



Hypoaspis

[*Stratiolaelaps (=Hypoaspis) miles*]

Fungus Gnat Predator

by Applied Bio-nomics

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Target Pests

Fungus gnats (*Bradysia* spp.) –larvae only

Western flower thrips (*Frankliniella occidentalis*) – pupal instars only

Larval stages of other soil borne pests, including springtails (Collembola), nematodes, mold mites, spider mites, cactus root mealybug, strawberry root weevil, and black vine root weevil in the soil

Description

Hypoaspis is a native species of soil-dwelling mite, which feeds on small insects and mites, but prefers fungus gnat larvae. It has a swarming behavior on all larval stages of pests. Adults are tan in color, less than 1/20th inch long (1 mm). They move rapidly over the soil surface.

Use as a Biological Control

- Hypoaspis are used primarily to control young larvae of fungus gnats in the soil. Fungus gnats cause feeding damage to roots and transmit *Pythium*, *Phytophthora* and *Fusarium* that cause root rot diseases. They are also a nuisance to people. Identification is important because they look like shore flies, but their antennae are long and bead-like, with long legs and a prominent Y shape in the wing veins. Fungus gnats are poor flyers.
- They also help control soil stages of thrips and may account for up to 30% of Western flower thrips control. Hypoaspis do not control shore flies or moth flies, but will feed on other soil organisms, such as springtails and root mealybugs.
- They have been used successfully in bedding and potted plant production, seedling and cutting propagation, and poinsettia stock.
- They adapt well to the various growth media and capillary mats used in plant production, but do not survive freezing or flooding conditions.

Monitoring Tips

Use a headband magnifier or 10-15 X hand lens to look for the mites in the top inch (1-2 centimeters) of soil or growth media and at the base of plants.

Life Cycle

The complete life cycle takes 18 days at 68° F (20° C) and as short as 13 days at warmer temperatures.

- The sex ratio is equal, 1:1 females to males. The males are much smaller and hard to see.
- Eggs hatch in 2-3 days into young nymphs
- Each Hypoaspis consumes 1-5 prey per day. It can also survive for very long periods as a scavenger, living on algae and plant debris.

Populations will naturally fluctuate throughout the growing season.

Product Information

Hypoaspis is supplied in a pasteurized peat/bran mixture in a one liter container with a shaker lid for distributing the mixture over the soil.

There are 25,000 predators per liter, or about 25 predators per cc. The mixture also contains another species of mite as a food source for the predators.

To check the product for live mites, inspect under 10-15 X magnification. The predators are tan and move quickly compared to the food source mites, which are white or translucent, and move slowly.

Apply soon after receipt. If necessary, containers can be held, out of direct sunlight, at 60-70° F (16-21° C) for up to 7 days. **Do not refrigerate.**

Introduction Rates

Hypoaspis is most effective when applied before fungus gnat populations become established or while numbers are still low. In general one application of from 6 to 60 *Hypoaspis* per container or ft² per crop cycle is sufficient, if used early in the season.

- Soil Culture – Apply 1 L/1000 ft² (100 m²) to the soil at the time of planting. Be sure to treat wet, exposed areas of soil, where fungus gnats are likely to breed.
- Sawdust bag or Rockwool culture – Apply 3-6 L/acre (8-16 L/ hectare) to at least one plant in every bag or rockwool slab. Vegetable transplants may be treated 1 week before planting out.
- Pot Culture – Apply 1 L/ 1000 ft² (100 m²) of bench area. Treat the floor of the greenhouse if it provides conditions for fungus gnats to breed and occasionally treat the perimeter of the greenhouse.

It is not necessary to apply mites to every flat of bedding plants if applications are done early, at full rate, to allow them time to spread to all flats. Mites can also be applied to propagation media before striking cuttings.

For Best Results

- Do not mix predators into the growth media before potting because they do not survive.
- Hypoaspis will eat beneficial nematodes; Atheta will eat Hypoaspis.
- Apply Hypoaspis shortly after planting as a prophylactic treatment, before fungus gnat levels reach more than 20 adults/trap/week and continue
- To control high numbers of fungus gnats (above 75 flies per card), apply *Bacillus thuringiensis israelensis* (Bti) (Gnatrol or Vectobac®) or the beneficial insect parasitic nematode *Steinernema feltiae* for fastest control. Both control the larval stage of fungus gnats. Neither Bti nor beneficial nematodes harms Hypoaspis.

Conventional Pesticides

- In general, do not apply Hypoaspis to soil that has been treated with lime or pesticides (particularly soil treated with diazinon). Cygon, Decis, Dursban, Intercept, Lorsban, Malathion, Sevin, Trumpet and Vydate pesticides create residual damage for over a month. Plant Fume (Sulfolep) remains harmful for 70 days.
- It is likely that foliar sprays are less harmful than soil drenches, depending upon how much pesticide reaches the soil surface.
- Fungicide drenches containing benzimidazoles are known to reduce reproduction of Hypoaspis.
- See our Pesticide Toxicity Chart that shows expected effects of pesticides on Hypoaspis.

Pesticides Compatible with Hypoaspis

Insecticides	Fungicide Sprays	Growth Regulators
Pirimor (pirimicarb)	Daconil 2787 (chlorothalonil)	B-Nine (daminozide)
Vendex (fenbutation oxide)	ExothermTermil (chlorothalonil)	Cyocel (chlormequat chloride)
Dipel (<i>Bacillus thuringiensis</i>)	Karathane (dinocap)	
Enstar (kinoprene)	Meltatox (dodemorph acetate)	
	Rovral (iprodione)	