

No.	Records	Request
1	1171	PEANUT
2	309	GROUNDNUT
3	898	ARACHIS
4	898	PEANUT OF GROUNDNUT OR ARACHIS
5	16957	PY=2004
* 6	21	#4 and (PY=2004)

Record 1 of 21 - AGRICOLA 1998-2004/09

AU: Wichers,-H.J.; Beijer,-T.-de; Savelkoul,-H.F.J.; Amerongen,-A.-van

TI: The major peanut allergen Ara h 1 and its cleaved-off N-terminal peptide; possible implications for peanut allergen detection.

SO: Journal of agricultural and food chemistry. 2004 July 28, v. 52, no. 15 p. 4903-4907.

AB: Ara h 1 was purified from raw peanuts (*Arachis hypogaea* L.) in the presence or absence of protease inhibitors. N-Terminal amino acid sequences were determined after western blotting. Both purification procedures proved to be very consistent and resulted in identical chromatographic and electrophoretic behavior of Ara h 1 and in the isolation of identical proteins of ~64 kDa with RS/H\_PPGERTRG as the N-terminal amino acid sequence. Consequently, purified Ara h 1 appears to be truncated at the N-terminal side. The observations strongly suggest that Ara h 1 occurs physiologically as a protein of which the first 84 and 78 amino acids, respectively, are cleaved off in planta upon maturation of the protein. On the basis of epitope mapping, the cleaved-off N-terminal peptide contains three allergenic epitopes, of which two are major. These truncated epitopes will go undetected in assays when purified Ara h 1 from peanuts is used as reference material. Patients' sera, however, contain IgE-type antibodies against the epitopes that are contained in the cleaved-off peptide, implying that the peptide, or part of it, is still present in peanuts that are consumed. Possible consequences of this exposure to these three epitopes are discussed. On the basis of literature data the cleaved-off peptide is hypothesized to have antifungal activity.

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Record 2 of 21 - AGRICOLA 1998-2004/09

AU: Ellis-Jones,-J.; Schulz,-S.; Douthwaite,-B.; Hussaini,-M.A.; Oyewole,-B.D.; Olanrewaju,-A.S.; White,-R.

TI: An assessment of integrated *Striga hermonthica* control and early adoption by farmers in northern Nigeria.

SO: Experimental agriculture. 2004 July, v. 40, no. 3 p. 353-368.

AB: Two sets of on-farm trials, each covering two years, were conducted in the northern Guinea savannah of Nigeria over the period 1999-2001, the objective being to compare integrated *Striga hermonthica* control measures (soybean or cowpea trap crops followed by maize resistant to *Striga*) with farmers' traditional cereal-based cropping systems. In both sets of trials, this proved to be highly effective in increasing productivity over the two year period, especially where soybean was used as a trap crop. Resistant maize after a trap crop increased the net benefit over the two cropping seasons in both trials by over 100% over farmer practice. However, in the second set of trials there was no significant increase in productivity between a trap crop followed by *Striga* resistant maize, and a trap crop followed by

local maize especially where legume intercropping and fertilizer had been applied in the farmer practice. There was also no increase in productivity between two years' traditional cereal cropping and one year's local maize followed by Striga resistant maize. This indicates the importance of a legume trap crop in the first year in order to ensure high productivity in the second year, regardless of variety. Up to 20% of farmers obtained higher productivity from their own practices, notably intercropping of cereals with legumes and use of inorganic fertilizers. Leguminous trap crops and Striga resistant maize, together with two key management practices (increased soybean planting density and hand-roguing) were seen to be spreading both within and beyond the research villages, indicating that farmers see the economic benefits of controlling Striga. Survey findings show that explaining the reasons why control practices work can greatly increase the adoption of these practices. Wider adoption of Striga control will therefore require an extension approach that provides this training as well as encouraging farmers to experiment and adapt Striga control options for their local farming systems.

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Record 3 of 21 - AGRICOLA 1998-2004/09

AU: Wunscher,-T.; Schultze-Kraft,-R.; Peters,-M.; Rivas,-L.  
TI: Early adoption of the tropical forage legume *Arachis pintoi* in Huetar Norte, Costa Rica.  
SO: Experimental agriculture. 2004 Apr., v. 40, no. 2 p. 257-268.  
AB: The legume *Arachis pintoi* has a number of characteristics which enable it to make a valuable contribution to the development of sustainable and productive pastures in the tropics. It was introduced to Costa Rica for this reason, in 1987. The objective of this study was to analyse the adoption of *A. pintoi* as a forage legume in Huetar Norte, a region in the north of Costa Rica. The adoption process was analysed to identify the contributory factors and to make recommendations for measures which could be taken to promote the process. To collect the data, 115 randomly selected livestock holders and an additional 34 farmers known to have planted *A. pintoi* were interviewed. Farmers see improved pastures to be the most important technology to enhance forage and cattle production. It was confirmed that *A. pintoi* is a potential improved pasture alternative. Although *A. pintoi* was well known, the adoption rate was low. Lack of availability of seed, technical assistance and information about the use and management of *A. pintoi* hinder adoption. Difficulties in establishment and maintenance were also recorded.

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Record 4 of 21 - AGRICOLA 1998-2004/09

AU: Isleib,-T.G.; Pattee,-H.E.; Giesbrecht,-F.G.  
TI: Oil, sugar, and starch characteristics in peanut breeding lines selected for low and high oil content and their combining ability.  
SO: Journal of agricultural and food chemistry. 2004 May 19, v. 52, no. 10 p. 3165-3168.  
AB: Peanut seeds contain approximately 50% oil on a dry weight basis, making them a high fat food. Reduction of the oil content would make peanuts a more desirable food to fat conscious consumers. Removal of existing oil by processing is not feasible for in-shell peanuts, the dominant product of the North

Carolina-Virginia area. To reduce oil content in in-shell peanuts, a genetic solution must be found. However, while reduced oil content is a desirable objective, changes in oil must not be accompanied by significant decreases in any of the desirable aspects of peanut flavor. Because the impact of selection for low or high oil on flavor is not known, it would be useful to know in what form dry matter is being stored in the seed, particularly if it is not being stored as oil. Screening of 584 accessions identified two lines (PI 269723 and PI 315608) with high and two (Robusto 2 and Robusto 3) with low oil contents, each pair differing in sugar content. The four parents were crossed in diallel fashion to investigate patterns of inheritance. General combining abilities (GCA) for oil content closely followed values of the parental lines. One low oil parent (Robusto 2) had a correspondingly elevated GCA for sugar content, but neither low oil parent had the effect of elevating starch in progeny. Reciprocal cross differences were found for starch and sugar contents, suggesting influences of cytoplasmic genes on those traits. These lines serve as resource material for researchers interested in the genetic and physiological aspects of the oil-sugar-starch relationship in peanuts.

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Record 5 of 21 - AGRICOLA 1998-2004/09

AU: Lopez,-J.; Tejada,-I.; Vasquez,-C.; Dios-Garza,-J.-de; Shimada,-A.

TI: Condensed tannins in tropical fodder crops and their in vitro biological activity. 2.

SO: Journal of the science of food and agriculture. 2004 Mar., v. 84, issue 4 p. 295-299.

AB: With the aim to evaluate the biological activity of purified condensed tannins of tropical forages we conducted two in vitro experiments. In the first, using a radial diffusion technique, the protein precipitation of free condensed tannins (FCT) from *Manihot esculenta*, *leucaena leucocephala*, *Arachis pintoi*, *Guazuma ulmyfolia*, *Gliricidia sepium* and of tannic acid on bovine serum albumin (ASB), papain, pepsin and trypsin at pH 5.0 and 6.8 was evaluated with a three-way analysis of variance. Significant effects ( $P < \text{or} = 0.05$ ) for the tannin type, protein source, pH and their interactions were observed. Pepsin showed the highest protein precipitation (PP) at a pH of 5.0 (82.9 microgram) with FCT of *G ulmyfolia* and the lowest (0 and 0.2 microgram) of BSA with *G sepium* and *A pintoi* at pH 6.8. Experiments were then conducted using completely randomized designs in order to observe the effect of adding 0, 1.25 or 2.50 mg of FCT from *M esculenta* and *L leucocephala* to the rumen fluid-buffer in an in vitro dry matter digestibility test (IVDMD) of *Medicago sativa* and *Brachiaria decumbens*, The IVDMD value of *M sativa* (757 g kg<sup>-1</sup>) decreased with *L leucocephala* tannins, although with those of *M esculenta* it was increased (824 g kg<sup>-1</sup> and 871 g kg<sup>-1</sup>, respectively) for 1.25 and 2.5 mg of FCT. The IVDMD value of *B decumbens* (774 g kg<sup>-1</sup> without tannins) diminished with any tannin and any dose ( $P < 0.05$ ). We conclude that there are differences in the FCT contents of fodder crops and in their biological activity measured as the capacity to precipitate proteins, which is modified by the type of tannin, the protein and the pH. The result of an IVDMD is regulated by the type of tannin and its dose.

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Record 6 of 21 - AGRICOLA 1998-2004/09

AU: Stephan,-O.; Vieths,-S.

TI: Development of a real-time PCR and a sandwich ELISA for detection of potentially allergenic trace amounts of peanut (*Arachis hypogaea*) in processed foods.

SO: Journal of agricultural and food chemistry. 2004 June 16, v. 52, no. 12 p. 3754-3760.

AB: Hidden allergens in food products are, especially for peanut-allergic consumers, a serious problem because even low amounts (~200 microgram) of peanut can elicit allergic reactions. Undeclared peanut traces can be found in processed food products, because contaminations with peanut during production processes are frequent. To minimize the risk of such cross-contaminations, it is necessary to develop sensitive analytical methods for the detection of hidden allergens in foods. For this approach we developed two peanut-specific assays based on the detection of peanut protein by specific antibodies (sandwich ELISA) and by the detection of peanut-specific DNA (part of the coding region of *Ara h 2*) by a real-time PCR. Both tests did not show any cross-reactivity with 22 common food ingredients (cereals, nuts, legumes), and the limit of detection is <10 ppm peanut in processed foods. Thirty-three random samples of food products were tested for the presence of peanut to compare both assay types with each other and to evaluate the percentage of foods on the German market that are contaminated with peanut traces. We found that four products (13.3%) without peanut in the list of ingredients contained peanut protein in a range from 1 to 74 ppm peanut protein and that the results of both tests correlated well. The real-time PCR was able to detect one more positive sample than the sandwich ELISA. In conclusion, both assays are sensitive and specific tools for the detection of hidden allergens in processed foods.

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Record 7 of 21 - AGRICOLA 1998-2004/09

AU: Pildain,-M.B.; Vaamonde,-G.; Cabral,-D.

TI: Analysis of population structure of *Aspergillus flavus* from peanut based on vegetative compatibility, geographic origin, mycotoxin and sclerotia production.

SO: International journal of food microbiology. 2004 May 15, v. 93, no. 1 p. 31-40.

AB: Isolates of *Aspergillus flavus* obtained from a new growing peanut region in Argentina (Formosa province) were examined for aflatoxin types B and G and cyclopiazonic acid (CPA) production. Sclerotia diameters and the number of sclerotia produced per square centimetre were also determined for each isolate. They were tested by vegetative compatibility group analysis to investigate their genetic relatedness and correlate the results with vegetative compatibility groups previously described from the major peanut-growing area (Cordoba province) in our country. Two isolates were considered atypical because they simultaneously produce aflatoxins B and G and CPA. . A *flavus* population from Formosa province was very diverse genetically. Vegetative compatibility groups (VCGs) formed by typical isolations of *A. flavus* were different among agroecological sites. Formosa isolates could not be grouped to any of the Cordoba VCGs, while that one of the VCGs that contain atypical isolates included strains from the two geographical regions. Each VCG included

isolates of the same mycotoxin and sclerotia production pattern. The two regions analysed have different climatic conditions, soil type, crop sequence history and also are in different latitude. These parameters may reflect different geographic adaptation between isolates from both sites.

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Record 8 of 21 - AGRICOLA 1998-2004/09

AU: Patel, -M.; Jung, -S.; Moore, -K.; Powell, -G.; Ainsworth, -C.; Abbott, -A.

TI: High-oleate peanut mutants result from a MITE insertion into the FAD2 gene.

SO: Theoretical and applied genetics. 2004 May, v. 108, no. 8 p. 1492-1502.

AB: A high-oleate trait in the cultivated peanut (*Arachis hypogaea* L.) was reported to rely on the allelic composition of the two homeologous, microsomal oleoyl-PC desaturase genes (ahFAD2A or ahFAD2B). The enzyme activity of either ahFAD2A or ahFAD2B is sufficient for a normal oleate phenotype, and a significant reduction in the levels of ahFAD2B and a mutation in ahFAD2A were reported to be responsible for the high-oleate phenotype in one chemically induced mutant (M2-225) and one derived from a naturally occurring (8-2122) mutant. Here, we report an insertion of the same miniature inverted-repeat transposable element (MITE) in the ahFAD2B gene in another chemically induced mutant (Mycogen-Flavo) and the previously characterized M2-225 mutant. In both cases, this MITE insertion in ahFAD2B causes a frameshift, resulting in a putatively truncated protein sequence in both mutants. The insertion of this MITE in ahFAD2B, in addition to the point mutation in ahFAD2A, appears to be the cause of the high-oleate phenotype in Mycogen-Flavo and M2-225 mutants. Utilizing sequences of the MITE, we developed a DNA marker strategy to differentiate the two insertion-containing mutants from the normal oleate peanut variety (AT-108) and the naturally occurring, high-oleate mutant 8-2122. Reverse transcript-PCR/differential digestion results reveal the expression of both ahFAD2A and ahFAD2B genes in Mycogen-Flavo mutant. This result is in contrast to the observation that ahFAD2B transcripts are greatly reduced in the M2-225 mutant having the MITE insertion further 3' in ahFAD2B gene.

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Record 9 of 21 - AGRICOLA 1998-2004/09

AU: Sarr, -B.; Lecoecur, -J.; Clouvel, -P.

TI: Irrigation scheduling of confectionery groundnut (*Arachis hypogaea* L.) in Senegal using a simple water balance model.

SO: Agricultural water management. 2004 July 1, v. 67, issue 3 p. 201-220.

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Record 10 of 21 - AGRICOLA 1998-2004/09

AU: Zhang, -F.; Shen, -J.; Li, -L.; Liu, -X.

TI: An overview of rhizosphere processes related with plant nutrition in major cropping systems in China.

SO: Plant and soil. 2004 Mar., v. 260, no. 1-2 p. 89-99.

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Record 11 of 21 - AGRICOLA 1998-2004/09

AU: Kar, -G; Singh, -R.; Verma, -H.N.

TI: Alternative cropping strategies for assured and efficient crop production in upland rainfed rice areas of eastern India based on

rainfall analysis.

SO: Agricultural water management. 2004 June 1, v. 67, issue 1 p. 47-62.

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Record 12 of 21 - AGRICOLA 1998-2004/09

AU: Burke, -I.C.; Price, -A.J.; Wilcut, -J.W.; Jordan, -D.L.; Culpepper, -A.S.; Tredaway-Ducar, -J.

TI: Annual grass control in peanut (*Arachis hypogaea*) with clethodim and imazapic.

SO: Weed technology a journal of the Weed Science Society of America. 2004 Jan.-Mar., v. 18, no. 1 p. 88-92.

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Record 13 of 21 - AGRICOLA 1998-2004/09

AU: Ferguson, -M.E.; Burow, -M.D.; Schulze, -S.R.; Bramel, -P.J.; Paterson, -A.H.; Kresovich, -S.; Mitchell, -S.

TI: Microsatellite identification and characterization in peanut (*A. hypogaea* L.).

SO: Theoretical and applied genetics. 2004 Apr., v. 108, no. 6 p. 1064-1070.

AB: A major constraint to the application of biotechnology to the improvement of the allotetraploid peanut, or groundnut (*Arachis hypogaea* L.), has been the paucity of polymorphism among germplasm lines using biochemical (seed proteins, isozymes) and DNA markers (RFLPs and RAPDs). Six sequence-tagged microsatellite (STMS) markers were previously available that revealed polymorphism in cultivated peanut. Here, we identify and characterize 110 STMS markers that reveal genetic variation in a diverse array of 24 peanut landraces. The simple-sequence repeats (SSRs) were identified with a probe of two 27,648-clone genomic libraries: one constructed using PstI and the other using Sau3AI/BamHI. The most frequent, repeat motifs identified were ATT and GA, which represented 29% and 28%, respectively, of all SSRs identified. These were followed by AT, CTT, and GT. Of the amplifiable primers, 81% of ATT and 70.8% of GA repeats were polymorphic in the cultivated peanut test array. The repeat motif AT showed the maximum number of alleles per locus (5.7). Motifs ATT, GT, and GA had a mean number of alleles per locus of 4.8, 3.8, and 3.6, respectively. The high mean number of alleles per polymorphic locus, combined with their relative frequency in the genome and amenability to probing, make ATT and GA the most useful and appropriate motifs to target to generate further SSR markers for peanut.

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Record 14 of 21 - AGRICOLA 1998-2004/09

AU: Pensuk, -V.; Jogloy, -S.; Wongkaew, -S.; Patanothai, -A.

TI: Generation means analysis of resistance to peanut bud necrosis caused by peanut bud necrosis tospovirus in peanut.

SO: Plant breeding = Zeitschrift fuer Pflanzenzuchtung. 2004 Feb., v. 123, no. 1 p. 90-92.

AB: This study was conducted to evaluate the types of gene action governing the inheritance of resistance to peanut bud necrosis disease (PBNB) in populations derived from three crosses involving two resistant (ICGV 86388 and IC 10) and one susceptible (KK 60-1) peanut lines. Populations were composed of P1, P2, F1, F2, BC11, BC12, BC11S and BC12S. These populations were evaluated for PBNB incidence in a farmer's field in Kalasin province in north-east Thailand, where PBNB is a recurring

problem. Results showed variations between crosses in the relative contributions of different types of gene effect. The results indicate that multiple genes control the PBNB resistance trait, and that the two resistant lines differ in some of these genes. As non-additive gene effects are important in all three crosses, selection for low PBNB incidence in these crosses would be more effective in later generations.

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Record 15 of 21 - AGRICOLA 1998-2004/09

AU: Srivastava,-R.C.; Singhandhupe,-R.B.; Mohanty,-R.K.

TI: Integrated farming approach for runoff recycling systems in humid plateau areas of eastern India.

SO: Agricultural water management. 2004 Feb. 1, v. 64, issue 3 p. 197-212.

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Record 16 of 21 - AGRICOLA 1998-2004/09

AU: Young,-C.T.; Pattee,-H.E.; Schadel,-W.E.; Sanders,-T.H.

TI: Microstructure of peanut (*Arachis hypogaea* L. cv. 'NC 7') cotyledons during development.

SO: Lebensmittel-Wissenschaft+Technologie Food science+technology. 2004, v. 37, no. 4 p. 439-445.

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Record 17 of 21 - AGRICOLA 1998-2004/09

AU: Chapin,-J.W.; Dorner,-J.W.; Thomas,-J.S.

TI: Association of a burrower bug (Heteroptera: Cydnidae) with aflatoxin contamination of peanut kernels.

SO: Journal of entomological science. 2004 Jan., v. 39, no. 1 p. 71-83.

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Record 18 of 21 - AGRICOLA 1998-2004/09

AU: Misra,-J.B.

TI: A mathematical approach to comprehensive evaluation of quality in groundnut.

SO: Journal of food composition and analysis an official publication of the United Nations University, International Network of Food Data Systems. 2004 Feb., v. 17, no. 1 p. 69-79.

AB: Various chemical and physical traits that govern the quality of shelled groundnut were identified. The important physical traits put together were assigned a total of 100 points and likewise the important chemical traits were assigned a total of 100 points. Further allocation of points to individual traits was made on the basis of the extent to which each influences the market value of the groundnut. A mathematical formula was also devised for calculating the points attainable by each trait on the basis of analytical values of that trait. The mathematical model so developed was applied for determining the relative worth of three groundnut cultivars. The exercise brought to the fore the feasibility of applying a mathematical approach to comprehensive evaluation of groundnut samples emanating from breeding trials/commercial consignments. The importance of the proposed model lies in its logical integration of various quality parameters to arrive at a numerical value to facilitate proper grading of samples for their quality.

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Record 19 of 21 - AGRICOLA 1998-2004/09

AU: Sastawa,-B.M.; Lawan,-M.; Maina,-Y.T.

TI: Management of insect pests of soybean: effects of sowing date and

intercropping on damage and grain yield in the Nigerian Sudan savanna.

SO: Crop protection. 2004 Feb., v. 23, no. 2 p. 155-161.

AB: Field trials were carried out during the 2001-2002 cropping seasons at Maiduguri, Nigeria, to determine the effects of defoliation and pod damage by insect pests on grain yield of soybean. The factorial experiments consisted of four sowing dates (31 July, 7, 14 and 21 August in 2001 and 21 and 28 July and 4 and 11 August in 2002), four cropping patterns of millet and soybean (3:1, 2:1, 1:1 and 0:1) and two cropping systems of millet-soybean (MS) and millet-soybean-groundnut-cowpea (MSGC). The number of insect defoliators and pod sucking bugs were significantly higher in soybean sown on 31 July in 2001 and on 28 August in 2002. The numbers of pod sucking bugs were also higher in pattern 0:1 and in MS system than the other patterns and systems in both the 2001 and 2002 cropping seasons. Grain yields were higher in early sown soybean in 2001 but not in 2002. Percentage defoliation was significantly lower in cropping pattern 1:1 over other patterns in 2001 and in pattern 0:1 in 2002. Percentage pod damage was significantly lower in pattern 1:1 than the other patterns in both the years. Percentage defoliation was significantly higher in MS intercrop system than the other system in 2001. In both cropping seasons, grain yields were significantly higher in the MS intercrop system than in the MSGC system.

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Record 20 of 21 - AGRICOLA 1998-2004/09

AU: Dodo, -H.W.; Viquez, -O.M.; Maleki, -S.J.; Konan, -K.N.

TI: cDNA clone of a putative peanut (*Arachis hypogaea* L.) trypsin inhibitor has homology with peanut allergens Ara h 3 and Ara h 4.

SO: Journal of agricultural and food chemistry. 2004 Mar. 10, v. 52, no. 5 p. 1404-1409.

AB: Trypsin inhibitors are pathogenesis-related (PR) proteins, which play an important role in the plant defense mechanism against insects and pathogens. Peanut trypsin inhibitors are low molecular mass seed storage proteins. Like peanut allergens, they are stable to acid and heat, resistant to digestion, and can have a negative impact on human health. In peanut, five Bowman-Birk trypsin inhibitors (BBTI) have been isolated and amino acid sequences published. However, to date, no peanut BBTI sequence is available at both the cDNA and the genomic levels. The objectives of this investigation were (i) to synthesize degenerate oligonucleotides based on conserved regions of published amino acid sequences of BBTI, BII, and BIII; (ii) to isolate, sequence, and analyze at least one positive peanut trypsin inhibitor cDNA clone using the synthesized <sup>32</sup>P-labeled oligonucleotides as probes; and (iii) to determine its trypsin inhibitory activity. Thirty-two degenerate oligonucleotides DNA primers of 24 nucleotides each were synthesized based on the published amino acid sequences of peanut BBTI, and two were selected as probes to screen a peanut Lambda gt 11 cDNA library. Three putative positive clones were isolated, purified, and subcloned, and one was sequenced. Sequence analysis revealed a partial cDNA clone of 643 bp with a start codon. This clone shares 93 and 96% nucleotide sequence homology with peanut allergens Ara h 3 and Ara h 4 cDNA clones, respectively. A trypsin inhibitor assay revealed that peanut allergen Ara h 3 has a trypsin inhibitory



activity of 11 238 TIA/mg protein. We concluded that peanut allergen Ara h 3 may also function as a trypsin inhibitor.

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Record 21 of 21 - AGRICOLA 1998-2004/09

AU: Higgins,-C.M.; Hall,-R.M.; Mitter,-N.; Cruickshank,-A.; Dietzgen,-R.G.

TI: Peanut stripe potyvirus resistance in peanut (*Arachis hypogaea* L.) plants carrying viral coat protein gene sequences.

SO: Transgenic research. 2004 Feb., v. 13, no. 1 p. 59-67.