Entomopathogenic Nematodes

Biological control of pests in:
- Horticulture
- Ornamentals
- Turf and Grassland
- Orchards
- Small Fruits
- Mushrooms

Adult vine weevils cause typical notched foliar damage on many plants. The more damaging larval stages however, feed on roots of ornamental plants, strawberries, young fruit trees and vines.

Application period:
- March – June and/or August – October

Soil temperature:
- > 10 °C

Application rate:
- 0.5 Mio/m² (1 – 2 times)

These parasitic nematodes control many different grub species and lepidoptera:
- Garden chafer (Phyllopertha horticola)
- Welsh chafer (Hoplia spp.)
- Dung beetle (Aphodius spp.)
- Western corn rootworm (Diabrotica virgifera)
- Hazelnut borer (Balaninus nucum)
- Chestnut moth (Cydia splendana)
- Beech moth (Cydia fagiglandana)

Black vine weevil (Otiorhynchus sulcatus)
**Biology of nematodes**

Entomopathogenic nematodes occur naturally in the environment as parasites of many insect larvae. The mass release of these nematodes provides an efficient and curative control of key insect pests in a wide range of crops.

**Mode of action**

Once released, nematodes actively seek out their insect hosts. When a host has been located, the nematodes penetrate the insect through body openings and release symbiotic bacteria that multiply and rapidly kill the insect. Subsequently, nematodes feed upon the host and mature into adults, which mate and produce the next generation. The life cycle is completed within a few weeks and hundreds of thousands of nematodes emerge in search of new hosts.

**Persistance in the soil**

For some species, nematode infected pest larvae turn a characteristic red or brown colour, providing easy identification of activity. When no new hosts are present, the nematode population will decrease quickly.

**AquaNemix 2%**

Our nematodes are formulated in a vermiculite or clay powder that should be mixed well in water prior to use. An easy way to apply nematodes is to use AquaNemix 2%. The tank of the AquaNemix 2% holds 1 liter of concentrated nematode stock. The intergrated proportioning system mixes the nematodes in a 2% ratio with the irrigation water. AquaNemix 2% has a quick coupler, allowing easy connection to the hose.
**Steinernema feltiae**

Provides professional control of soil and leaf-dwelling larvae:

**Sciarid flies (Sciaridae)**

Larvae of sciarid flies cause direct damage to seedlings, cuttings, young plants and mushrooms by feeding on their roots/stalks. Also, larvae can transmit viruses and fungal spores.

**Application rate**

- 0.5 Mio/m² (horticulture)
- 2 Mio/m² (mushroom production)

**Thrips and leafminers**

Thrips and leafminers are key pests in many greenhouse crops and ornamental plants. Effective control of larvae is possible by foliar application of nematodes.

**Application rate**

- 0.25 – 1 Mio/m²
- repeated application recommended

**Overwintering codling moth larvae (Cydia pomonella)**

Application of nematodes in autumn will control overwintering codling moth larvae. As a result, pest pressure in the following spring will be considerably reduced.

**Application period:** After harvest

**Air temperature:** > 8 °C

**Application rate:** 1.5 billion/ha
Steinernema carpocapsae
Effectively controls larvae of:

Overwintering codling moth larvae (*Cydia pomonella*)

Application of nematodes in autumn will control overwintering codling moth larvae. As a result, pest pressure in the following spring will be considerably reduced.

**Application period:** After harvest  
**Air temperature:** > 12 °C  
**Application rate:** 1.5 billion/ha

Other target pests

The parasitic nematode Steinernema carpocapsae controls many different larvae of Gryllotalpidae, Tipulidae, Noctuidae, Pyralidae and Coleopterae such as:

- **Mole crickets** (*Gryllotalpa gryllotalpa*)  
- **Crane flies** (*Tipula spp.*)  
- **Cutworms** (*Agrotis spp.*)  
- **Duponchelia fovealis**  
- and many others

**Application rate**
0.5 Mio/m² (1 – 2 times)
Heterorhabditis bacteriophora
Provides rapid control even at low soil temperatures of:

Black vine weevil (Otiorhynchus sulcatus)
Adult vine weevils cause typical notched foliar damage on many plants. The more damaging larval stages however, feed on roots of ornamental plants, strawberries, young fruit trees and vines.

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Soil temperature: > 10 °C
Application rate: 0.5 Mio/m²

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Application rate 0.5 Mio/m² (1 – 2 times)
7 good reasons to use nematodes for pest control

✔ Effective and quick control of pest larvae
✔ Residue free pest control
✔ No re-entry time
✔ Natural product that is safe to users, consumers and the environment
✔ Improvement of pest resistance management
✔ Compatible with other biological/IPM systems
✔ Easy application using sprayers, overhead irrigation or sprinkler systems

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