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Entomology, Ornithology & Herpetology: Current Research

Commentary

Entomopathogenic Nematodes for Insect Pest Control

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DESCRIPTION

Entomopathogenic nematodes have been used in traditional, conservation, and augmentative biological control regimes. The majority of applied research has focused on their potential as biological control agents used in floods. Extensive research has revealed both successes and failings in the management of insect pests of crops, ornamental plants, trees, lawns, and turf over the last three decades. This paper presents the highlights of their development for managing insect pests above and below ground. Insects from foliar, soil surface, cryptic, and subterranean habitats are among the insects targeted. Advances in EPN mass-production and formulation technology, the identification of several efficacious isolates/strains, and the desire to reduce pesticide use have all contributed to an increase in commercial use and development of EPNs. Scarab larvae in lawns and turf, fungus gnats in mushroom production, invasive mole crickets in lawns and turf, black vine weevil in nursery plants, and Disappears root weevil in citrus, among other pest insects, are currently controlled by commercially produced EPNs. However, demonstrable success in controlling a variety of different insects has not always resulted in a large share of the pesticide market for these pests.

Pest control

Entomopathogenic nematodes are worms that parasitize insects and have been identified in 23 nematode families. The Steinernematidae and Heterorhabditidae have received the most attention of all the nematodes studied for biological control of insects because they possess many of the characteristics of effective biological control agents and have been used as classical, conservational, and augmentative biological control agents. The great majority of applied research has been on their potential as inundatively applied biological control agents. Over the last three decades, extensive study has shown both their achievements and failures in the management of insect pests of crops, ornamentals, and lawns and turf. The primary benefits and drawbacks of this are outlined in. They can be regarded as suitable candidates for integrated pest management and sustainable agriculture due to a range of characteristics, including the ability to recycle and persist in the ecosystem, which certain species lack. They may have direct and/or indirect effects on plant parasite nematode and plant pathogen populations, can improve soil quality indirectly, and are compatible with a wide range of chemical and biological pesticides used in IPM programmes. Pest insects can harm agricultural productivity and market access, as well as the natural environment and our way of life. Pest insects may be an annoyance and a health concern to humans, causing damage to crops and food production, parasitizing cattle, and generally being a nuisance. Some of the world's most dangerous pest insects are absent in Western Australia. In order to avoid the spread of insects, biosecurity precautions on your premises are essential. The term "biological control" has been applied to a variety of biological domains, most notably entomology and plant pathology. In entomology, it refers to the employment of live predatory insects, entomopathogenic nematodes, or microbial infections to suppress pest insect populations. EPNs are one of the most effective bio-control agents for a variety of economically important insect pests. Many surveys have been undertaken around the world to identify plants that could be useful in the control of economically important insect pests. The term "Entomopathogenic" was initially used in nematology nomenclature to describe the bacterial symbionts of Steinernema and Heterorhabditis. Because of their mutualistic relationship with bacteria, EPNs kill their hosts in a very short amount of time, unlike other parasitic or necromenic nematodes.

CONCLUSION

Operator and end-user safety, absence of waiting periods, minimization of the treated area by monitoring insect populations, minimum damage to natural enemies, and lack of environmental contamination are only a few of the advantages they have over chemical pesticides. Due to advancements in mass-production and formulation technologies, the finding of multiple effective isolates, and the desirability of increased pesticide use, EPNs have sparked a rush of scientific and commercial interest.

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