Agriculture Notes

# Aphids as pests of ornamental plants

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June, 2000
AG0182
ISSN 1329-8062

***Aphids are a well known group of insect pests that occur in both winged (alate) and wingless (apterous) forms. When wings are present, they are usually large and transparent, with few veins.***

Adult aphids are slow-moving, plump-bodied insects about 2 mm long. The colour varies, depending on the species. Green, yellow, pink, brown and black forms occur. The young aphids (nymphs) look like the adults but are smaller and wingless.

Aphids are sometimes known as 'greenfly' or 'blackfly' when they live in exposed situations on leaves, shoots, or buds. Other species live hidden in unfolded leaves, at the base of the stem, or on roots.

## Habits and life-cycle

Adults and nymphs have similar habits and often live together in dense colonies. They feed on sap by piercing the plant tissue with their needle-like mouthparts that usually penetrate into the phloem.

Aphid life cycles are often complex. Many species alternate generations between different host plants; usually the two host plants are botanically distant. The generations of aphids produced on the primary and secondary hosts often have anatomical differences. Migration between alternate hosts is usually achieved by the production of winged forms. Host alternation probably evolved in response to the unsuitability, as food, of some hosts during summer and of most host plants during winter. In the milder climatic conditions in much of Australia, host alternation is not as important as it is in the more severe conditions of Europe.

Where winters are cold, aphids usually overwinter as eggs laid on the host plant. Eggs are commonly laid in the crevices between buds and stems. The eggs hatch in late winter or early spring to produce wingless female aphids (stem mothers), which do not lay eggs but produce live young. These, in turn, produce live young and several successive broods of aphids continue to appear in this way. This is why aphid populations may rapidly increase in spring if conditions are favourable.

When the condition of the host plant becomes unsuitable, either as a result of weather, growth factors or aphid feeding, many species of aphids produce winged forms that migrate to other hosts. The winged aphids produce wingless forms and the cycle repeats itself.

## Economic importance

Over 70 species of aphids, including a number of important pests, have been introduced into Australia from overseas. None of the native Australian aphids is an important pest.

Some aphids are annual pests that are liable to cause serious damage by hindering the growth of their host plants. Others only occasionally occur in large enough numbers to check the growth of their host plants. Probably the most important consequences of aphids attacking ornamental plants are:

- Transmission of virus diseases-about 200 species of aphids are recorded as vectors of plant viruses. The green peach aphid *Myzus persicae* is a common pest of ornamentals and is recorded as a vector of over 100 plant viruses. Ornamental plants that often have virus diseases transmitted by aphids include carnation, chrysanthemum, gladiolus, tulip, lilium, hyacinth, iris, narcissus, daphne, lilac, philodendron and many of the *Araceae*.
- Leaf distortion, gall production, discolouration- many plants respond to feeding activities of aphids by forming galls or leaf distortions. Some aphids inject toxic saliva into the plant. Removal of nutrients from the plant may cause discolouration.
- Production of honeydew-a sugary exudate produced by aphids while feeding. It encourages the growth of sooty mould, which makes the plants unsightly and inhibits photosynthesis. Honeydew also makes the plants sticky and may drip onto floors, seats, etc if infestations are heavy enough .

## Ornamental host plants

The green peach aphid *Myzus persicae* has stone fruit trees as the primary host but has a wide range of secondary hosts including Iceland poppies, roses, carnations, chrysanthemums and potato.

The cotton aphid *Aphis gossypii* has a wide range of hosts including plants from the following families: *Araliaceae, Compositae, Crassulaceae, Euphorbiaceae, Goodeniaceae, Labiatae, Lilaceae, Malvaceae,*

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*Myoporaceae, Myrtaceae, Proteaceae*, R*osaceae, Ulmaceae* and *Verbenaceae.*

The cowpea aphid, *Aphis craccivora*, is mainly confined to members of the *Leguminosae* but at the end of summer it may attack *Portulaca oleracea, Grevillea alpina* and *Viola* species.

The rose aphid *Macrosiphum rosae* occurs conspicuously on rose twigs. Spruce aphid *Elatobium abietinum* causes leaf fall on some *Picea* species but not on others. Maidenhair fern aphid *Idiopterus nephrelepidus* attacks ferns. The Californian maple aphid *Periphyllus californiensis* is widely distributed on *Acer palmatum*.

## Control

Aphids are seasonal pests and may occur in large numbers for a relatively short time, usually during spring and autumn. Aphids do not like hot, dry weather but the sheltered conditions in which many ornamentals are grown may allow the aphids to survive throughout the year.

Birds, spiders, lacewings, predatory bugs, parasitic flies and wasps, predatory beetles and some caterpillars attack aphids but growers aiming for 'pest-free' crops usually spray pesticides that result in the crops being 'insect-free' or at worst, devoid of beneficial insects.

Recommendations for preventing the spread of aphid-borne virus diseases are contained in publications referring to virus diseases of the particular host plant. In general, 'virus-free' plants should be grown in isolation, away from potential sources of infection. Growing conditions (including weed control) should discourage aphids, infested plants should be rogued out, and strict hygiene should be enforced .

Regular inspection of plants that are not hosts of aphid-borne diseases should allow the presence of aphids to be detected well before any damage occurs. Once aphids are detected, spraying with a suitable insecticide should prevent economic damage.

Care should be taken to avoid the use of insecticides that may be phytotoxic to the crop plants. Those registered for a specific host plant should be safe to use on that plant but chemicals registered under the broad category of 'general ornamental use' may be phytotoxic to some plants.

**Note:** Aphids are well known for developing resistance to pesticides. Growers who think they may have a resistance problem should contact their ornamentals extension officer.

**For effective pest and disease control, correct diagnosis is essential. A commercial diagnostic service is available at the Institute for Horticultural Development. For further information, contact the Diagnostic Service. ph: (03) 9210-9222 or fax (03) 9800 3521.**