

Montdorensis tech sheet



Montdorensis (*Typhlodromips montdorensis*) are Australian predatory mites that feed on small insects, mites, pollen and honeydew. They have proven to be very effective biocontrol agents in many crops and are now used internationally. Montdorensis prey on the eggs and juvenile stages of thrips and whitefly, making them ideal for preventative control of these pests. They also offer strong secondary suppression of spider mites, broad mite and russet mites.

Montdorensis are small (<1 mm), pale, pear-shaped mites. The eggs are clear and oval. They are laid on the underside of leaves (often on hairs), under the calyx of fruit and sepals of flowers and in other protected areas. At 25°C Montdorensis take 6-7 days to complete their lifecycle. A female mite kills an average of 14 thrips larvae per day.

Key target pests include western flower thrips, onion thrips, tomato thrips, melon thrips, greenhouse whitefly and silverleaf whitefly.

When to release

Montdorensis are best used early in the crop/pest cycle to prevent whitefly and thrips buildup. Use sticky traps to detect adult thrips and whitefly and begin Montdorensis releases at the first sign of these pests. In crops where pollen is abundant, best results are achieved when Montdorensis are released preventatively from the onset of flowering.

Complementary thrips biocontrol agents include orius predatory bugs (which feed on all stages of thrips) and hypoaspis soil-dwelling predatory mites (which kill thrips pupae at ground level). Complementary whitefly biocontrol agents include the parasitoid wasps *Eretmocerus hayati* (for silverleaf whitefly) and *Encarsia formosa* (for greenhouse whitefly).

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.

Montdorensis are mixed with vermiculite and packed in cardboard tubes. They should be released as soon as possible after delivery. If necessary, tubes can be stored (on their side) for up to 3 days at 10-18°C. After cool storage mites will initially be slow moving and hard to detect.

Roll the tubes gently before release to distribute mites evenly. Remove the end cap, take away the breathable cloth and replace the cap to use as a shaker. Distribute the contents of each tube over foliage (ideally near flowers). During release keep an eye out for pest hotspots and be prepared to place additional mites in these areas.

After release

Montdorensis will be difficult to find for a week or so after introduction. They disperse quickly in search of food. Mark a few places where Montdorensis were released, especially those with good numbers of pests. These sites can be checked regularly to assess pest numbers and establishment of predatory mites. Look for Montdorensis eggs, as this is a good early sign of predator establishment. Initially pest numbers may continue to increase, while Montdorensis establishes.

A predatory mite for control of thrips and whitefly

Target pests

- Thrips
- Whitefly

Suppression of

- Spider mites
- Broad mite
- Russet mites

Advantages

- Rapid population growth in crops with pollen
- Feed on a range of pests
- Survive at low prey densities
- Can be introduced preventatively

Pack size

10,000 mites
(Larger pack sizes on request)

Suitable crop environments

Montdorensis have been used successfully in many protected crops including capsicums, eggplants, cucumbers, strawberries and cut-flowers. They can also be used in non-protected crops, provided temperatures do not remain below 10°C for extended periods.

They prefer warm conditions and their activity ceases below 11°C. Adults can tolerate 45°C in greenhouses but eggs and younger stages perish at this extreme. The optimum temperature range is 20-30°C. Short winter days and cool nights will not induce hibernation. As long as the mean daily temperature is warm, this predator will keep working all year round.

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.

An ongoing regular release program may be warranted in dynamic environments where plants are moved regularly or other influences (e.g. fungicides) adversely impact predators.

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	Release rate (per release)	No. of releases	Interval between releases
Preventative	10-25 mites/m ²	3	2 weeks
Curative	50-100 mites/m ²	as required	1-2 weeks
Hotspot treatment	100-200 mites/m ²	as required	1-2 weeks

Cultural practices to aid establishment

- Minimise dust and ensure plants are well watered and in good health to provide optimal conditions at the plant surface where the mites are active
- Relative humidity of 70% or more is needed for a high egg hatch rate - in crops with a full canopy this is not a problem, but if plants are small or conditions are exceptionally dry, misting or watering down paths and under benches will improve establishment
- Use companion plants that increase availability of pollen to improve establishment and sustain populations of Montdorensis
- Use flowering trap crops (e.g. alyssum) to attract thrips and support Montdorensis
- Avoid application of pesticides for at least three days after release if possible
- Weed management and screening (in protected crops) should be used to reduce the number of adult thrips and whitefly entering the crop

Chemical use

While some pesticides are not harmful to predatory mites, many are directly toxic or have sublethal effects. These can prevent predators from establishing and/or reduce their efficacy.

If pesticides are required, always check for side-effects and select products that are least harmful to Montdorensis and other key beneficials in your IPM program. Use the Biobest Side Effects app or access the Biobest side-effects manual at www.biobestv2.firstsite.be/en/side-effect-manual.

Some insecticides (e.g. synthetic pyrethroids, organophosphates and neonicotinoids) can have residual toxicity that affects Montdorensis for many weeks. Fungicides generally have low toxicity to predatory mites, however some (e.g. mancozeb and chlorothalonil) are highly disruptive.

Images (from top): 1. & 2. Adult Montdorensis 3. Montdorensis nymph and egg 4. Montdorensis egg on capsicum leaf hair.

