



## Information

**DOVE**  
**ASSOCIATES**

**Horticultural Consultants**

Weggs Farm

Common Road

Dickleburgh, DISS

Norfolk IP21 4PJ

Tel: 01379 741200

Fax: 01379 741800

Email: [info@dovebugs.co.uk](mailto:info@dovebugs.co.uk)

[www.dovebugs.co.uk](http://www.dovebugs.co.uk)

### Biological Control - APHIDS

With their alarming rate of reproduction and increasing resistance to pesticides, aphids are now becoming a much more serious threat to greenhouse crops. There are now effective aphid predators and parasites and growers have started to rely on these to control the pest.

These are the main species of aphid attacking protected crops: -

MYZUS PERISCAE	on mainly chrysanthemums and <i>Solanaceae</i>
APHIS GOSSYPII	on mainly chrysanthemums and cucumbers
MACROSIPHUM EUPHORBIAE	on mainly <i>Solanaceae</i>
AULACORTHUM CIRCUMFLEXUM	on mainly ornamentals
AULACORTHUM SOLANI	on mainly <i>Solanaceae</i>

Other species can be found from time to time on greenhouse crops.

Aphids all feed by inserting their stylets into the conducting vessels of the plant. Plants can be damaged in four ways:-

1. Reduced plant vigour;
2. Distorted growth;
3. Spread of virus diseases;
4. Excretion of excess sugars which result in the growth of black sooty moulds on leaves etc., thereby affecting quality and reducing photosynthesis.

### LIFE CYCLE OF APHIDS

On greenhouse crops aphids multiply continuously throughout the year. Young feed as soon as they are born. After moulting several times they mature and begin to reproduce; from birth to reproduction takes less than a week in the summer. When the population becomes dense, winged forms are produced which fly to new feeding sites. Some aphid species have different plant hosts in the winter.

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## BIOLOGICAL CONTROL

There are two key biological control agents that are successfully used for aphid control:-

The parasite	<i>APHIDIUS</i>
and the predator	<i>APHIDOLETES</i>

*APHIDIUS* spp. are small wasps about 2mm long, which hunt for individual aphids in the crop. They lay an egg in an aphid which, after hatching, feeds internally on the live aphid without affecting its normal development. When the parasite is mature the aphid dies and an adult parasite emerges by cutting a hole in the aphid's skin. Parasitised aphids can easily be recognised by being swollen and a silvery brown skin colour – the aphid mummy.

*APHIDOLETES* is a predacious midge, which lays its eggs in colonies of aphids. Eggs hatch in 2-3 days and the larvae immediately start to search for aphids. The larvae take 7-16 days to mature before pupating in soil or compost. Adults emerge after 10-14 days.

## APPLICATION RATES

Preventative programmes of *Aphidius* and *Aphidoletes* give the most satisfactory results. Introduction rates depend on the crop and the aphid pressure, but 2,500/ha./week (1,000/acre) will be necessary under most conditions using *Aphidius* in the winter and *Aphidoletes* in the summer.

Commencing introductions after aphids have been found often requires the use of much higher numbers to obtain control. 30-40,000/ha./week (12-16,000/acre) for at least 3 weeks may be necessary.

As *Aphidoletes* will only pupate in soil or similar substrate, it cannot reproduce in greenhouses where the soil is covered with polythene. Frequent introductions are therefore necessary to control the pest.

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Other predators that will also consume aphids include ladybirds (*Adalia* spp.) and lacewings (*Chrysoperla carnea*)

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