

Aphidius colemani

A parasitoid wasp for control of aphids



(1) Female *Aphidius* wasp inserting her egg into an aphid (2) Parasitised aphids (mummies) beside healthy aphids (3) Empty aphid mummy with round hole through which adult wasp has emerged. Images 1 & 2: Denis Crawford.

Key target pests

- Green peach aphid
- Cotton aphid

Advantages

- Ideal for preventative treatment
- Adapted to finding aphids at low population densities
- Attack adult and juvenile aphids
- Able to establish and spread quickly within the crop
- Can reduce aphid pressure rapidly due to a short generation time

Biology and description

Aphidius colemani wasps are recognised worldwide as valuable natural enemies of many common aphid species including green peach aphid and cotton aphid. They are small parasitoid wasps (2-3 mm long) that specifically target aphids and are harmless to other animals.

The female wasps can parasitise up to 300 aphids over a period of just a few days. They use the odour of infested plants and the aphid's honeydew secretion to locate their victims.

Once the female wasp has found a suitable aphid she inserts an egg into its body. After several days a wasp maggot hatches and feeds on the aphid host from within, eventually killing it. At this point it is easy to recognise the parasitised aphid (mummy) because it appears bloated and takes on a shiny bronze/gold colour. The wasp pupates within the mummy and emerges as an adult, ready to mate, feed and continue the cycle.

Development from egg to adult takes about 12 days at 25°C. Adults have a lifespan of 2-3 weeks provided they have access to water and nectar/honeydew.

Suitable crop environments

Aphidius can be used in any crop that hosts susceptible aphids. These wasps can be deployed in both greenhouse and open field production. They form an important part of IPM programs in nurseries, ornamentals, cannabis, and a wide range of fruit and vegetable crops.

Aphidius colemani are active at temperatures as low as 15°C but optimal conditions are 18 - 25°C at 60 - 80% relative humidity.

Beneficial insects, especially tiny wasps, prefer a protected environment. They will perform best in a crop that has good foliage development, is well irrigated and free from pesticide residues and dust.

Pack size, storage and handling

Aphidius are supplied as pupae in packs of 500. Adult wasps will begin to emerge in transit or shortly after arrival. They should be released as soon as possible after adult activity is detected. If necessary, they can be stored in the container for a couple of days at 6-12°C.

When to release

Aphidius should be introduced preventatively or from the first detection of aphid activity. Use sticky traps and inspect crops regularly to detect the presence of aphids.

How to release

Before release, check prior history of chemical applications to ensure toxic residues are no longer present. See notes on chemical use below.

Aphidius wasps are highly mobile and well adapted to finding aphids within the crop. To release them, simply open the tub within the area that is to be treated and allow



(1) Adult Aphidius wasp (2) A high level of parasitism in a capsicum crop (3) Aphidius wasps ready for release. Image 1: Biobest.

the wasps to fly out. The remaining mummies can then be tapped onto foliage at several release points or placed in [release boxes](#) hanging on the plants.

Concentrate releases in hotspots if possible. Avoid placing mummies directly on soil or substrate and make sure they remain dry and are not removed for at least a few days.

Monitoring after release

It is not easy to find adult wasps after release. However it should be possible to observe mummies on leaves 10-14 days after the first application. The presence of a round hole at the back of the mummy indicates that an adult wasp has emerged. Effective establishment should result in a reduced pest population and healthy new growth, free of honeydew and sooty mould. Control is typically achieved once parasitism rates reach 80%.

Recommended release rates

Release rates will vary depending on the crop and level of infestation. The table below is only a guide - contact us for specific recommendations.

Situation	Rate (per release)	No. releases	Interval
Preventative	0.25 wasps/m ²	as required	1-2 weeks
Curative	0.5-2 wasps/m ²	minimum 3	1 week

Unlike chemicals, when it comes to beneficials, more is always better. However, they are costly to produce and our goal is to achieve the best results at minimal expense. There are many factors to consider, including the value of the crop, the severity of the pest outbreak and the activity (or otherwise) of naturally occurring beneficial species.

As a general rule, multiple releases of modest numbers is better than a single large release. This reduces risk, improves establishment and accelerates the development of multiple overlapping generations. In most cases our releases are inoculative and we anticipate that our beneficials will establish and breed up within the crop to give extended protection.

Cultural practices to aid establishment

Watch for ant activity as aggressive ant populations can interfere with wasp establishment. Ants may need to be controlled if this is the case.

There are many naturally occurring aphid biocontrol agents that can work with Aphidius wasps to help growers achieve a great outcome without the need for pesticides. These include lacewings, hoverflies and predatory ladybirds. In outdoor crops conservation biocontrol techniques should be employed to attract and encourage a variety of naturally occurring aphid biocontrol agents and support introduced Aphidius wasps.

Complementary biocontrol options

Aphidius are most effective when introduced preventatively or used to treat low level aphid infestations. [Lacewings](#) and [Spotted ladybirds](#) are useful additional tools for treating aphid hotspots and heavy infestations.

Chemical use

Aphids have a history of rapidly developing resistance to pesticides. These chemicals may be useful tools but they should only be used as a last resort and with a clear understanding of their efficacy, impact on beneficial insects and the need to conserve them for the future. Overuse of pesticides is counter-productive especially with difficult pests such as aphids.

Aphidius and other natural enemies of aphids can be very effective but they are delicate organisms and are easily harmed by pesticides. Some insecticides (e.g. synthetic pyrethroids, organophosphates and neonicotinoids) can have residual toxicity that is harmful to Aphidius for many weeks.

If pesticides are required, always check for side-effects and select products that are least harmful to Aphidius and other key beneficials in your IPM program. Consult the [Biobest side-effects manual](#) online or via the app.