TECHNICAL SHEET

Mundus-System

In protected crops, tobacco whitefly (*Bemisia tabaci*) is a common pest and very difficult to eradicate. Until now a small parasitic wasp was used: *Eretmocerus eremicus*. The large temperature fluctuations that affect the crops of southern Spain stimulated the search for new alternative solutions. Biobest observed that in the Mediterranean region *Eretmocerus mundus* was present, another parasitic wasp of whitefly that is very well adapted to the climatic conditions of that region.

Biology

Eretmocerus mundus is a wasp that parasitizes several species of *Bemisia*. It can develop in any larval stage of *Bemisia*, but prefers the second and the beginning of the third larval stage. *Eretmocerus mundus* lays its eggs under the larvae of *Bemisia*. After 3 days, the egg turns a brownish colour. If the eggs are laid under the first larval stage, the larva of *Eretmocerus* does not develop before the *Bemisia* reaches the second larval stage. The life cycle is completed in approximately 14 days, depending on the temperature and the stage of *Bemisia* when it was parasitized. During the winter, the life cycle might require more time. In non-heated greenhouses the life cycle can take more than one month to complete. A recently parasitized *Bemisia* larva does not acquire any distinct colouration. After 2 weeks of parasitism, the *Bemisia* larvae swell, are shinier and their colour turns golden-yellow. At the moment of eclosion, *Eretmocerus mundus* makes a round hole in its host, just as *Eretmocerus eremicus* does. The presence of this hole is a good indication of parasitism. The *E. mundus* adult resembles that of *E. eremicus*. It is only possible to distinguish them under a microscope. *E. mundus* has 4 hairs on the prothorax while *E. eremicus* has 6.

Application

E. mundus is recommended for the control of several biotypes of *Bemisia*. This parasitic wasp is very well adapted to the climatic conditions of the mediterranean region. It is active in summer when the temperatures are high as well as in winter when the temperatures drop. This makes *E. mundus* the most suitable parasitic wasp of *Bemisia* because it will work in the greenhouses on early crops until the end of the cropping season.

Advantages

E. mundus has advantages over other parasites of whitefly:

1. When the population of *Bemisia* is large, *E. mundus* infects more larvae;
2. *E. mundus* is more able to endure high temperatures;
3. It shows activity in winter at lower temperatures;
4. *Eretmocerus* is more resistant to most pesticides, which is important for IPM.
5. Better aclimatized parasite of *Bemisia*.

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Side effects

Generally, this species of *Eretmocerus* is considered to be more resistant than *Encarsia* to pesticides (shorter persistence for *Eretmocerus*). At present, Biobest performs various trials in order to study the side effects of pesticides used in greenhouse crops on *Eretmocerus*.

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E. mundus is supplied on cards with at least 75 pupae/card. One package contains 10 strips of 10 cards each. These cards can be hung on the plants to ensure a good distribution in the crop.

Technical Advice

1. Introduce *E. mundus* when *Bemisia tabaci* is the whitefly present. If the species of whitefly present is *Trialeurodes vaporariorum*, introduce *E. eremicus* in combination with *Encarsia formosa*;
2. Curative: If there is *Bemisia* present, it is advised to begin introductions of 6 *Eretmocerus*/m² for several weeks;
3. Preventative: In some crops it is necessary to begin with an introduction the moment the first *Bemisia* are observed.
   Introduce 2-3 *Eretmocerus*/m² until the parasitism is sufficient (80 %).

Advantages

- **Good activity at high temperatures**
- **Active in wintertime**
- **Greater resistance to pesticides**
- **Better action on *Bemisia tabaci***
- **Easy method of introduction**
- **Good results in various crops**

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