

Beneficial Nematodes

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pests





Eastern Flower Thrip



Strawberry Clipper



Strawberry Sap Beetle





Pest Control

After the second world war we are becoming mainly depending on the synthetic chemical pesticide, and we have hundreds of different types of pesticides, used:

- 1- For “Hygiene” in our homes, and
- 2- For the control of pests and diseases in our food production (Bactericides, Fungicides and insecticides..... ?)

Chemical pesticides and health?

- In recent years, there are increasing consumer pressure on both farmers and supermarkets to minimise the use of chemical pesticides in the production of the fruits and vegetables in Ireland.
- Biological pest control can play a significant role in a more safe and sustainable food production.

Bio-pesticides

- For many years scientist selecting many viable and powerful natural enemy to combat many plant pests and diseases.

A range of **bio-pesticide** products are now available commercially for the control of:

- Insect pests
- Fungal,
- Bacterial diseases,
- Weeds,
- Slugs and Snails.

Beneficial Nematodes



What are Beneficial Nematodes?

- They are tiny round worms (microscopic) found in healthy soil, and lethal to more than 250 insect pest species,



- Safe for animals and plants. Unlike chemicals, nematode applications do not require masks or other safety equipment.

How they attack the insect pest?

- Ambushers such as:
 - *Steinernema carpocapsae*
 - *Steinernema scapterisci*
- Cruisers such as:
 - **Steinernema kraussei**
 - *Heterorhabditis bacteriophora*
- Intermediate such as:
 - *Steinernema feltiae*
 - *Steinernema riobravisi*

How do they kill the
insect pests?

Advantages

- Most biological control agents may require days or weeks to kill the insect pest. However once nematodes penetrate the target pest, they kill it, in just 24 to 48 hours.
- Nematodes do not require specialised application equipment as they are compatible with standard agrochemical equipment including pressurised mist and aerial sprayers.

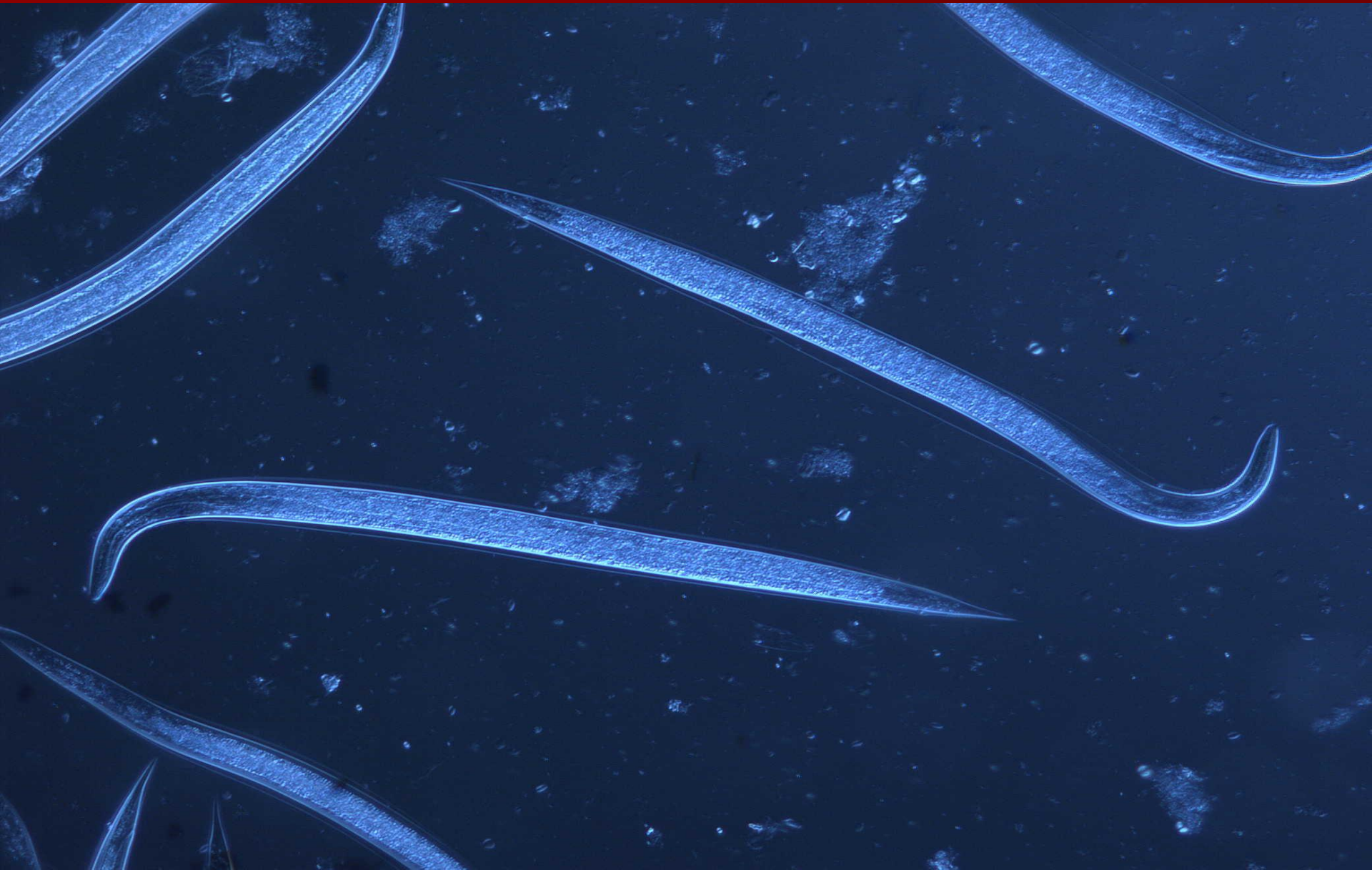
Disadvantages

- **One of the major disadvantages of the current use of beneficial nematode products is:**
- **Economic viability.** Traditionally the beneficial nematodes sold in the market, as bio-insecticidal, contain only a single nematode species, and are only able to target a single pest, or one group of insect pest.

***Steinernema feltiae*: Attacks dipterous larvae, including mushroom flies, fungus gnats, and leather jacket .**



***Steinernema carpocapsae*: Effective against lepidopterous larvae, including various webworms, cutworms, Codling moth.**



***Heterorhabditis bacteriophora*: predator of the
Vine Weevil.**



**Steinernema kraussei is a natural predator of the
Vine Weevil.**



Other disadvantages:

Commercial growers will not adopt biological control agents which do not provide the same standard of the chemical insecticides.

New Irish Invention



SuperNemos (New Invention)

SuperNemos are capable of controlling several target pest species:

- **Coleopteran:** Vine Weevils, Flea Beetles, Root Weevils, , Carrot Weevils, Chafer Grubs, Also effective against Beetle larvae which feeds on Cucumber, Tomatoes and Potatoes. And more!
- **Lepidopteron:** Caterpillars, Cutworms, cabbageworm
- **Dipterans:** Fungus Gnats Larvae, Sciarid Larvae, Leatherjackets,

The other benefit of SuperNemos:

- The field trials revealed that SuperNemos, infect insect pests between 70-90%
- Compared with the single species application which may infect insect pests between 40-60%, if they applied in the same numbers and in the same growing media.

Who use the SuperNemos

- Strawberries, raspberries and other soft fruits
- Nursery stocks
- Planted Herbs
- Turf grass
- SuperNemos product is ideal for the protection of home growing, fruit and vegetable in the back garden, from all soil insect pests attacks.