

---

## 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<sup>®</sup> sticky traps for (timely) detection of flying insects. Hang during the heating of the greenhouse min. 20 yellow sticky traps per ha to detect the first flying insects.

Also use yellow Bug-Scan<sup>®</sup> sticky traps during the cultivation. Count and register **during minimum the first 10 weeks** the different kinds of flying insects which are captured on the sticky traps.

---

## CONTACT WITH BENEFICIALS

---

Follow 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 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](http://www.biobest.be).

## BIOLOGICAL CONTROL OF THRIPS

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

(predatory mite - *Amblyseius cucumeris* in breeding sachets)



- Introduce 2.500 sachets/ha (in total minimum 500.000 *Amblyseius cucumeris*/ha). Repeat this every 4 weeks depending on the infestation.
- Introduce in hot spots 1 sachet/2 m<sup>2</sup> or disperse weekly minimum 100 *Amblyseius cucumeris*/m<sup>2</sup>.
- 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.

### Hypoaspis-System

(predatory mite - *Hypoaspis miles*)

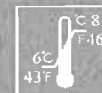


- Introduce preventive minimum 100 *Hypoaspis*/m<sup>2</sup> to control the larval and pupal stage of the thrips.

## BIOLOGICAL CONTROL OF WHITEFLY

### Encarsia-System

(parasitic wasp - *Encarsia formosa*)



- Available as sprinkling material and on cards.
- Preventive: Introduce 1,5 *Encarsia*/m<sup>2</sup> per week.
- Curative: Introduce after the detection of whitefly in the crop, weekly min. 3 *Encarsia*/m<sup>2</sup> until a sufficient number of whiteflies are parasitized (80 - 90 %).
- Introduce in hot spots 5 - 10 *Encarsia*/m<sup>2</sup> per week until an equilibrium is reached.

### 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 4 weeks minimum 3 – 4 *Eretmocerus eremicus* + *Encarsia formosa*/m<sup>2</sup> until a sufficient number of whiteflies are parasitized (80 - 90 %).

### Eretmocerus-System

(parasitic wasp - *Eretmocerus eremicus*)



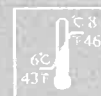
- As from February introduce during minimum 4 weeks min. 3/m<sup>2</sup> until a sufficient number of whiteflies are parasitized. (80 - 90 %)

**Mundus-System**(parasitic wasp - *Eretmocerus mundus*)

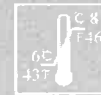
- When *Bemisia tabaci* (the sweetpotato whitefly) is detected, introduce immediately for 5 weeks 3 *Eretmocerus mundus*/m<sup>2</sup>.
- Remark: Be sure with which whitefly you are dealing.

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

- Introduce minimum 6 *Phytoseiulus*/m<sup>2</sup> as soon as the first spider mites are detected. The amount to be introduced depends on the infestation level.
- In and especially around hot spots: 20 *Phytoseiulus*/m<sup>2</sup>.
- Spread well in the work direction.

**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 in hot spots.
- 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 0,1 *Aphidius colemani*/m<sup>2</sup> per week.
- Curative: As soon as aphids are detected: introduce minimum 0,5 *Aphidius colemani*/m<sup>2</sup> per week, during 3 weeks, until there is enough parasitizing.
- Disperse *Aphidius* in bioboxes (± 25 boxes/ha).

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

- Preventive: Introduce 0,1 - 0,2 *Aphidoletes*/m<sup>2</sup>/week.
- Curative: When aphids are detected in the crop, introduce 0,5 – 1 *Aphidoletes*/m<sup>2</sup>/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 by frequent use of a sulphur steamer.

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



- Introduce *Aphidius ervi* when the Potato aphid (*Macrosiphum euphorbiae*) or the Glasshouse potato aphid (*Aulacorthum solani*) occurs.
- Introduce 2 *Aphidius*/m<sup>2</sup> in and around the hot spots.

### Aphelinus-System (parasitic wasp - *Aphelinus abdominalis*)



- Introduce *Aphelinus abdominalis* when the Potato aphid (*Macrosiphum euphorbiae*) or the Glasshouse potato aphid (*Aulacorthum solani*) occurs.
- Introduce 2 *Aphelinus*/m<sup>2</sup> in and around the hot spots.

### Adalia-System (ladybird - *Adalia bipunctata*)



- Introduce 50 - 100 *Adalia*-larvae/m<sup>2</sup> efficiently in the immediate neighbourhood of aphid hot spots, as a supplement on *Aphidius* and *Aphidoletes*.

## BIOLOGICAL CONTROL OF LEAFMINER

### Dacnusa-System / Diglyphus-System (parasitic wasps - *Dacnusa sibirica* & *Diglyphus isaea*)



- Introduce when the first leafminer infestation is detected.

Spring & autumn: minimum 0,25 *Dacnusa* / *Diglyphus* (90 % - 10 %) m<sup>2</sup> per week, until an equilibrium is reached.

Summer (or at a high infestation): introduce 100 % *Diglyphus* in a dose of minimum 0,1 *Diglyphus*/m<sup>2</sup>/week during minimum 3 weeks or until a sufficient number of leafminers are parasitized.

- Remark: Samples of the leaf should be tested regularly to determine the percentage of parasitized leafminers. To have an efficient control, the percentage must be 80 - 90 %.

## BIOLOGICAL CONTROL OF CATERPILLARS

### Attract® pheromone lures



- Hang 2 catch lamps/ha above the crop, to catch as many *Duponchelia* as possible.
- Hang minimum 2 **Attract®** pheromone traps per ha.
  - ⇒ Hang **Attract®** pheromone lures minimum 50 m from each other to prevent a mixture of the pheromones.
  - ⇒ Replace the pheromone lures in time (1 lure every 4 weeks).
- Max. 7 days after catching the first moth, spray with *Bacillus thuringiensis*. Repeat these spraying after 7 till 10 days.

## Hypoaspis-System

(predatory mite - *Hypoaspis miles*)



- Introduce shortly after the plantation minimum 100 *Hypoaspis*/m<sup>2</sup> to control the eggs of *Duponchelia*.