

# FloraCulture™

*'Concordia res parvae crescunt'*

## INTERNATIONAL

July/August 2012 • [www.floracultureinternational.com](http://www.floracultureinternational.com)

The business magazine for worldwide floriculture



### Flower Trials: business boost for bedding plant community

**22** How much open access is good for breeders?

**32** LEDs continue at Vitro Plus

# Crop protection

In greenhouse production and trade of ornamental plants, aphid tolerance is very low. Due to increasing insecticide multiresistance, the chemical control of aphids becomes increasingly difficult. A sustainable way to control this pest is the use of parasitoids, the natural enemies of aphids. More and more growers apply these mini-wasps already successfully in their crops as part of an Integrated Pest Management (IPM) strategy.



Ready-to-use unit of OrnaProtect. One tube covers 200 m<sup>2</sup>, and its installation takes about five seconds.

## OrnaProtect, a strategic choice of the grower

A very easy approach of using beneficial insects against this economically important pest is the simultaneous use of different parasitoid species against a very broad range of attacking aphid species.

The Belgian company Viridaxis, world leader in the mass-production of aphid parasitoids, has developed and commercialized a cocktail of

six different parasitoids, controlling all commonly appearing aphids in ornamental crops (Tab. 1). This mix, OrnaProtect, confers not only a broad, but also tight control through the fact that the different aphid species are generally parasitized by several different parasitoid species.

OrnaProtect is used throughout the crop season in a preventive strategy, and its application in the ready-to-use units (Fig. 1) is much easier and faster than even a chemical treatment.

### How does it work?

A parasitoid is a wasp able to parasitize aphids in a more or less host-specific way. These natural enemies of aphids are used since long in organic and IPM strategies. In order to apply the matching parasitoid against a given aphid species, the aphid has to be detected in the crop and subsequently identified. By the time the aphids are spotted by the grower and then identified by himself or a specialist, it is usually more difficult to gain control over an increasing aphid population.

A mix of different parasitoids covering the common spectrum of aphids in ornamental crops makes the difficult part of aphid identification redundant and allows for easy implementation of biological pest control.

An adult parasitoid can parasitize up to 100 aphids per day. Depending on the species, the life span is between two weeks and two months.

- 1) Adult parasitoids hatch from mummies (Fig 2).
- 2) Parasitoids search aphids and lay an egg inside (Fig 3).
- 3) Development of larvae inside the aphid.
- 4) Aphids die and the next generation of parasitoids emerges (Fig 4).
- 5) Parasitoid population keeps aphids below economic damage threshold.

### Application

One dose of OrnaProtect covers 200 m<sup>2</sup>; releases have to be renewed every two weeks. The ready-to-use units of OrnaProtect contain an integrated feeding point (Fig. 6)

by Ron van der Ploeg



Tube of OrnaProtect installed on a stake. The integrated feeding point is in the center of the holes from which the parasitoids emerge and serves as immediate energy source. Once the adults fed, they are fitter, have a longer life expectation, and start searching actively for aphids.

which contributes to longevity and efficiency of the parasitoids. Important is the preventive use of OrnaProtect, it is not recommended for any curative treatment.

### Case studies

OrnaProtect has been tested in different European countries, in potted plants as well as in cut flowers. Amongst the plant species enrolled in the trials were Begonia, Chrysanthemum, Cyclamen, Gerbera, and Hydrangea.

After a full crop season, OrnaProtect proved to offer an excellent control of aphid populations. The growers involved in the trials highlighted especially their savings in labor and time due to easy and fast application.

A Hydrangea nursery in Germany used OrnaProtect in the greenhouse from January to October 2011. During the cooler season the green-spotted potato aphid (*Aulacorthum solani*) was observed.

This aphid species has been controlled by OrnaProtect, as were all other different aphid species appearing later in the season. A Cyclamen nursery used since more than a decade already beneficial insects for plant protection under IPM. This approach has been convincing, because it does not result in the development of resistance as it is observed by using chemical pesticides, and because it strongly decreases the handling of chemicals by the workers.

The conclusions after having used OrnaProtect in the greenhouse from end of March until mid-October 2011 were

- perfect control throughout the season of all appearing aphids.
- savings of about 60% of labor time due to a simple and fast application of OrnaProtect.
- increased security by using of a mix of six different parasitoid species.
- investment in the difficult task of aphid identification made redundant. |||



^ Mummies of *Aphidius* sp., show the approximate shape of the former aphid. In each of these mummies develops a parasitoid.

A parasitoid (here *Ephedrus cerasicola*) is laying an egg into an aphid.



A parasitoid is hatching from a mummy.

## OrnaProtect relations

**Table 1.** Ornamental plants can be attacked by far more than ten different aphid species. The table lists the most important species (left column; in bold are the most common species or those which are economically important). The parasitoids present in OrnaProtect are listed in the first line. Their efficacy in the control of the different aphids is indicated by '+' for proven control under field conditions (+++: very high efficacy, ++: high efficacy, +: good efficacy) or 'X' for control under laboratory and semi field conditions.

| Aphids / parasitoids            | <i>Aphidius colemani</i> | <i>Aphidius ervi</i> | <i>Aphidius matricariae</i> | <i>Aphelinus abdominalis</i> | <i>Ephedrus cerasicola</i> | <i>Praon volucre</i> |
|---------------------------------|--------------------------|----------------------|-----------------------------|------------------------------|----------------------------|----------------------|
| <i>Aphis fabae</i>              | +                        |                      | +                           | X                            |                            | +                    |
| <i>Aphis gossypii</i>           | +++                      |                      | ++                          | X                            | X                          | +                    |
| <i>Aulacorthum circumflexum</i> |                          | +++                  | X                           | ++                           | ++                         | ++                   |
| <i>Aulacorthum solani</i>       | X                        | ++                   | X                           | ++                           | +++                        | ++                   |
| <i>Brachycaudus helichrysi</i>  | X                        | X                    | X                           | X                            | X                          | X                    |
| <i>Macrosiphum euphorbiae</i>   | X                        | +++                  |                             | +++                          |                            | +++                  |
| <i>Macrosiphum rosae</i>        | X                        | ++                   |                             | ++                           |                            | +++                  |
| <i>Myzus ascalonicus</i>        |                          |                      | X                           | X                            | X                          | X                    |
| <i>Myzus ornatus</i>            | ++                       | X                    | ++                          |                              | X                          | +                    |
| <i>Myzus persicae</i>           | +++                      | +                    | ++                          | ++                           | ++                         | ++                   |
| <i>Rhodobium porosum</i>        |                          | ++                   |                             | +++                          | X                          | X                    |