

## Technical Sheet

### nemamax<sup>®</sup>

Entomopathogenic nematode *Heterorhabditis downesi*

### Description of the nematode

nemamax<sup>®</sup> contains beneficial nematodes of the species *Heterorhabditis downesi*.

### In which countries has the nemamax<sup>®</sup> nematode been isolated?

The nemamax<sup>®</sup> nematode *Heterorhabditis downesi* has been isolated in Germany, Denmark, Hungary, Ireland, Scotland, Wales, England and Italy. It is an indigenous nematode in Ireland and Scotland. Wales and England issue licences.

### What pests does nemamax<sup>®</sup> control?

The host range of nemamax<sup>®</sup> is similar to *H. megidis* and *H. bacteriophora* and comprises:

Weevil larvae (*Otiorhynchus spp.*), including pine weevil (*Hylobius abietis*)  
Chafer grubs (*Hoplia philanthus*, *Melolontha melolontha*)

### Why use nemamax<sup>®</sup>?

- nemamax<sup>®</sup> shows excellent results in field trials
- nemamax<sup>®</sup> offers better results against vine weevil larvae than other *Heterorhabditis* species in the temperature range 6–12°C.
- nemamax<sup>®</sup> offers better results against vine weevil larvae than *Steinernema* species in the temperature range 12–30°C.
- nemamax<sup>®</sup> offers better control than other nematode products against other *Otiorhynchus* species like *O. armadillo*, *O. salicicola* *O. dieckmanni*.
- nemamax<sup>®</sup> persists well in soil and in cool storage.

### How does nemamax<sup>®</sup> work?

The species follows a cruising strategy to locate potential hosts. Consequently, it disperses well in soils and substrates.

Infective juveniles of nemamax<sup>®</sup> forage for an insect host in soil, enter it through natural openings, and release bacterial cells that kill the host within 48 hours. In smaller insects, host mortality can occur in minutes.

The nematodes feed, mature and mate on the bacterial cells and degrading host tissues. As the nutrition quality within the cadaver deteriorates, the nematodes develop into infective juveniles, emerge from the cadaver and seek new hosts. Under ideal conditions, infective juveniles emerge from the cadaver approx. 12–14 days after infection.

## What is the effective temperature range?

*Heterorhabditis downesi* infects insects and causes host death at temperatures between 8° and 30°C. Highest reproduction in hosts occurs at 15–20°C.

## How to best apply nemamax®

- Remove all filters and sieves
- Use nozzles with at least 0.8 mm diameter.
- Moisten soil well.
- Spray at least 1,000 litres/ha.
- Spray early morning or during rainfall or in the evening after 6 pm.
- Within 30 minutes after application: wash nematodes into the soil using 2–5 litres/m<sup>2</sup>.
- Keep the soil moist for at least 2 weeks.

## Dosages

Crop	Growing system	Dosage nemamax®
Strawberries, blueberries, raspberries	Open field	250,000 per m <sup>2</sup>
	Bags/pots in tunnels	5,000 per litre of substrate
Nursery stock	Open field	250,000 per m <sup>2</sup>
	Container	5,000 per litre of substrate
Lawn (chafer grubs)		500,000 per m <sup>2</sup>

## Can I use nemamax® in organic production?

EU regulation 848/2018 on organic production recommends the use of natural enemies for pest and disease control. The entomopathogenic nematode in nemamax® is a natural enemy of many insect pests. It can be applied in organic production without any restrictions.

## What is the shelf life and what are the recommended storage conditions?

nemamax® should be stored in a sealed bag at 4–8°C and 50–90% humidity. The shelf life is 6 weeks.

## Compatibility with other plant protection agents?

Compatibility and suitability for tank mixes is the same as for *Heterorhabditis bacteriophora*. Please consult the compatibility list on our website: <https://www.e-nema.de/service-en/compatibility-of-pesticides/>

## How is nemamax® packaged?

nemamax® is available in packages of 10, 25, 50 and 250 million nematodes.

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