



Aphidius (*A. colemani*, *A. ervi*, *A. matricariae*) Aphid Parasite

DESCRIPTION:

Aphidius species are a group of native parasitic wasps, frequently found parasitizing aphids in greenhouses and outdoor crops. Adults are tiny, dark colored, non-stinging wasps, up to 1/8-inch (2-3 mm) long. Larvae develop entirely inside host aphids, which eventually become rigid mummies when the larvae pupate. *Aphidius* is an outstanding searcher, and can locate new aphid colonies even when aphid populations are low.

TARGET PEST:

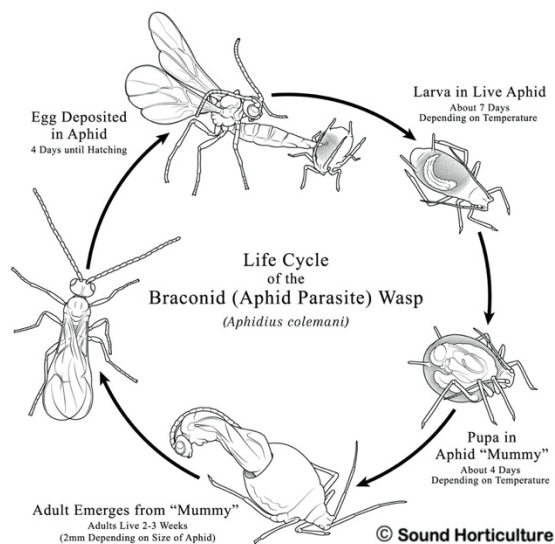
***Aphidius matricariae*:** Green peach aphid (*Myzus persicae*) & related aphids

***Aphidius colemani*:** Melon aphid (*Aphis gossypii*)

***Aphidius ervi*:** Potato aphid (*Macrosiphum euphorbiae*)



Aphidius spp.



LIFE CYCLE:

A complete life cycle takes 10 days at 77°F (25°C) and 2 weeks at 70°F (21 °C). Sex ratio in the population is about equal, although there may be slightly more females than males (50-60% females).

Each female lays about 100 eggs in aphids, but may attack 200 to 300 aphids in the process. The larvae develop entirely inside the aphids and do not kill their host until the wasp larva is ready to pupate. The larvae pupate inside the aphid's body, which becomes a rigid, leathery, golden brown mummy. Adults emerge from the mummies by cutting an exit hole in the top. The empty mummy remains on the leaf surface. The size of the adult parasite and the number of eggs it can lay depends on the size of the aphid it came from.

MONITORING TIPS:

Use a 10-15 X lens to inspect aphid mummies for round holes in the hind end, which indicates the adult parasites have emerged. A ragged emergence hole, in the top (midback) of the mummy indicates a hyperparasite has emerged.

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USE IN BIOLOGICAL CONTROL:

Aphidius matricariae parasitizes about 40 aphid species, including green peach aphid and closely related species.

Optimum conditions are daytime temperatures of 64-77 °F (18-25 °C) and relative humidity 60-80%. *Aphidius* is not affected by short-day induced diapause, so it can be used year round.

Aphidius alone will not provide control when aphid populations are high, but can be used with *Aphidoletes* and lady beetles to provide control. Effectiveness may be reduced in late summer when *Aphidius* may be attacked by naturally occurring parasitic wasps (hyperparasites).

PRODUCT INFORMATION:

Aphidius is shipped either as parasitized aphid mummies (pupae) from which adults will emerge, or as newly emerged adults. The advantage of shipping adults is that they usually arrive pre-mated and the supplier can ensure they are sent without hyperparasites. Adults should be released immediately by walking along the rows, allowing them to fly out of the container. If necessary, parasitized aphid mummies may be held at 39-50 °F (4-10 °C) for up to 3 days.

INTRODUCTION RATES:

Aphidius is most effective when aphid populations are low. Parasites can be introduced at low rates before aphids are detected in greenhouses or when aphids are likely to move onto crops outdoors. When aphids have been detected in a crop, higher release rates should be used over a period of at least 3 weeks.

Because of the time it takes for larvae to develop inside aphid mummies, use at least two releases one week apart to establish overlapping generations of the parasite. Most of the parasitized aphids leave the plant before mummies are formed and it has been found that if 10% of aphids found on leaves are mummies, that the population should soon collapse (Ramakers, 1989).

General Introduction Rates:

- Before aphids are detected — 400 *Aphidius*/acre weekly (1,000/ha)
- After aphids are established — 2,000 *Aphidius*/acre (5,000/ha) 2-3 times, one week apart.

Specific Crops:

- Peppers: Before aphids are detected: 400 *Aphidius*/acre weekly. After aphids are established: 2,000 *Aphidius*/acre 2-3 times or until 10% of aphids on plants are mummies.
- Tomatoes: 1 *Aphidius*/10 plants, weekly for 2 weeks.
- Cucumbers — 1 *Aphidius*/plant, weekly.
- Ornamentals and outdoors — 0.1-3 *Aphidius*/10ft² (m²) or 0.1-5 *Aphidius*/plant, weekly or until control is evident.

*Note: The yellow sticky traps used for monitoring pests also trap *Aphidius*. However, they are not attracted to blue sticky traps, which can be used for monitoring thrips where *Aphidius* is being released for aphid control.

FOR BEST RESULTS:

During spring and summer, aphid populations grow too fast to be controlled by the parasite alone. Therefore it is advisable to introduce additional aphid predators such as *Aphidoletes aphidimyza*.

*Note: In gardens, wash high populations of aphids from plants with a strong water spray before introducing the aphid parasite.

USING CHEMICALS:

Aphidius matricariae is likely to be sensitive to the same pesticides as *Encarsia formosa* (see *Encarsia*).

Growth regulators used in crop production should not be harmful to *Aphidius*.

Spreader-stickers are likely to be harmful to *Aphidius* on contact, but do not have residual effect.

Insecticidal soap can be used to reduce aphid numbers in hot spots without harming the pupal stage of *Aphidius*.

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