

# Advanced Biocontrol for **Black Vine Weevil**

## Nemasys<sup>®</sup> L

**Nemasys L** is a proprietary formulation of the naturally occurring insect-parasitic nematode *Steinernema kraussei* that searches out and enters insect pests. Once inside, nematodes release symbiotic bacteria that quickly kill targeted insects. Reproduction inside the insect releases a new generation of infective nematodes that disperse in search of further prey.

Nemasys L is active against larval and pupal stages of the black vine weevil (*Otiorhynchus sulcatus*). With no restricted entry interval (REI = 0) and no adverse effects on beneficial insects and soil microorganisms, Nemasys L is ideally suited for use in integrated pest management programs as an important tool for resistance management, worker safety, and environmental responsibility.



Entomopathogenic  
Nematode



Black Vine Weevil Larva<sup>1</sup>



Black Vine Weevil Adult<sup>2</sup>

### Black Vine Weevil Natural History and Life Cycle

The black vine weevil, also known as the taxus weevil, is a species of snout beetle that feeds as an adult on plant foliage and whose larval form feeds on roots and crowns. Adult black vine weevils are flightless and emerge in mid-June and are about ¾ inch long, oval, and dull black in color. Adults feed at night and hide under leaf litter, mulch, or plant bark during the day. All adults are females and able to produce fertile eggs without mating. Adults require four to five weeks of feeding before eggs develop and egg laying begins. Each female is capable of producing 300 or more eggs that are laid throughout the growing season. Eggs hatch in 10 to 14 days depending on temperature. Young larvae tunnel into the soil and begin feeding on plant roots. Larvae feed all summer and into the fall before moving below the frost line to overwinter. Larvae resume feeding in the spring and inflict the greatest amount of root damage. Some adults may overwinter in enclosures and protected areas and begin feeding and egg laying much earlier in the spring. Therefore, any larval stage can be found in the soil at one time. Pupae can be found in early April through mid-June and take about two weeks to develop to an adult. Black vine weevils only have one generation per year.

## Black Vine Weevil Damage

Black vine weevils are pests of over 200 plants, ranging from weeds and shrubs to greenhouse and nursery plants. Broadleaf evergreens are common hosts. Adult weevils feed on foliage by chewing on the edges of leaves, producing c-shaped notches.



Damage Caused by Adult



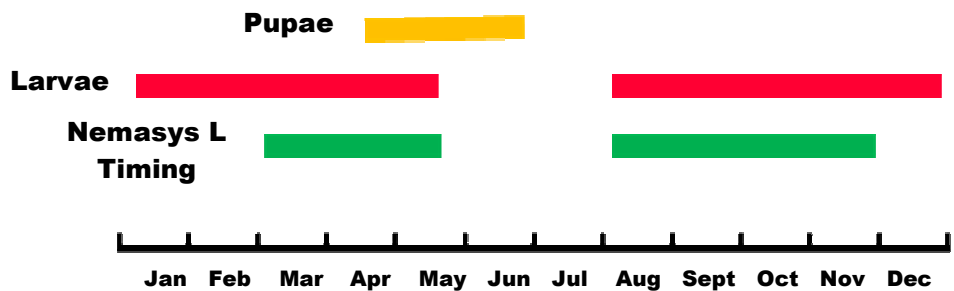
Damage Caused by Larvae

Larvae feed on the roots and crowns of plants and are more destructive than adults. Large larva can girdle the plant crown, blocking water and nutrient movement to the foliage. Infested plants have stunted growth and leaves that turn yellow and wilt. Young plants cannot withstand high larval populations and often are killed, whereas mature plants can tolerate high populations, but may die if transplanted. Because adults are flightless, infestations spread slowly and initially may be introduced from infected nursery stock. Monitor adult population in mid-June by looking for fresh feeding notches on plant foliage, or by using a flashlight to observe adult weevils at night. Adults prefer mature foliage and often are found within the inner canopy.

## Nemasys L Application Details

Apply Nemasys L at a rate of two billion nematodes per acre (5 billion per hectare) in a minimum water volume of 50 gallons per acre (450 L per ha). Immediately follow applications with 0.125-0.250 inch (0.3175-0.635 cm) of irrigation water to move nematodes into the soil profile.

Soil temperatures should be 41 °F (5 °C) or above when using Nemasys L. Applications should be made when larvae and pupae are in the soil/media. Nematodes will not control the egg stage or adult weevils.



Optimum results are achieved when nematodes are applied to moist soil in early morning or evening to avoid heat and direct sunlight. If soil temperatures are higher than 86 °F (30 °C), irrigate with at least 0.1 inch (.25 cm) of water to reduce temperature prior to applying Nemasys L. Remove all sprayer filters of 50 mesh or finer and maintain pump pressure below 300 psi/2000 kPa/20 bar to avoid damaging nematodes.

**ALWAYS REFER TO THE LABEL FOR APPLICATION DIRECTIONS AND RESTRICTIONS.**

Nemasys® is a registered trademark of Becker Underwood.

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