

Summary of Associated Professor Calum Wilson's virus talk from our July 2012 Meeting

There are 30 different viruses which can infect Orchids, & there is likely to be more which so far are unidentified.

In many overseas countries Odontoglossum Ringspot Virus (**ORSV**) and Cymbidium Mosaic Virus (**CyMV**) are most common, and Orchid Fleck Virus (**OFV**) was rare in the past.

In Australia, testing in laboratories in NSW & Tasmania produced the following results from suspect plants sent for testing.

NSW	Tas	
CyMV	8.7%	15.5%
ORSV	61.9%	63.5%
OFV	29.4%	21.1%

ORSV was first reported in the USA in 1951. It is common in orchids, world wide. It is spread by plant to plant contact, also by cutting, pruning & handling of plants, and seed contamination.

It is a **very stable** virus, & survives in dried leaves etc for over 100 years.

CyMV was first reported in cymbidiums in 1950. It is spread by plant to plant contact, also by cutting, pruning & handling of plants. It is quite a stable virus.

OFV was first reported in Japan in 1969. It is reported widely around the world. It is quite unstable, surviving quite a short time outside a live plant.

OFV is found in a wide range of orchid species & infects other plant families. It infects plants systemically (moves throughout the plant). There are distinct genetic strains.

Means of spread. By the False Spider Mite (*Brevipalpus californicus*), also cutting, pruning & handling of plants (with difficulty). It is not transmitted by seed. Transmission is more frequent at temperatures above 30 degrees centigrade & it is easier to infect non orchid plants. False Spider Mite is found naturally infesting over 1000 plant species. It feeds initially along the midribs of leaves, then moves outwards.

Life cycle is eggs, larva, photo-nymph, deuto-nymph, adult.

Eggs take 3 weeks to hatch and immature stages take 5-6 weeks to become adults. Between stages they exist as chrysalis, glued to plants.

Adults are about half the size of the 2 spotted mite (red spider).

The life span of the false spider mite is about 2.5 times that of the 2 spotted mite.

The false spider mites produce exclusively female populations, in hot, humid conditions. A bacterium is responsible for female only reproduction. They do not produce webbing as does the 2 spotted mite.

False spider mite moves by lifting (gliding) from leaf surfaces & moves with the wind. Moving by walking is not considered important. They are also transported on infested plants & worker clothing. Movement is stimulated by overcrowding also by host plant senescence (biological ageing after maturity), or death.

The false spider mite acquires virus while feeding. The virus infests the gut lining, then moves into the body & into the salivary glands. Once infected it probably carries the virus for life.

The mite needs at least 30 minutes feeding to transmit the virus.

Symptoms of OFV in plants can be useful but are unreliable. Symptoms vary with

1. Mixed infections
2. Host species and cultivar
3. Virus strain
4. Age of the plant at infection
5. Time since infection
6. Environmental conditions (temp etc)
7. Plant stress

Detection at the moment is by using an Electron Microscope. There is no lateral flow test kit (Agdia) available yet.

Management

Virused plants cannot be cured. No chemical treatment will eliminate virus. Removing symptomatic leaves **will not** eliminate virus.

Precautions

Quarantine new plants. Infected plants should be quickly removed and destroyed. Monitor plants continually. Sterilize all cutting tools with Tri Sodium Phosphate, bleach, or by flame. Use soap & water, or disposable gloves on hands. Avoid plant to plant contact (space them) and avoid excessive handling

Control

Biological control is worth using. *Phytoseiulus persimilis* and other predatory mites may feed on them.

Miticide sprays which control 2 spotted mite should work. It is critical that full spray coverage is achieved. Horticultural oils and insecticidal soaps may be effective, though be careful, some are phytotoxic. Repeat treatments to break overlapping lifecycles of mite populations. Regular water sprays can remove some mites.

Calum stressed that there is a lot still to learn about this virus and the role played by the false spider mite. We need to be careful in reaching conclusions, without thorough research, over a wide range of conditions. Industry groups (eg orange growers) have in the past funded research into other virus problems (industry related), which has benefitted orchid growers. At this stage little research has been done on Orchid fleck Virus.

Since the general meeting in which Calum spoke about virus, your committee have met and discussed at length what we should do to assist our members to prevent & control virus.

We have formed a sub committee to review the talk and to advise if further action is required. Very importantly, we have committed to fund a post graduate student at the University of Tasmania, under the supervision of Calum, to further research Orchid Fleck Virus. We expect to gain a huge amount of information through this venture, which should benefit orchid growers, world wide. One aim is to try to isolate the virus from the plant material, possibly leading towards the development of a lateral flow test kit, similar to the Agdia kit, presently available to test ORSV and CyMV.

We will seek donations from other clubs and interested parties. We already have significant donations from Nico Jong (Jong's Nursery, Mt Compass) also from the Milicent Orchid Club, but further financial assistance would enable more work to be done. All members are encouraged to promote this venture to other clubs they may be associated with. We have the opportunity here to significantly improve orchid culture, world wide.

More information will be provided at future meetings, and helpful suggestions are most welcome.