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1. David I. Shapiro-Ilan, Dawn H. Gouge, Simon J. Piggott, Jane Patterson Fife,
Application technology and environmental considerations for use of entomopathogenic nematodes in biological control,
Biological Control, Volume 38, Issue 1, July 2006, Pages 124-133,
ISSN 1049-9644, 10.1016/j.biocontrol.2005.09.005.
(http://www.sciencedirect.com/science/article/pii/S1049964405002392)

Abstract: Summary

A wide range of technology is available for application of entomopathogenic nematodes including various irrigation systems and spray equipment. The choice of application equipment, and manner in which the nematodes are applied, can have substantial impact on pest control efficacy. For example, nozzle or pumping system types are some of the parameters that can affect nematode performance following spray applications. Operating pressures for some nematode species may reach up to 2000 kPa without notable damage, whereas other species may require lower pressure limits, e.g., 1380 kPa for Heterorhabditis megidis. In addition to application equipment, a variety of other abiotic and biotic factors must be considered. In general, a rate of 25 infective juvenile nematodes/cm2 is required for successful pest suppression. Critical environmental factors include avoidance of ultraviolet radiation, adequate soil moisture, and appropriate temperature. Certain fertilizers and chemical pesticides can have positive effects on entomopathogenic nematode efficacy, whereas other agents may have neutral or negative effects. Similarly, certain biotic agents present during soil applications can be expected to be detrimental to nematode applications (e.g., nematophagous mites and fungi), whereas other organisms may be beneficial (e.g., some combinations with Bacillus thuringiensis). With some exceptions foliar applications have been less successful than soil applications due to nematode susceptibility to desiccation and UV; recent research, however, indicates that frequent low-rate applications of nematodes to foliage can result in substantial suppression of greenhouse pests such as thrips. Further innovation in application technology will undoubtedly contribute to the expansion of entomopathogenic nematodes as biocontrol agents.

Keywords: Application technology; Biological control; Entomopathogenic nematode

2. Paul G. Fields,
Effect of Pisum sativum fractions on the mortality and progeny production of nine stored-grain beetles,
Journal of Stored Products Research, Volume 42, Issue 1, 2006, Pages 86-96,
ISSN 0022-474X, 10.1016/j.jspr.2004.11.005.
(http://www.sciencedirect.com/science/article/pii/S0022474X05000093)

Abstract:Summary

Yellow field pea (Pisum sativum L.) fractions that were mainly protein (50%), fibre (90%) or starch (85%) were obtained from a

commercial pea mill and mixed with wheat kernels or wheat flour. Based on the mortality and the number of offspring produced, protein-rich pea flour was more toxic than fibre, which was more toxic than starch. For the protein-rich pea flour mixed with wheat kernels, the most sensitive insects were Sitophilus oryzae (L.), Sitophilus zeamais Motschulsky and Sitophilus granarius (L.), followed by Cryptolestes ferrugineus (Stephens) which was more sensitive than Tribolium castaneum (Herbst) and Rhyzopertha dominica (F.). For the protein-rich pea flour mixed with wheat flour, Cryptolestes pusillus (Schönherr) was most sensitive, followed by C. turcicus (Grouvelle) and T. confusum (Jacquelin du Val), with T. castaneum being the most resistant. Although protein-rich pea flour did not kill adults to a great extent when mixed with flour, it reduced offspring production significantly. Again C. pusillus was the most sensitive, followed by T. confusum, with T. castaneum offspring being the most resistant. The insecticidal activity of pea fractions decreased after treated wheat kernels were held at 30 °C, 70% r.h. for 8 months. The potential of using pea fractions to control stored-product insects is discussed.

Keywords: Pea; Legume; Toxicity

2008

1. R. Mostowfizadeh-Ghalamfarsa, D.E.L. Cooke, Z. Banihashemi, Phytophthora parsiana sp. nov., a new high-temperature tolerant species,
   Mycological Research, Volume 112, Issue 7, July 2008, Pages 783-794,
   ISSN 0953-7562, 10.1016/j.mycres.2008.01.011.
(http://www.sciencedirect.com/science/article/pii/S0953756208000348)

Abstract: Summary

As part of a study to examine the phylogenetic history of the taxonomically challenging species Phytophthora cryptogea and P. drechsleri, a distinct monophyletic group of isolates, previously described as P. drechsleri or P. cryptogea, were characterised. Analysis of their rDNA ITS sequences indicated that these isolates were distinct from P. drechsleri, P. cryptogea, and all members of Phytophthora ITS clades 1–8, clustering instead alongside basal groups previously described as clades 9 and 10. This group comprised six isolates all of which were isolated from woody plants, such as pistachio (Pistacia vera, Iran and USA), fig (Ficus carica, Iran), and almond (Prunus dulcis, Greece). Analysis of sequence data from nuclear (β-tubulin and translation elongation factor 1α) and mitochondrial (cytochrome c oxidase subunit I) genes confirmed the ITS-based analysis as these isolates formed a distinct monophyletic group in all NJ trees. The isolates were fast growing with a relatively high optimum growth temperature of 30 °C and, in most cases, rapid colony growth even at 37 °C. The isolates produced complex colony patterns on almost all media, especially corn meal agar (CMA). Phylogenetic analysis and examination of all the other morphological and physiological data lead us to infer that this taxon has not been described previously. As this taxon was first isolated and described from Iran we propose that this taxon be formally designated as Phytophthora parsiana.

Keywords: ITS rDNA; Multiple gene genealogies; Oomycota

2010

1. Isabel S. Carvalho, Teresa Cavaco, Lara M. Carvalho, Paula Duque, Effect of photoperiod on flavonoid pathway activity in sweet potato (Ipomoea batatas (L.) Lam.) leaves,
Food Chemistry, Volume 118, Issue 2, 15 January 2010, Pages 384-390,
ISSN 0308-8146, 10.1016/j.foodchem.2009.05.005.
(http://www.sciencedirect.com/science/article/pii/S0308814609006190)

Abstract: Compared with those of major commercial leafy vegetables, leaves of sweet potato have higher contents of flavonoids and phenolic acids, which provide significant health benefits and may be used as natural colourants. We have analysed the expression of key flavonoid biosynthesis genes using RT-PCR and the accumulation of polyphenolic compounds using high-performance liquid chromatography coupled to a photodiode-array detector, during the development of leaves of sweet potato plants growing under either long day or short day photoperiods. A massive induction of flavonoid pathway gene expression, correlating with a dramatic increase in the content of an anthocyanin, catechins, flavonols, hydroxycinnamic acids and hydroxybenzoic acids, was observed during sweet potato leaf exposure to a long day photoperiod. These results provide further support for the protective role of flavonoids and phenolic acids against enhanced light exposure in plants.

Keywords: Anthocyanins; Catechins; Flavonoid pathway; Flavonols; HPLC; Hydroxycinnamic acids; Hydroxybenzoic acids; Photoperiod; RT-PCR, sweet potato; Gene expression