

Green Lacewing tech sheet



Our Green Lacewings (*Mallada signatus*) are hardy, generalist predators that feed on many small insects including aphids, caterpillars, moth eggs, scale insects, mealybugs, psyllids, and lace bugs. They are among the most common and widely distributed native lacewings in Australia.

Adults are green, 15 mm long, and have large 'lacey' wings. They live for 3-4 weeks, feeding on nectar, pollen and honeydew. Adult female Lacewings lay up to 600 eggs. Each egg sits on the end of a slender stalk.

Green Lacewing larvae are often called 'trash carriers' or 'junk bugs' because they carry the remains of their prey on their backs. They have two pairs of hollow jaws which they use to grasp and then suck out the body fluids of their prey. Larvae range in size from 2 mm at first emergence to 8 mm just before they pupate. They pass through three moults before pupating inside a silken cocoon. Adult females start laying eggs about a week after emergence.

Our Lacewings are supplied either as adults or eggs (from which larvae hatch in transit or shortly after arrival). Eggs are packed with a carrier medium (rice hulls) and a small quantity of sterilised moth eggs for the larvae to feed on. Adults are packed in ventilated plastic jars with a supply of honey.

When to release

Lacewings occur naturally in many outdoor crops, however natural populations may not be sufficient to give economic control of key pests.

Adult Lacewings can be released in outdoor settings (such as orchards and vineyards) to boost natural populations early in the season. Adults may also be applied in these environments to fast track re-establishment if the natural population has been lost or reduced due to the use of disruptive pesticides.

Lacewing larvae are recommended for the treatment of pest hotspots in both outdoor and protected crops. Best results are achieved when they are applied before pests reach damaging levels.

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.

Adult Lacewings should be released as soon as possible after delivery. If necessary they can be stored in the dark for up to 3 days at 10-18°C. To release them, simply open the jar and gently tap them out onto foliage.

If you have ordered **Lacewing eggs**, we recommend waiting until the larvae emerge and then releasing them. When your package arrives, check for emergence by looking for movement inside the container. Freshly hatched larvae are tiny (just visible to the naked eye).

Once they have emerged, **Lacewing larvae** can be sprinkled directly onto foliage in pest hotspots, or placed inside a Lacewing Release Box. These boxes provide shelter for the larvae until they are ready to search for food. Release boxes are ideal for use in situations where it is preferable to avoid sprinkling the carrier medium onto the crop.

A generalist predator

Key target pests

- Aphids
- Caterpillars
- Mealybugs
- Scale insects

Advantages

- Prey on a broad range of pests
- Useful in situations where no specific biocontrol agents are available
- Active under a wide range of environmental conditions
- Larvae provide efficient hotspot treatment when used as a 'biological insecticide'

Pack size

500 eggs
2,000 eggs
100 adults

Suitable crop environments

Green Lacewings are most commonly used in:

- Orchards
- Nurseries
- Parks and gardens

They occur naturally in many outdoor tree and vine crops and they are well suited to these environments. In settings like orchards and vineyards it is possible to establish a breeding population for long term management of target pests.

Green Lacewings rarely establish in protected crops and low-growing vegetation. However, hotspot treatment using the larval stage can still be highly effective in these situations.

After release

Lacewing adults disperse rapidly and the females quickly begin laying eggs. Adults may be difficult to find after release. Eggs should be relatively easy to find, and looking for eggs on foliage within the treated area is the best way to check for establishment. Within a few weeks it should also be possible to see evidence of large larvae moving on foliage, carrying pest corpses and other debris on their backs.

Lacewing larvae begin feeding on target pests soon after release.

Recommended release rates

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, 2-3 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 long term control.

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. of releases | Release interval |
|--|-----------------------------|-----------------|------------------|
| Outdoor crops | 400-600 adults/ha | 1-3 | 2 weeks |
| Hotspot treatment (outdoor or protected crops) | 10-50 larvae/m ² | as required | 1-2 weeks |

Cultural practices to aid establishment

- Ants are often associated with aphid, mealybug and scale infestations. Ants actively defend these pests from their natural enemies. Controlling or reducing ant numbers can improve the efficacy of Lacewings and other biocontrol agents.
- Use companion plants that increase availability of nectar and pollen to support multiple generations of Lacewings (and other beneficials) in outdoor crops.

Chemical use

While some pesticides are not harmful to Lacewings, many are directly toxic or have sublethal effects. These can prevent Lacewings from establishing and/or reduce their efficacy. Some insecticides (e.g. synthetic pyrethroids, organophosphates and neonicotinoids) can have residual toxicity that affects Lacewings for many weeks. Fungicides generally have low toxicity to Lacewings.

If pesticides are required, always check for side-effects and select products that are least harmful to Lacewings and other key beneficials in your IPM program. There is little published side-effects data for the Australian lacewing species *Mallada signatus*. As a guide, you can instead refer to side-effects reported for other lacewings such as *Chrysopa carnea*. Use the Biobest Side Effects app or access the Biobest side-effects manual at www.biobestv2.firstsite.be/en/side-effect-manual.

