



Koppert

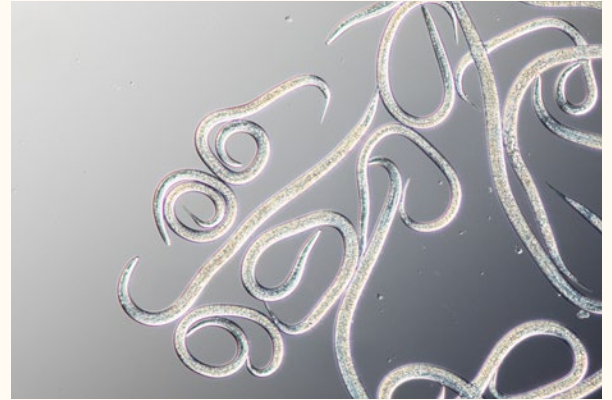
Beneficial nematodes in horticultural crops

















Partners
with Nature

Which nematode controls which pest best?

This is an overview of the nematode-pest combinations that have been tested successfully so far. However, effectiveness of the nematode solution depends largely on a number of factors; temperature, time of application, larval stage of pest, humidity, application equipment etc. If you have any questions or doubts, please consult your Koppert contact person. If a specific pest is not mentioned in this document, it doesn't necessarily mean it cannot be controlled by nematodes. Koppert is continuously researching new possibilities.







Protected Vegetables

Pest	Larva	Adult	Solution
Fungus gnats / Sciarids <i>Bradysia spp.</i>			Entonem
Tomato leafminer <i>Tuta absoluta</i>		* 	Entonem
Western flower thrips <i>Frankliniella occidentalis</i>			Entonem (most effective against pupae)
Caterpillars - Noctuids <i>Agrotis sp., Autographa gamma, Spodoptera sp., Chrysodeixis sp.</i>			Capsanem
Colorado potato beetle <i>Leptinotarsa decemlineata</i>			Capsanem
Mirid bugs <i>Nesidiocoris tenuis & other species</i>			Capsanem
Mole cricket <i>Gryllotalpa gryllotalpa</i>		** 	Capsanem








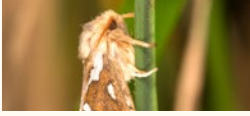




* Source: Scott Bauer | USDA Agricultural Research Service, Bugwood.org

** Source: Bram Koese | Link: https://upload.wikimedia.org/wikipedia/commons/b/bb/Veenmol_op_straat.jpg

Soft Fruits

Pest	Larva	Adult	Solution
<p>Weevils <i>Otiorhynchus sulcatus</i> & other species</p>			<p>Entonem (cold tolerant) Larvanem</p>
<p>European pepper moth <i>Duponchelia fovealis</i></p>			<p>Capsanem</p>
<p>Chafer/White grubs (scarabs) Several species</p>			<p>Larvanem</p>

Ornamentals: nursery, potted plants, cut flowers

Pest	Larva	Adult	Solution
<p>Fungus gnats / Sciarids <i>Bradysia spp.</i></p>			<p>Entonem</p>
<p>Western flower thrips <i>Frankliniella occidentalis</i></p>			<p>Entonem (most effective against pupae)</p>
<p>Shore flies <i>Scatella sp.</i></p>		<p>*</p> 	<p>Entonem Capsanem</p>
<p>Garden swift moth <i>Pharmacis lupulina</i></p>			<p>Entonem (cold tolerant) Larvanem</p>
<p>Weevils <i>Otiorhynchus sulcatus</i>, <i>Otiorhynchus spp.</i></p>			<p>Entonem (cold tolerant) Larvanem</p>
<p>Caterpillars - Noctuids Several species</p>			<p>Capsanem</p>

* Source: Toby Barton (London, UK)

Urban Greens: ornamental trees and shrubs



Pest	Larva	Adult	Solution
<p>Oak processionary moth <i>Thaumetopoea processionea</i></p>			<p>Entonem</p>
<p>Sycamore lace bug <i>Corythuca ciliata</i></p>			<p>Entonem (spring application) Capsanem (summer application)</p>
<p>Buxus moth <i>Cydalima perspectalis</i></p>			<p>Capsanem</p>
<p>Palm moth <i>Paysandisia archon</i></p>			<p>Palmanem</p>
<p>Red palm weevil & South American palm weevil <i>Rhynchophorus ferrugineus</i>, <i>Rhynchophorus palmarum</i></p>			<p>Palmanem</p>

* Source: Luc Hoogenstein | Link: https://commons.wikimedia.org/wiki/File:Thaumetopoea_processionea,_Eikenprocessierups,_Oak_Processionary_02.jpg

** Source: Ben Sale | Link: <https://flic.kr/p/2cbcyHd>

*** Source: Gilles San Martin | Link: <https://flic.kr/p/9hrY3V>

Mushroom industry

Pest	Larva	Adult	Solution
<p>Sciarids <i>Lycoriella castanescens</i></p>			<p>Scia-Rid</p>



Koppert's little heroes

Entomopathogenic nematodes measure much less than a millimeter, so cannot be seen with the naked eye. As small as they are, they play an important role in the biological control of many pests, keeping fruits, vegetables and ornamental crops free of pests while minimizing chemical residues. In optimal circumstances it can entirely replace the use of chemicals.

Koppert started producing nematodes in 1986. Many years of experience have gone into the selection, breeding and quality control of these nematodes. Each of the entomopathogenic nematodes bred by Koppert has been selected to target specific pest insects and Koppert produces specific strains of *Steinernema feltiae*, *Steinernema carpocapsae* and *Heterorhabditis bacteriophora* (and other species/strains are being researched). They are selectively applied to combat a significant variety of pests in a wide range of temperatures, such as the pupae and larvae of thrips, the larvae of vine weevils and several beetles, caterpillars, the larvae of sciarid flies and many others.



How does it work?

After application, the nematodes set out in search of their prey. Once they have found a host insect, they penetrate its natural body openings. The nematodes then release pathogenic bacteria they carry with them. These actions kill and liquify the insect from the inside. The nematodes feed on the digested tissues of the dead insect and reproduce in large numbers. The pest insect stops feeding soon after being infested, and dies within a few days. The nematodes that emerge then start their search for a new host.

Part of the IPM toolbox

Nematodes have increasingly become a powerful part of IPM solutions together with other beneficial organisms; working together to either partly substitute, and sometimes replace the use of conventional pesticides, to manage pests that are extremely difficult to control and where chemicals fail or are simply not available anymore.



