

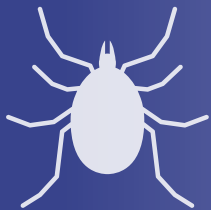
# Velifer®

Biological Insecticide

 **BASF**

We create chemistry

## Velifer compatibility with commercially applied beneficial insects



### Predatory mites - Phytoseiidae

*Amblyseius cucumeris*

*Amblyseius swirskii*

*Phytoseiulus persimilis*



### Parasitoids - Hymenoptera

*Aphidius colemani*

*Encarsia formosa*

*Eretmocerus eremicus*



### Predatory bugs - Hemiptera

*Macrolophus caliginosus*

*Nesidiocoris tenuis*

*Orius laevigatus*



### Lace Wing - Hemerobiidae

*Micromus tasmaniae*

# Integrated Pest Management: Control of pests in protected cropping

There is a very similar range of pests of crops grown under glasshouse or polyhouse conditions around the world. These typically include two-spotted mite (*Tetranychus urticae*), western flower thrips (*Frankliniella occidentalis*), greenhouse whitefly (*Trialeurodes vaporariorum*) along with several species of aphids and caterpillars. Whether the crops are vegetables or ornamentals (such as roses) what makes these pests of particular concern is that they are typically resistant to many insecticides.

Both vegetable and flower crops grown under protected cropping conditions are expected to be free from blemishes and if normal insecticides fail then another approach is needed. The answer is to use an approach that relies mainly on biological and cultural (management) controls with pesticides being used only as supports, as required. This is called integrated pest management or IPM.

Control of the key pests (two-spotted mite, western flower thrips and whitefly) is mainly achieved using commercially reared biological control agents. These include predatory mites (eg. *Phytoseiulus persimilis*, *Neoseiulus cucumeris*), predatory bugs (*Orius* spp) and parasitic wasps (eg. *Encarsia formosa*, *Eretmocerus* spp., *Aphidius* spp).

## Selection of Pesticides

The use of any pesticides (insecticides, miticides and also fungicides) needs to be very carefully considered so as to not disrupt the biological control of these major pests. Under protected cropping systems the residual impact of pesticides is far greater than in outdoor situations, mainly because UV radiation and rainfall or overhead irrigation are absent. For example, a single spray of a broad-spectrum insecticide (such as an organophosphate or most synthetic pyrethroids) can kill beneficial insects and mites for 3 months. The worst scenario is where such a product is sprayed for a minor pest resulting in flare of major pests when biocontrol is lost.

Ideally, support pesticides would be effective on the target pest and not kill beneficial species of importance in the particular crop. As the biological and cultural controls are providing the bulk of control, the pesticide selected usually does not need to be the most potent product. (This is different to where routine pesticide applications are expected to provide 100% of the control.)

Such selective products are of great value in Integrated Pest Management (IPM) strategies and their use should be considered carefully so that they are not lost due to resistance.