

Thrips can cause serious damage in several greenhouse crops. Since the widespread application of substrate cultures, the thrips problem has increased. Soil treatments that made thrips hibernation impossible, are now often omitted in soilless cultures.

THRIPS

Adult thrips are small, elongated insects typically with fringed wings. They measure about 1 mm, and have a greyish or yellow to brown colour. The two most common harmful species are the Onion Thrips (*Thrips tabaci*) and the Western Flower Thrips (*Frankliniella occidentalis*).

The female thrips deposits eggs in the leaf tissue. The eggs hatch within a few days into very mobile larvae which immediately begin to feed. After the second instar they fall on the ground to pupate. The total development from egg to adult takes from 20 days at 20°C (68°F) to 12 days at 30°C (86°F). At sufficiently high temperatures one female thrips can produce up to 100 descendants.

Thrips damage the crop by withdrawing the plant cell fluids. Empty cells are filled with air, causing a silvery appearance, on which dark spots (excrement) are visible. Moreover, there exist many more damage symptoms depending on the crop.

In sweet pepper, they cause cosmetic damage on the fruits close to the calyx. In several ornamentals, flower damage through discoloration or deformation occurs. Only a few individual thrips are enough to cause crop damage. Moreover, thrips are important vectors of several viruses (e.g. Tomato Spotted Wilt Virus, TSWV).

AMBLYSEIUS CUCUMERIS

Biology

Amblyseius cucumeris is a beige predatory mite of less than 1 mm. As an arachnid it has eight legs. In spite of the modest appearance, it is still quite conspicuous because of its mobility on the underside of a leaf or in the flower.

The female mite mates several times. It deposits (a few eggs) daily on hairs close to the veins on the underside of the leaf.

The young larvae that emerge have only six legs and do not eat. During the two subsequent nymphal stages and as an adult, they have eight legs. A nymph looks like a smaller adult, so there is no metamorphosis. The development from egg to adult takes 8 - 11 days (at respectively 25°C (77°F) and 20°C (68°F)). An adult *Amblyseius cucumeris* lives for about 3 weeks.

Adults pierce their prey and then feed on it. Besides thrips larvae, they might sometimes eat spider mites or eggs or larvae of the spider mite predator *Phytoseiulus persimilis*. As adult thrips can defend themselves well by striking out their abdomen, *Amblyseius* prefers first instar thrips.

Moreover, they eat pollen, which is a useful characteristic for preventative introduction of *Amblyseius cucumeris* in pollen bearing crops such as sweet pepper.

APPLICATION

Amblyseius cucumeris has been used for years in several greenhouse vegetable crops such as sweet pepper and eggplant. Also in ornamentals such as gerbera, chrysanthemum, rose and all sorts of pot plants, the interest for this predatory mite has increased during recent years. Although *Amblyseius* controls thrips well in a wide range of greenhouse crops, the leaf structure or composition of some plants (tomato, geranium) hampers the use of this predatory mite. Therefore, consult your technical advisor for possible applications.

A low air humidity (below 65 %) impedes the population build-up of *Amblyseius cucumeris* as the eggs do not hatch and breeder packs (see below) dry out. Therefore *Amblyseius cucumeris* is assisted in the summer by other natural enemies of thrips (*Orius*, *Amblyseius degenerans*).

FORMULATIONS

Biobest offers *Amblyseius cucumeris* in the following formulations:

1. Amblyseius-System:

The predatory mites are packed per 25.000 or 50.000 in a practical 1 liter sprinkler tube on a bran carrier. Through a dosage lid the mites are spread on the leaves. Amblyseius-System can also be obtained in 5 liter buckets containing 125.000 mites per bucket.

2. Amblyseius-Breeding-System (ABS):

This consists of breeder sachets that are simply hung in the crop without having to open them. A breeder sachet contains bran on which a fungus grows that serves as food for bran mites. These bran mites are on their turn eaten by *Amblyseius*. One breeder box contains about 1.000 predatory mites and can still produce thousands more for several weeks. The mites leave the breeder sachet gradually and spread throughout the crop. With this system *Amblyseius* can now also be introduced preventatively in crops without pollen production. A box contains 250 breeding sachets.

3. Amblyseius-Vermiculite-System:

This formulation is especially developed to blow *Amblyseius* in the crop with a sprayer. This system is delivered per 25.000 and 50.000 mites in a 1 liter sprinkler tube. Amblyseius-Vermiculite-System can also be obtained in 5L buckets containing 125.000 or 250.000 predatory mites. This application method is particularly useful for ornamental crops.

Amblyseius cucumeris can be shortly stored at 15°C, if necessary.

ADVANTAGES

- Applicable in several crops;
- Preventative introductions possible, also in crops without pollen;
- Available in large quantities;
- Not diapausing;
- Long-standing protection;
- User friendly application methods.

WARNING

Amblyseius-Breeding-System (ABS), which contains the predatory mite *Amblyseius cucumeris*, also contains the prey mite (*Tyrophagus putrescentiae*) as a food source.

Under certain circumstances such as young or weak plants, dark and humid climate conditions, and in combination with using large quantities of breeding sachets, the prey mite (*T. putrescentiae*) population can increase to the point of causing damages in cucumbers.

The use of these products in cucumbers is under the grower's own responsibility.

In case of doubts or questions, discuss this with your nearest Biobest distributor or Biobest advisor.