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Product Information Sheet

Guardian for Gardens

BENEFICIAL NEMATODES FOR FLOWER and VEGETABLE PESTS

Natural Insect Control (NIC) **Guardian for Gardens** Canadian Beneficial Nematodes are a natural product that is safe for the homeowner, pets, plants and the environment! **Guardian for Gardens** contains specific Canadian Beneficial Nematodes, *Steinernema spp.* and *Heterohabditis bacteriophora*.

GARDEN PESTS

ROSE CHAFER *(Macrodactylus subspinosus*)

Rose Chafer adults: reddish brown, 1/3" beetles with black undersides and wing covers cloaked in thick, yellowish hairs. Larvae: small white grubs found throughout North America, they feed on the roots of grass and weeds. Adults chew on the flowers, leaves and fruit of grapes, roses, tree fruits, brambles, strawberries, peonies, irises, dahlias, hollyhocks and vegetables. Larvae overwinter in soil, pupate in spring and emerge as adults in late May to early June. Adults lay eggs in soil until early July, eggs hatch in about 2 weeks, grubs feed on roots until fall. Nematodes should be applied in late July after the adults are observed and in autumn to manage overwintering larvae before hibernation.

ROSE MIDGE *(Dasineura rhodophaga*)

Rose Midge are mosquito-like and 1-2 mm in length. They emerge from pupae in the soil early in the spring in synchrony with the production of new plant growth and flower buds. There are several overlapping generations per year and a single generation can be as short as 2 weeks. Populations of the midge build up until early fall and the last generation overwinters in the ground in cocoons and adult midges emerge the following spring. Females lay their eggs inside the sepals of flower buds or leafy tips. The larvae then hatch from the eggs and damage the buds and rose tips. The full grown larvae may measure up to 1.8 mm long and are sometimes reddish in color. Pupation usually occurs in the soil but pupae have been observed in the damaged rose tips. They leave the damage tips after which the buds wither, blacken, and die. Nematodes should be applied in late fall and again in early spring.

IRIS BORER *(Macronoctua onusta)*

Iris Borer adults: moths with dark brown forewings, yellowish hind wings (2" wingspan). Larvae are fat, pinkish borers with brown heads and a light stripe down the back, rows of black dots on sides; up to 2" long. Young larvae will tunnel within leaves, leaf sheaths and buds of iris, moving down into crowns and rhizomes as they develop. Soft rots usually follow larval damage. Eggs overwintering on old leaves and will hatch in late April or early May. Larvae enter leaves, feed for several weeks then pupate in the soil near rhizomes; adults emerge in late summer and lay eggs. Nematodes should be applied in late April and again in early fall.

THRIPS (Family Thripidae)

Thrip adults: slender, 1/50"-1/25" long insects; colors range from yellowish to brown or black; these fast moving insects leap or fly away on narrow, fringed wings when disturbed. Adults suck contents of plant cells from a variety of garden plants, flowers, fruits and shade trees. Their feeding leaves silvery speckling or streaks on leaves; severe infestations stunt plants and damage flowers and developing fruit and some species spread tomato spotted wilt virus. Adults overwinter in sod, plant debris, or cracks in bark becoming active in early spring. Eggs are laid in plant tissue and hatch in 3-5 days. Up to 15 generations per year outdoors, may breed continuously in greenhouses. Nematodes should be applied weekly throughout the growing season.

VEGETABLE GARDEN PESTS

ARMYWORM, (*Pseudaletia unipuncta)*

Crops: corn, oats, wheat and other species of the grass family. Adult Moths: Pale grey, brown with a wingspread of about 1.27cm. The center of each forewing is marked with a white dot. Larvae in Soil: Apply Nematodes in June (first generation) and late August - September (second generation).

FALL ARMYWORM, (*Spodoptera frugiperda)*

Crops: Corn, sorghums, grasses, alfalfa beans, potatoes, turnips, tomatoes, cabbage and cotton. Adult Moths: Grey with a 3cm wingspan. Larvae in Soil: Apply Nematodes in late August to September.

GUARDIAN FOR GARDENS: Beneficial Nematodes

BLACK CUTWORMS, (***Agrotis ipsilon)***

Crops: Tomatoes, turnips, radish, cabbage, cauliflower, corn, oats, barley, potatoes and tobacco. Adult Moths: Dark brown with wingspan of 2.54cm. Larvae in Soil: Apply Nematodes in late June to July (first generation) and mid September (second generation).

VARIEGATED CUTWORM, ***(Peridroma saucia)***

Crops: Most vegetables, asparagus, cole crops, kohlrabi, radish, turnips, kale, cucumber, pumpkin, squash, melon, lettuce, potatoes, spinach. Adult Moths: Thick bodied greyish brown coloured moth with wingspan of 2cm. Larvae in Soil: Apply Nematodes spring (first generation) and mid summer (second generation).

CARROT RUST FLY, (***Psila rosae)***

Crops: Carrots, celery, parsnip, parsley and fennel. Adult Flies: Shiny, metallic green/black with yellow legs and head, present from late May to end of June. Larvae in Soil: Apply Nematodes in July (first generation) and September (second generation).

CARROT WEEVIL, (***Listromotus oregonensis***)

Crops: Carrots, celery, parsnip, dill and parsley. Adult Weevil: Coppery brown, hard shelled weevil present in mid / late May. Larvae in Soil: Apply Nematodes in June.

CRUCIFER FLEA BEETLES, (***Phyllotreta albionica)***

Crops: Cabbage and many plants of the Cruciferae family. Adult Beetles: Small, oval-shaped, blackish with a bright blue sheen on their back, measuring 0.08cm to 0.32cm in length. Larvae in Soil: Apply Nematodes in July. NIC Tip: Removing leaf debris at the end of the season helps minimize the number of locations the beetles can over winter.

ONION MAGGOT, (***Delia antique***)

Crops: Onions, leeks, chives, garlic, scallion and shallots. Adults Flies: Gray humpbacked 0.64cm present from mid May to end of June. Larvae in Soil: Apply Nematodes July (first generation) and September (second generation).

NIC TIP - For moths use pheromone lures and traps. For flies use row cover over seedlings. For Beetles remove plant debris.

Before Application

- Store **Guardian for Gardens** in a refrigerator 5-7^{o}C (41-45^{o}F) for a maximum of 8 weeks; do not freeze.
- Water treatment area well before applying **Guardian for Gardens**. The soil must be moist to the level of the pest. Once **Guardian for Gardens** is applied a light watering daily for 3 to 4 days is required. Nematodes use the water channels to travel to find their prey.
- Do not apply in bright sunlight. The best time for application is on a cloudy day or late in the afternoon.
- **Guardian for Gardens** should not be mixed with fertilizers or pesticides. Fertilizer can be applied prior or after **Guardian for Gardens** applications.

Application

1. Open **Guardian for Gardens** beneficial nematode package, remove sponge and place in 1L (.26 gal) of cool water then wring out the sponge 5 to 10 times. Also rinse plastic bag to release any remaining nematodes, then remove bag (please recycle). This will make a nematode concentrate.
2. Apply nematode concentrate with an additional 20L (5.28gal) of water to your treatment area of 46m^2 (500ft^2). Nematodes can be applied with NIC's Hose End Sprayer, watering can or backpack sprayer.
3. NIC's Hose End Sprayer = 80L (20gal) finished product, for other sprayers, set sprayer to allow the most water to be applied. Fill bottle of Hose End Sprayer with nematode concentrate and water your treatment area. Prior to refilling the Hose End Sprayer bottle stir the nematode concentrate vigorously as the nematodes will settle to the bottom of the concentrate container.
4. Use all **Guardian for Gardens** within a 2 hour period.

Note: Application of Nematodes should take approximately 45 minutes to apply using our hose end sprayer

See our **YouTube** video on "YouTube NIC How to Apply Nematodes" **https://www.youtube.com/channel/UCgDRsllNTz-YOsjf079bnAQ**

For further Information go to: **www.naturalinsectcontrol.com**

GUARDIAN FOR GARDENS: Beneficial Nematodes