

PREDATORS AND PARASITES COMMONLY FOUND ON LANDSCAPE PLANTS

Presentation at the 43rd "Annual Horticulture Growers' Short Course"
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This presentation will be a tour of the predator gallery and a close-up look at their appearance. Are predators reliable? We will discuss what works and what does not work in every day situations.

1- Know what the predators look like

Learn to recognize the appearance of common predators and their juvenile stage.

2- Plant flowers

Encourage the predators and parasites into your site.

3- Use pesticides selectively

Select the products that control aphids but are fairly safe to predators and parasites.

I. KNOW WHAT THE PREDATORS LOOK LIKE

- *Lady beetles (many species)*

The larvae is dark blue with orange spots and long legs, the yellow eggs are laid in clusters. Overwinters as adults, which emerge in very early spring, with 1 to 3 generations per year. There are many native species, such as the 2-spot lady beetle and the transverse ladybeetle. The twice-stabbed ladybeetle (*Stethorus p.*) feeds on scale crawlers and is often seen on junipers.

- *Aphid midges (Aphidoletes)*

The young stage is an orange maggot (no legs), which drops to the ground to pupate. Overwinters as mature larvae or pupae in the ground, the adults arrive in gardens during June. The adult is a small fly active at night. It requires nectar or honeydew to lay eggs. Aphidoletes are very effective predators and can kill up to 50 aphids per day.

- *Syrphid flies or hover flies (many species)*

The young stage is a maggot (no legs) that is blind but very efficient at finding preys. Overwinters as adults. They arrive in gardens around mid-May, with 3 generations per year. This predator can work in cooler weather and can consume 200 to 800 aphids in 10 days. The adult female needs pollen to lay eggs and will visit sites with flowers.

- *Minute pirate bugs (Orius t.)*

The adult is small and black, with 3 to 4 generations per year. It is very common in nurseries as it can survive on spider mites, thrips, aphids, pollen or debris.

- *Parasitic wasps (many species)*

The female adults lay their eggs inside of aphids, which become swollen and leathery. The adults are very small and difficult to detect but very effective at finding aphid colonies.

II. PLANT FLOWERS

Beneficial insects can be attracted to a garden or a farm. Many predator adults feed on pollen and nectar of flowers and then look for a place to lay eggs. Once attracted to a site with many flowers, these predators will tend to stay on site and look for aphids to feed their progeny.

- *Have a diverse garden.*

Plant flowers that provide pollen and nectar, both required by predator adults. Aim to have a full season of bloom. Mix flowers with shrubs and stone paths. Have a few areas with water.

- *Keep an open attitude.*

Flowers with aphids will attract the beneficial insects. It is important to be patient and allow nature to do its work. Our part is to keep the situation under control, not to wipe out all aphids.

- *Plant flowers known to attract beneficial insects.*

Many researchers have examined the value of different flowers for different predators. For example, Robert L. Bugg, at the University of California, has found that clover, buckwheat and yarrow are excellent to attract *Orius* species (minute pirate bugs).

Flowers to attract beneficial insects in British Columbia

<i>Achillea</i> species (yarrow)	<i>Amaranthus</i> species (amaranth)
<i>Angelica</i> species (angelica)	<i>Euonymus j.</i> (evergreen euonymus)
<i>Foeniculum vulgare</i> (fennel)	<i>Fosmarinus o.</i> (rosemary)
<i>Hedera</i> species (English ivy)	<i>Iberis umbellate</i> (candy tuft)
<i>Oenothera</i> species (evening primrose)	<i>Pieris japonica</i> (andromeda)
<i>Polygonum aubertii</i> (silver lace vine)	<i>Ruta graveolens</i> (rue)
<i>Solidago</i> species (goldenrod)	<i>Symphoricarpos</i> species (snowberry)

Source: HortWest Magazine, B.C. Landscape Nursery Association, January 1998

III. USE PESTICIDES SELECTIVELY

- *Look for aphids very early in the season, and back-off in late spring and summer.*

For example, the winter eggs will hatch at bud break on *Viburnum* and *Cornus* and the feeding by young aphids will cause deformed leaves very early in the season. On these plants, it is important to apply pesticides at the time of bud break to keep a lid on the aphid population.

Predators will arrive in April and May, ladybeetle adults at first and other predators later. The population of predators should be allowed to increase so they can provide season-long control.

- *Use pesticides that are selective on plants where predators are present.*

Products such as Diazinon and Cygon will kill both the aphids and their predators. The result is a continuous outbreak of aphids, which requires a continuous application of pesticides.

Products such as Pirimor and Insecticidal Soap are more selective and will allow predators to survive.

Pesticides for aphids on ornamental plants

Dormant Oil

A low toxicity product used by organic growers. It works by suffocating the eggs that are closed to hatching. It works well for aphids overwintering on plants and is fairly safe for predators.

Approximate cost for a 500-litre mixture is \$20 (for a 2% solution).

Safer's Insecticidal Soap (soap)

Organic growers use this product of very low toxicity. Excellent coverage is very important as it works only by contact. Soap will control about 50% of the aphids treated.

Approximate cost for a 500-litre mixture is \$65 (for a 2% solution).

Pirimor 50WP (pirimicarb)

A synthetic pesticide of moderate toxicity, it controls aphids but is fairly safe to many predators such as ladybeetles and syrphids. It is an excellent option where predators are present.

Approximate cost for a 500-litre mixture is \$25.

Cygon or Dimethoate EC (dimethoate)

This pesticide must be used with extreme care because of its high toxicity to humans.

Dimethoate is systemic: when applied to the bark of trunk or large branches, it is transported to the leaves where the aphids are feeding. This method is very useful for large trees in urban sites.

Approximate cost for a 500-litre mixture is \$10.

Orthene 75SP (acephate)

A pesticide very similar to dimethoate as it is both systemic and contact, but it has low toxicity to humans and is thus a safer option. It is a broad-spectrum product that kills predators.

Approximate cost for a 500 litre mixture is \$30.

Diazinon 50WP or EC (diazinon)

A pesticide of moderate toxicity, it is often the one and only product used by many companies. Diazinon is inexpensive, has an extensive label for ornamental plants, and a fairly long residual activity of 7 to 14 days. Diazinon will kill predators and parasites. The federal government has announced the withdrawal of domestic formulations in 2002 and commercial products in 2003.

Approximate cost for a 500-litre mixture is \$10.

When using pesticides, always read the label for rate of application and safety instructions

IV. FOR MORE INFORMATION

- *Field Guide to Harmful and Beneficial Insects and Mites of Tree Fruits*

H.G. Philip and Linda Edwards. B.C. Ministry of Agriculture, Fisheries and Food. 1993.

An excellent pocket-size publication with colour pictures of common predators of tree fruit – the same predators found on landscape plants. This brochure cost \$10 and is currently updated.

- *Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control*

M.L. Flint and S.H. Dreistadt. University of California Press. 1998.

An excellent book comes with colour pictures, technical information and a very affordable cost.

For more information, call 510-642-2431 or visit the web site at <http://danrcs.ucdavis.edu>

- *Biological Control: A Guide to Natural Enemies in North America*

This Cornell University web site offers good information and pictures of predators and parasites.

The web site is found at www.nysaes.cornell.edu/ent/biocontrol/

43rd Annual
**Horticulture
Growers'
Short
Course**

February 15-17, 2001

**Together with the
Pacific Agriculture Show**

at TRADEX

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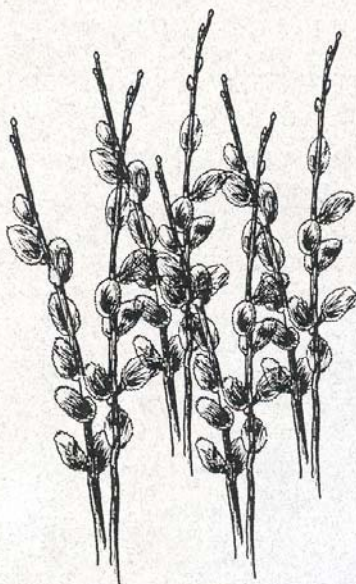
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and Fisheries

JANUARY, 2001

Growers' Hort Short Course - February 15, 16, & 17, 2001

The 43rd annual Lower Mainland Horticulture Improvement Association (LMHIA) Growers' Horticultural Short Course will be held February 15 to 17, 2001. The event consists of three days of concurrent seminars that provide information on ornamentals, tree fruits, berries, alternate crops, and vegetables. Both Thursday and Friday have sessions that are applicable for ornamental growers. Thursday features integrated pest management for ornamental crops in the morning and diversifying the bedding plant mix in the afternoon. On Friday the morning session looks at energy conservation in greenhouses and the afternoon session focuses on family farm estate planning and business pitfalls in managing farm labour. The greenhouse energy session is organized by BC Hot House Growers and the afternoon session is organized by BCMAFF's Farm Business Management.

Thursday, February 15 - Ornamentals Day Morning session

Focus on Integrated Pest Management

(2.5 pesticide recertification credits)

Principles of Integrated Pest Management for Ornamentals

Greg St. Hilaire, UCFV, Chilliwack

An overview of the components of IPM programs and some key points for the major pests of ornamental crops.

Predators and Parasites Commonly Found on Landscape Plants

Mario Lanthier, CropHealth Advising and Research, Kelowna

Join us for a tour of the predator gallery, what they look like, how to help them help us, what works and what does not work.

Biological Control for Greenhouse Ornamentals

Koppert Biological Systems' Representative

An overview of commercial biological control agents.

Afternoon session

Beyond Bedding Plants... The Best New Varieties of Annuals and Tender Perennials from Around the World

Josh Schneider, EuroAmerican Propagators and John Gaydos, Proven Winners North America

Josh and John will talk about some of the most exciting new plants to hit the North American market, as well as providing a preview of future introductions. Learn some simple ways to cash in on the container garden craze sweeping the marketplace.

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