage. crude-protein
Geographic Locator:Benin
Organism Descriptors:Brachiaria-ruziziensis. Panicum-maximum. sheep
Supplemental Descriptors:Brachiaria. Poaceae. Cyperales. monocotyledons. angiosperms. Spermatophyta. plants. Panicum. Ovis. Bovidae. ruminants. Artiodactyla. mammals. vertebrates. Chordata. animals. ungulates. West-Africa. Africa-South-of-Sahara. Africa. Least-Developed-Countries. Developing-Countries. ACP-Countries. Francophone-Africa
Subject Codes:FF007. LL120. LL145. LL500. LL300
Supplementary Info:24 ref
ISSN:0049-4763
Year:2000
Journal Title:Tropical Grasslands