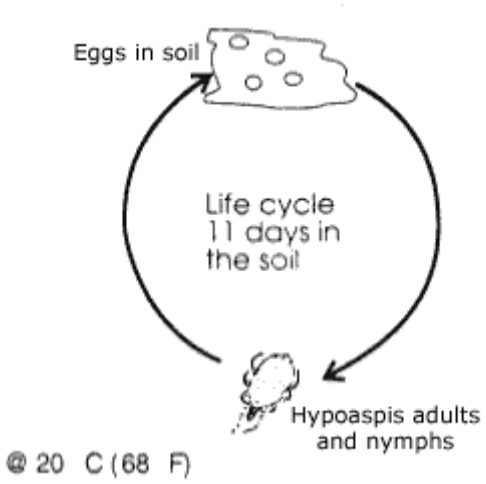
Hypoaspis [*Stratiolaelaps (Hypoaspis) miles*]



Target Pests
Fungus gnats (*Bradysia* spp.)
Western flower thrips (*Frankliniella occidentalis*)

Description
'Hypoaspis' is a native species of soil-dwelling mite, which feeds on small insects and mites (e.g., springtails, root mealybug crawlers, spider mites).

Adults are tan in color, less than 1 mm long (1/20th inch). 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 or planting media (for information on fungus gnats, see Sheet 330). They also helps control soil stages of thrips and may account for up to 30% of thrips control (see Sheet 320). 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 1-2 centimeters (1 inch) of soil or growth media and at the base of plants.

Life Cycle
The complete life cycle takes about 18 days at 20^{o}C (68^{o}F).
- The sex ratio is equal, 1:1 females to males.
- Eggs hatch in 2-3 days into young nymphs
- Each Hypoaspis consumes 1-5 prey per day. It can also survive as a scavenger, feeding 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 1 L (1 qt) containers with a shaker lid for distributing the mixture over the soil.

There are 15,000-20,000 predators per litre, or about 15-20 predators per cc. The mixture may also may contain another species of mite as a food source for the predators.

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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.

The predators should be applied as soon as received. **Do not refrigerate**.
If necessary, containers can be held, stored on their side out of direct sunlight, at 16-21^{o}C (60-70^{o}F) for up to 7 days.

Introduction Rates
Hypoaspis is most effective when applied before fungus gnat population become established or while numbers are still low (below 10/trap/week). Two applications of *Hypoaspis* per crop cycle is usually sufficient used early in the season. The second application should be made 2-3 weeks after the first.

- Soil Culture – Apply 50 Hypoaspis/ m^2 to the soil at the time of planting, repeated in 2-3 weeks. Be sure to treat wet, exposed areas of soil, where fungus gnats are likely to breed.

- Sawdust bag or Rockwool culture – Apply 50 Hypoaspis/ m^2, 500,000/ hectare. Apply 4cc (1tsp.) per every 2nd. bag or rockwool slab, repeat in 2-3 weeks.
- Pot Culture – Apply 1 L/ 200 m^2 (2000 ft^2) of bench area. Treat the floor of the greenhouse weekly if it provides wet 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.
- Apply Hypoaspis shortly within the first few weeks of planting and before fungus gnat levels reach more than 20 adults/trap/week.
- To control high numbers of fungus gnats, use of Hypoaspis can be integrated with insect parasitic nematodes (e.g., *Steinernema* spp.) and *Bacillus thurinigiensis israelensis* (BTI) (Vectobac®), both of which control the larval stage of fungus gnats.

Using Pesticide
See Sheet 180 for expected effects of pesticides on Hypoaspis. In general, do not apply Hypoaspis to soil that has been treated with lime or pesticides (particularly soil treated with diazinon).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.

Microbial pesticides, such as Vectobac® (BTI) will not harm Hypoaspis.

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