

## PLANT PROTECTION: MANAGING PESTS AND DISEASES

Peter Haeusler and Neil Duncan

We were very fortunate in having Mr. Neil Duncan from the Northern Melbourne Institute of TAFE Horticultural Campus, Fairfield, come along to our April meeting and give a talk on common insect pests and diseases. The following summary notes have been compiled from Neil's talk.

### Insect pests

- **Aphids.** Small 2–4 mm long, soft-bodied insects which vary in colour from green to yellow and black. They often cluster on young shoots and flower buds or underneath leaves. Thrips attack fruit trees, roses, chrysanthemums and other ornamentals, along with a wide range of vegetables. Large infestations can develop in a few days, numbers multiplying rapidly in warm weather. Apart from damage to new growth aphids also transmit virus diseases so control is important. Aphids excrete a substance called honeydew, which in turn provides an environment on which sooty mould fungus grows.



Neil Duncan

Check plants weekly in warm weather so that aphids can be controlled when populations are relatively small. Look out for natural predators such as ladybirds and parasitic wasps. The ladybird larvae - which look like tiny bird droppings - are voracious eaters of aphids. There is a diverse range of controls available, from the more environmentally sensitive to harsher chemicals.

- **Mealy bugs.** Long-tailed and normal short-tailed – the former are a particular problem in clivias where they aggregate between the new leaves at the centre of the plant and under mature leaves. Unfortunately, broader-leaved Clivia forms seem to be even more attractive as homes! As with aphids, mealy bugs are sucking insects, which soon swell to large populations in warm, humid weather, damaging new leaves in particular and transmitting fungal and other diseases in the process.

Eco-control via ladybirds (as above). Chemical controls include Confidor. In the case of small infestations, you can simply squash them, and using warm water with a dash of kitchen detergent wipe clean infected leaves.

- **Scale.** There are many different types of scale, some of which are host specific (e.g. rose scale), while others attack a variety of hosts (e.g. white wax scale found on gardenias and citrus), but essentially there are two main groups of scale insects, hard scale and soft scale. Both forms spend most of their lives as immobile adults under a coating, sucking the sap from stalks, leaves

and stems. They can be found on the top side or underside of leaves and on stems or small branches. Once again it is through their sucking activity that scale can easily transmit viruses. There are various oil-based products on the market which are effective in controlling most common forms of scale.

- **Thrips** are 0.5mm – 15 mm long and range in colour from white to yellow to black. They attack the flowers, fruit and foliage of a variety of plants from roses and azaleas, to vegetables like tomatoes and beans, and fruit trees. In contrast to the above insects, thrips feed by rasping or scraping the surface of cells (of leaves and flowers) and then sucking up the contents. Damage from thrips includes mottling and yellowing of leaves due to loss of plant nutrition (scraping of the green tissue results in the yellowing or mottling effect). In azaleas this presents as the silvering effect that you will be familiar with. Thrips also leave black blobs – their faeces – on the underside of leaves, a good tell-tale sign that the problem insect is in fact thrips! Other symptoms include browning on petals and fruit, and flower drop. In severe infestations the leaves, new shoots and flowers become deformed. Thrips also spread plant viruses. Again, a wide range of controls is available, from the eco-friendly through to more conventional chemical applications.
- **Caterpillars.** Well-known to all gardeners! The lily borer caterpillar is a problem with clivias, burrowing as it does into the base of the plant and if not detected early can result in the loss of the plant. In Australia, lily borers are mainly confined to the warmer reaches of Queensland and New South Wales.  
Clivia enthusiasts in Victoria still need to be vigilant as the smaller green caterpillars can do a surprising amount of damage particularly among younger clivias (up to 2yrs). In such cases they can soon damage leaves and indeed eat out the centre leaves resulting in possible loss of the plant particularly if rot sets into the damaged centre.  
At the top of the control mechanisms is vigilance! Regularly look over your younger plants in particular and keep an eye out for those tell-tale signs – the leaves webbed together or the dust-like residue that you will see around the smaller centre leaves in particular. From there on you can hit them with one of the eco-sensitive treatments which targets caterpillars (you will need a different product to what you use on sucking insects) OR you can simply squash them...which is always rather satisfying!
- **Fungus gnats.** Small (2-3mm) mosquito-like insect which likes moist conditions and tends to live near the soil surface. Damage is caused by the larvae eating the roots of plants, including seedlings.  
For a simple control try the yellow sticky sheets (about 100mm X 250mm) that can be purchased in small packs from home hardware stores (garden pest control sections). These may be aimed at trapping thrips (the sheets can be located indoors or outdoors) but are extremely effective in your propagation box at trapping these insects.
- **Spider mites** are generally pale to darker yellow in colour, although in the winter months can become quite red. Like thrips, spider mites rasp the plant surface and suck up the material, resulting in a mottling effect on leaves. They are most active under dry conditions.
- **Nematodes** are microscopic worm-like insects. While some nematodes cause problems the majority are in fact very beneficial. Affected plants will lose leaf colour and plants will lack

vitality. Treatment is generally via application of appropriate chemicals to the soil around the plant. However, care must be taken so as not to cause more harm than good through destroying good nematodes. For this reason, seek professional advice if a nematode problem is suspected.

### Beneficial insects

- **Lacewings** (which are different from the Azalea lace bug) are voracious eaters of other insects, both good and bad!
- **Ladybirds** – see earlier comments.
- **Wasps** - some will attack scale, aphids.



### Insecticides

- **Mavrik** - broad spectrum synthetic pyrethroid for chewing and sucking insects, also mites. Contact application – needs to be sprayed onto the insects or surface of affected leaves. Insects can build up resistance so use perhaps two times and then change to an alternative.
- **Malathion** – broad spectrum organophosphate. Older type of chemical control - take care not to over-use it (i.e. alternate with other products).
- **Confidor** – a relatively new systemic insecticide which targets sucking insects such as aphids, mealy bugs, scale, thrips, and whitefly on ornamentals and vegetables. Confidor is absorbed through the foliage and moves throughout the plant to control insect pests, i.e. works from the inside out! Widely recommended in the control of long-tailed mealy bug (but note the stronger application rate required as per instructions).
- **Pyrethrum** - controls a wide range of insect pests on vegetables, flowers and ornamentals. Based on the natural pyrethrum daisy extract. Low toxic.
- **Natrasoap** - is a new generation broad-spectrum insecticide. It is a contact spray which is effective against a wide range of insect pests including aphids, mites, leafhopper, thrips, and whitefly. It is nil residual, making it environmentally safe.
- **Pest oil** – petroleum-based oil (has replaced White Oil) for control of citrus leaf miner, scales, mites, mealy bug, aphids and white fly on, for example, fruit trees and ornamentals. Works by smothering insects. Low toxic.
- **Eco-oil** – vegetable-based and hence environmentally friendly. Organic miticide and insecticide which controls a range of insects including scale, aphids, two-spotted mite, whitefly and citrus

leaf miner. Safe for use on vegetables. Also safe for beneficial insects like bees, ladybeetles and earthworms.

- **Dipel** - a non-toxic, natural caterpillar control.
- **Success**. Controls a range of insects, especially chewing insects like caterpillars on fruit, vegetables and ornamentals. Potentially useful in controlling insects that may have become resistant to other insecticides. Non-residual, broken down by sunlight and soil microbes.
- **Beat-a-bug**. Ingredients include chili, garlic and pyrethrum, more of a repellent.
- **Neem oil** is a naturally occurring pesticide found in seeds from the neem tree. Neem oil is practically non-toxic to birds, animals and bees.



## Fungicides

- **Mancozeb** - used to protect many fruit crops, vegetables and flowers (including clivias) from a wide spectrum of fungal diseases.
- **Kocide** is a new generation garden fungicide designed to protect plants from fungal and bacterial diseases including black spot, leaf curl, and downy mildew.
- **Liquid copper** - a broad-spectrum fungicide for control of a wide range of diseases on fruit, vegetables and ornamentals.
- **Fongarid** - is a systemic fungicide that controls damping off and root diseases caused by Pythium and Phytophthora fungi in ornamental flowers, shrubs and trees.
- **Sulphur** - one of the oldest garden remedies which has multiple uses in the garden. Dusting grade Sulphur can be used to control foliar fungi or powdery mildew.
- **Triforine** – a systemic fungicide which acts as both a preventative and a curative, destroying diseases already in the plant and preventing disease infestations.
- **Eco-fungicide** - organic fungicide for the control of powdery mildew, black spot and rust in many plants. It attacks existing fungal infections and prevents new spores from germinating. Eco-fungicide can be mixed with Eco-oil to create a two-in-one organic insecticide and fungicide.

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