



**BioWorks®**  
How You Grow Matters™



# NemaShield® HB

## Directions for Use

The insect-parasitic nematode *Heterorhabditis bacteriophora* biologically controls soil-dwelling and boring larvae (caterpillars) of many species of beetles and flies. Target hosts are: cutworms, plant-boring larvae such as the banana moth, various other caterpillars, vine weevil larvae, white grubs and leatherjackets. This nematode is especially effective against the black vine weevil, *Otiiorhynchus sulcatus*.

### **Mode of Action**

The nematode actively searches for insect larva and enters the larva through a natural body opening, sometimes directly through the skin. The nematode excretes specific bacteria from its digestive tract before it starts to feed. The bacteria multiply very rapidly and convert the host tissue into products that can easily be taken up by the nematodes. The larva dies within a few days and the color changes to orange-red or red-brown. The nematodes multiply and develop within the dead insect. As soon as the nematodes are in the infectious third stage, they leave the old host and start searching for new larvae. When there is no new host present, the nematode population will slowly decrease.

### **Application**

One package contains at least 50 million nematodes (sufficient for approximately 2,000 sq. ft. under low to low-moderate infestation). The nematodes should be applied as soon as insect larvae and/or damage is expected or observed. Large packages containing 500 million nematodes are available. Recommended application per acre is a minimum of 1 billion nematodes; 2 billion nematodes should be applied under moderate to higher infestation (50 million nematodes per 1,000 sq. ft.).

#### **Black Vine Weevil:**

Introduce the nematodes as soon as the presence of the vine weevil is suspected. One 50 million package will treat approximately 2,000 sq. ft. (50 million nematodes should be used on 1,000 sq. ft. with moderate to higher infestation). Every crop requires its own introduction strategy. Contact your supplier for more information.

#### **Boring Insects:**

The affected crop or plant parts must be sprayed with, or immersed in the nematode solution. Keep the crop moist for as long as possible after application.

#### **Other Soil-Dwelling Insects:**

Apply following the directions for the Black Vine Weevil.



**BioWorks®**  
How You Grow Matters™



## Application Recommendations

At least 50 million nematodes are supplied as infectious third stage larva (L3) together with inert carrying material in a 50 million unit package.

### To prepare the solution

Empty the contents of the package into a bucket containing about one gallon of cool water (60 – 75° F), then stir. Let the entire solution soak for 5 minutes. Stir again thoroughly, then transfer the contents into a larger barrel or spray tank and fill it up with water until the required amount of solution is reached. Apply the solution immediately, using a watering can, irrigation system, knapsack or motorized sprayer (maximum pressure of 150 psi). To avoid blockages, all screens should be removed. The spray nozzle opening should be at least 1 mm (1,000 micron). Evenly spread the solution over the ground area to be treated. Continuous agitation should take place to prevent the nematodes from settling out. Water plants after application to wash the nematodes off the foliage and into the ground. Keep the soil moist during the first two weeks after application.

### Important

For optimum results, the moisture content of the soil must be high and the temperature must be 50 – 85° F. Nematodes are very susceptible to UV light. Do not use them in direct sunlight; apply on a cloudy day or in the late afternoon. Store the product in a cool and dark place (35 – 44° F): **DO NOT FREEZE.** Product should be used prior to the expiration date indicated on the package (dd/mm/yy). NemaShield HB is compatible with all other beneficial organisms, including RootShield® and PlantShield® HC. It is also compatible with soils previously treated with botanical insecticides like pyrethrins, rotenone, nicotine sulfate and neem-based products. It is not compatible with many organophosphates and carbamates. Do not combine with other pesticides.