
GENERAL

Before introducing beneficials, the greenhouse and plants should be free of harmful pesticide residues.

Before the beginning of your cultivation discuss with your advisor a plan of approach for the whole season.

SCOUTING AND MONITORING

Use yellow Bug-Scan[®] sticky traps for (timely) detection of flying insects. During the heating of the greenhouse hang min. 20 yellow sticky traps per ha to detect the first flying insects.

Also use yellow Bug-Scan[®] sticky traps during the cultivation. Count and register during **minimum the first 10 weeks** of your cultivation the different species of flying insects which are captured on the sticky traps.

CONTACT WITH BENEFICIALS

Follow up carefully the user's instructions; always pay attention to the icons on the packing. If necessary consult the Icon Guide.

Introduce beneficials preferably early in the morning.

If you want to store the beneficials for a short time, you have to reckon with the mentioned storage temperature and the use by date which are mentioned on the packing.

CHEMICAL CORRECTIONS

If a chemical correction has been inevitable, use as much as possible selective chemical crop protection products. Try to apply chemical corrections on local spots.

In case of doubt about the side effects of pesticides, contact your advisor or consult the Side Effects Manual which is available on www.biobest.be.

BIOLOGICAL CONTROL OF THRIPS

Amblyseius-Breeding-System (A.B.S.)

(predatory mite - *Amblyseius cucumeris* in sachets)



- Introduce before the plant reaches the suspension wire (\pm 3 weeks after the plantation or sooner)
- Introduce minimum 4.000 sachets/ha.
- **1st cultivation:** Introduce minimum 1 sachet per 5 plants when no thrips are detected in the crop. When thrips are detected in the crop, introduce minimum 1 sachet per 3 plants.
- **2nd and 3rd cultivation:** Introduce minimum 1 sachet per 3 plants.
- Remark:
 - Disperse in and around thrips hot spots extra *Amblyseius cucumeris* as sprinkling material.
 - The crop must be 100 % free of harmful residues. If you have doubts about the side effects of chemical products, contact your advisor.
- Warning:

The products Amblyseius-Breeding-System (ABS) and Amblyseius-Slow-Release-System (ASR), which contain the predatory mite *Amblyseius cucumeris* delivered in breeding sachets, also contain Mold mites (*Tyrophagus putrescentiae*) and bran. Under certain circumstances such as a moist greenhouse climate or when using large quantities of breeding sachets, Mold mite population can increase to the point of causing damages in some crops (e.g. cucumbers). When planning to use these products in crops where they have never been used before, we recommend to first perform a small-scale trial or to discuss this with your Biobest advisor or supplier.

Amblyseius-System

(predatory mite - *Amblyseius cucumeris* in 1 L - sprinkler tube)



- If ABS is not used, *Amblyseius cucumeris* can be introduced as sprinkling material (50.000 *Amblyseius cucumeris* per liter).
- Introduce minimum 2 x 500.000 *Amblyseius*/ha on the crop, with an interval of 1 to 2 weeks.
- Warning:

The products Amblyseius-Breeding-System (ABS) and Amblyseius-Slow-Release-System (ASR), which contain the predatory mite *Amblyseius cucumeris* delivered in breeding sachets, also contain Mold mites (*Tyrophagus putrescentiae*) and bran. Under certain circumstances such as a moist greenhouse climate or when using large quantities of breeding sachets, Mold mite population can increase to the point of causing damages in some crops (e.g. cucumbers). When planning to use these products in crops where they have never been used before, we recommend to first perform a small-scale trial or to discuss this with your Biobest advisor or supplier.

Amblyseius-Breeding-System

(predatory mite - *Amblyseius cucumeris* in 5 L - buckets)



- *Amblyseius cucumeris* can be introduced as breeding material on the pot.
- Disperse on each pot minimum 2,5 cc. Introduce minimum 750.000 *Amblyseius*/ha.
- Warning:

The products Amblyseius-Breeding-System (ABS) and Amblyseius-Slow-Release-System (ASR), which contain the predatory mite *Amblyseius cucumeris* delivered in breeding sachets, also contain Mold mites (*Tyrophagus putrescentiae*) and bran. Under certain circumstances such as a moist greenhouse climate or when using large quantities of breeding sachets, Mold mite population can increase to the point of causing damages in some crops (e.g. cucumbers). When planning to use these products in crops where they have never been used before, we recommend to first perform a small-scale trial or to discuss this with your Biobest advisor or supplier.

Orius-System(predatory bug - *Orius* spp.)

- When thrips damage increases: introduce *Orius* in and around the thrips hot spots (minimum 10 – 25 *Orius*/m²).
- Remark: Per packing maximum 5 – 10 introduction points.

BIOLOGICAL CONTROL OF SPIDER MITE**Phytoseiulus-System**(predatory mite - *Phytoseiulus persimilis*)

- Introduce minimum 6 *Phytoseiulus*/m² as soon as the first spider mites are detected.
- The exact amount of *Phytoseiulus* depends on the severeness of the spider mite damage. Introduce in and around the spider mite hot spots minimum 20 *Phytoseiulus*/m².
- Remark:
 - Introduce *Phytoseiulus* on a leaf, ± 15-20 cm under the top of the plant.
 - Reckon with the use of sulphur steamers till min. 5 days after introduction.

Californicus-System(predatory mite - *Amblyseius californicus*)

- Introduce *Amblyseius californicus* preventive on places where spider mites are early expected, minimum 4 *Amblyseius californicus*/m².
- Introduce *Amblyseius californicus* preventive in the whole greenhouse minimum 2 mites/m².

Feltiella-System(gall midge - *Feltiella acarisuga*)

- In combination with *Phytoseiulus* at spider mite hot spots.
- Introduce locally 1 pot (250 pupae) during 4 - 6 weeks.
- Remark: The gall midges have an excellent ability to search, but they can become disorientated by frequent use of a sulphur steamer.

BIOLOGICAL CONTROL OF APHID**Aphidius-System**(parasitic wasp - *Aphidius colemani*)

- Preventive: Introduce minimum 0,15 *Aphidius colemani*/m² per week.
- Curative: As soon as aphids are detected: introduce minimum 0,5 *Aphidius colemani*/m² per week, until an equilibrium is reached.
- When there is enough parasitizing: introduce minimum 0,15 *Aphidius colemani*/m² per week to maintain the balance.
- Remark: When hyperparasitizing occurs, *Aphidius colemani* can be replaced by *Aphidoletes aphidimyza*.

Aphidoletes-System(gall midge - *Aphidoletes aphidimyza*)

- Preventive: Introduce 0,1 - 0,2 *Aphidoletes*/m²/week.
- Curative: When aphids are detected in the crop, introduce 0,5 – 1 *Aphidoletes*/m²/week.
- Open the bottle and put it under the aphid hot spot, or disperse *Aphidoletes*, in heaps, on a moist substrate.
- Remark: The gall midges have an excellent ability to search, but they can become disorientated through frequent use of a sulphur steamer.

Ervi-M-System(parasitic wasp - *Aphidius ervi*)

- When the first aphids are detected in the crop, introduce 0,1 – 0,25 *Aphidius ervi*/m²/week until an equilibrium is reached.
- Introduce the parasitic wasps at the bottom of the plant, preferably in the neighbourhood of aphid hot spots.

Adalia-System(ladybird - *Adalia bipunctata*)

- Introduce *Adalia*-larvae purposefully in the immediate neighbourhood of aphid hot spots.
- The quantity that has to be introduced strongly depends on the infestation pressure and the area of the crop. In an aphid population which is spread over a few plants, it is recommended to introduce 200 to 300 larvae. Control daily and repeat if necessary.
- Remark: Introduce the larvae as soon as possible. If necessary, the material can be stored for a short time at ± 6°C.

Banker-System*Rhopalosiphum padi* - open rearing system for the control of aphids)

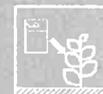
- Introduce the first Banker-Systems together with the first release of beneficials.
- Introduce minimum 3-4 Banker-Systems/week until there are minimum 10 Banker-System.
- Release 1 week after the introduction of the first Banker-System, 0,1 *Aphidius colemani*/m² until the first parasitized cereal aphids are detected.
- When hyperparasitism occurs, *Aphidius colemani* can be replaced by *Aphidoletes aphidimyza*.
- Remark: Put the Banker-System in sunlight.

BIOLOGICAL CONTROL OF WHITEFLY**Encarsia-System**(parasitic wasp - *Encarsia formosa*)

- Preventive: Introduce 1 *Encarsia formosa*/m² during min. 3 weeks. Discuss further steps with your advisor.
- Curative: After detection of whiteflies, introduce during min. 4 weeks minimum 3 *Encarsia formosa*/m² until a sufficient number of whiteflies are parasitized (80 - 90 %).
- Remark: You always have to reckon with the possible side effect and the advised waiting period of the used crop protection products before you start with the introduction of *Encarsia formosa*.

Eretmix-System

(mix of *Eretmocerus eremicus* & *Encarsia formosa*)



- A mix of *Eretmocerus eremicus* + *Encarsia formosa* (50/50) for the control of the greenhouse whitefly (*Trialeurodes vaporariorum*).
- Curative: As from February introduce during min. 4 weeks minimum 3 *Eretmocerus eremicus* + *Encarsia formosa*/m² until a sufficient number of whiteflies are parasitized (80 - 90 %).

BIOLOGICAL CONTROL OF CATERPILLARS

Attract[®] pheromone lures



- For the detection of the first moths in the greenhouse.
 - Hang minimum 2 **Attract[®]** pheromone lures per ha.
- ⇒ Hang the **Attract[®]** pheromone lures minimum 50 m from each other to prevent a mixture of the pheromones.
- ⇒ Replace the pheromone capsules regularly (every 4 weeks).