PHYTO PROTECT™

Naturally Derived
Parasitic Nematode Control

Sineria

PHYTO PROTECT™

The health of a crop is only as good as its root system and plant parasitic nematodes can cause root damage quickly - impacting crop yield and quality. Plant parasitic nematodes attach to roots and feed from the plant, which limits the plant's ability to access and utilize water and nutrients. Nematodes can also facilitate fungal invasion. The effects of plant parasitic nematodes can be devastating.

What is PhytoProtect™?

PhytoProtect™ is a highly effective and sustainable bio-nematicide used to treat and prevent plant parasitic nematodes. It is manufactured with high-quality *Sesamum indicum* plant extracts.

- Easy to mix, pre-emulsified, concentrated spray oil
- Can be used alone or with nutrients and other pesticides
- 3+ year shelf life
- Caution signal product

PhytoProtect™ Advantages

- Effective, broad spectrum nematicide
- Sustainable and environmentally friendly
- Can be used in Nematode Management Programs with other chemical nematicides, nutrients and cultural practices
- Will not harm beneficial insects, fungi, bacteria, honey bees or predatory nematodes
- Workers can re-enter the field immediately after application
- No pre or post harvest application limitations
- For use in conventional and organic production

How PhytoProtect™ Works

PhytoProtect™ controls and prevents plant parasitic nematodes using several modes of action:

Direct Action

PhytoProtect™ goes to work immediately to suffocate the nematode and damage its cuticle. PhytoProtect™ causes nematode immobilization and disorientation, making it more difficult for them to reach plant roots.

Repellency

PhytoProtect™ helps repel nematodes so that they are unable to reach plant roots. Without being able to reach roots and feed, nematodes will die after they have depleted their lipid reserves.

Indirect Action

Unlike conventional nematicides, PhytoProtect™ stimulates plant growth and increases beneficial microorganism populations in the soil. These organisms use PhytoProtect™ as an energy source, which allows them to attack nematode eggs/juveniles. Beneficial organisms also use PhytoProtect™ to produce enzymes and organic acids, which improve root and plant health.

PhytoProtect™ Host Range

PhytoProtect™ treats all plant parasitic nematodes, including, but not limited to:

- *Melodoigyne* spp. (Root-knot)
- *Heterodera* spp. (Cyst)
- *Helicotylenchus* spp. (Spiral)
- *Pratylenchus* spp. (Lesion)
- *Radopholus* spp. (Burrowing)

Field Performance

PhytoProtect™ Predictable Benefits

- Decreased nematode count
- New root hairs
- New growth and general vigor
- New and greater number of flowers
- Enhanced chlorophyll content
- Improved fruit quality and yield
- Greater shoot length

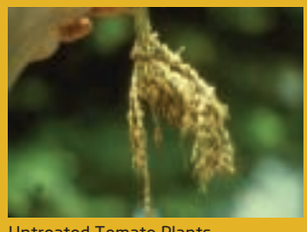
Untreated Cucumber Plants

Treated Cucumber Plants

Untreated Cucumber Plants

Treated Cucumber Plants

Efficacy Trials



Untreated Tomato Plants

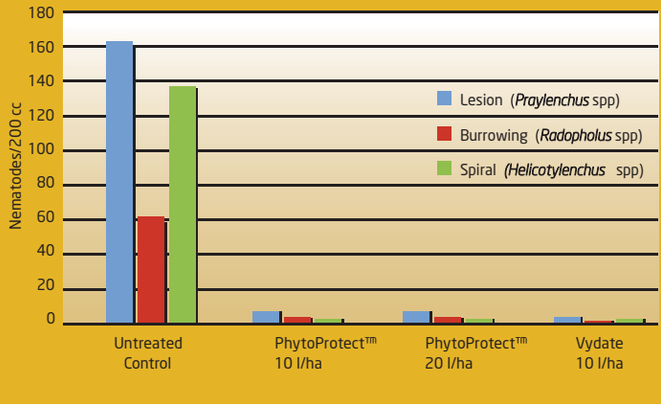
Treated Tomato Plants

Treatments & Rates / Ha (Total of 3 Applications)	% Plants With Zero Root Infestations	% Control of Infective Juveniles	% Yield Increase Over the Untreated Control
Untreated Control	0	0	-
PhytoProtect™ 10L	26	44.3	155.8
PhytoProtect™ 20L	66	82.0	222.7
Vydate 10L	31.2	75.1	180.4
PhytoProtect™ 10L + Vydate 10L	54	77.5	204.6

Tomato "Naxos Variety" Greenhouse Trial Drip Irrigation, Root - Knot Nematode *Meloidogyne incognita*. Italy, 2010 - 2011

French Beans

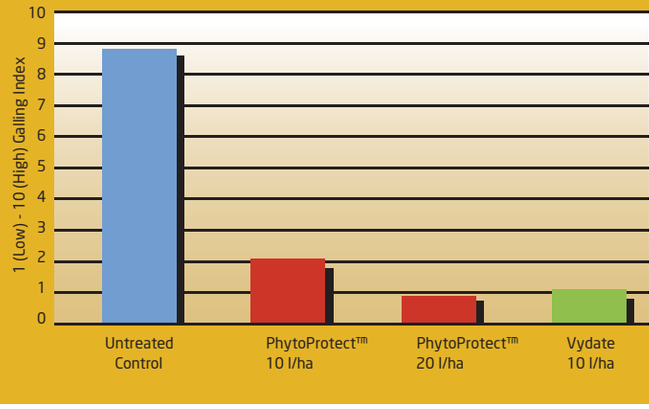
Field Drip Irrigation. Kenya, 2009



French Beans

Root-Knot Nematodes *Meloidogyne* spp

Field Trial Drip Irrigation. Kenya, 2009



Nematode affected corn roots Photo by Tom Hillyer

PHYTO PROTECT™

Recommended Rates and Application

PhytoProtect™ is ideally applied as a drip application, however may be used alternatively as a soil drench.

General: The first application of PhytoProtect™ should ideally be made at the beginning of the crop cycle. Reapply every 15 days and up to four (4) applications during the crop cycle if the nematode counts remain high. PhytoProtect™ is best applied when soils are near their field water holding capacity to avoid rapid leaching.

Drip Application: When applied by drip, best results will be achieved by injecting into the last portion of the drip irrigation cycle. Do not irrigate 24 to 72 hours after application.

Drench Application: In drench applications, PhytoProtect™ is best applied to place the product at least 5 inches (12 cm) below the soil surface.

Rates: Apply from 5 to 20 liters per application per hectare. Lower rates correspond to young plants, lower plant density and low nematode infestation level; higher rates correspond to mature plant, high plant density and high nematode infestation. The rate of application is also dictated by the number of applications during the crop life cycle. For calculating application rates taking into consideration only planted surface, consult your local PhytoProtect™ technician.

Crops

PhytoProtect™ has proven efficacy in numerous crops, including but not limited to:

- Vegetables (Cucurbits, Tomatoes, Peppers and more)
- Potatoes
- Wine and Table Grapes
- Strawberries and Blueberries
- Bananas
- Citrus

Supplied by:

Sineria

Sineria Holland BV
Randwycksingel 20-A015
6229 EE Maastricht
The Netherlands
www.sineria.com