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Poinsettia Whitefly

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INFESTATION IN AUSTRALIA

The poinsettia whitefly was first detected in Australia in the Berrimah area of Darwin, Northern Territory, in October 1994, on a rockmelon crop. The infestation was traced to the introduction of euphorbia snowflake from a Queensland nursery sometime in 1993. The pest was then found to be widespread in New South Wales and Queensland and there was an isolated occurrence in Tasmania.

SCIENTIFIC AND COMMON NAMES

The common name silverleaf whitefly is an alternative to poinsettia whitefly and the scientific name is *Bemisia tabaci*.

An indigenous strain of the whitefly of low pest status has been present in northern Australia for many years and has been known by the common names of sweet potato, cotton or tobacco whitefly.

DESCRIPTION AND BIOLOGY

Adults are about 1 mm long and appear as narrow white wedge-shaped insects. When an infested plant is tapped these tiny insects can be seen to flutter out and rapidly resettle.

Adults feed and lay their eggs on the undersides of young leaves and a female can lay up to 160 eggs during a 60 day life. The eggs are white at first but turn brown before hatching. The larval or immature stages are greenish white, scale like and oval in outline. The pupal or resting stage is yellow, slightly pointed at one end and 1-2 mm long

In Darwin conditions, the life cycle takes 18 days from egg stage to winged adult which is a much faster rate than that of the related indigenous whitefly.



Because the poinsettia and indigenous sweet potato whiteflies cannot be distinguished by appearance, samples of insects suspected of being the poinsettia whitefly need to be sent interstate to be tested by a biochemical technique.

HOST PLANTS

The whitefly has been recorded from more than 600 species of plants representing 74 plant families. Crops that support large numbers of the poinsettia whitefly include cotton, okra, cabbage and other brassicaceous crops, cucumber, squash, zucchini, rockmelon, watermelon, pumpkin, gramma and other cucurbits, tomato, eggplant, capsicum, chilli, sesame, soybean, bean, peanut, phasey bean, siratro, sweet potato and many ornamentals, e.g. duranta, poinsettia, euphorbia snowflake, hibiscus, lantana, verbena, gerbera and chrysanthemum. Some other plants known to be hosts of the whitefly include grape, citrus, taro, pawpaw, lettuce and frangipani.

Weeds in the Top End of the Northern Territory that could harbour the whitefly include *Euphorbia heterophylla*, *Euphorbia hirta* (asthma weed), *Phyllanthus* spp., *Mitracarpus hirtus* (white-eye or Berrimah weed), *Macroptilium phaseolooides* (phasey bean), *Senna obtusifolia*, *Physalis minima* (native gooseberry) wild mustards (family Brassicaceae), *Ipomoea* spp., blackberry nightshades (*Solanum americanum* and *S. nigrum*), *Emilia sonchifolia* (emilia or red tasse flower), *Sida acuta* and other malvaceous weeds. *Euphorbia hirta* is often infested with a native whitefly (*Asterobemisia* sp.) which appears "furry" because of abundant wax secretion and therefore looks different from poinsettia white fly. These weed hosts are most prone to infestation when they are growing lushly in shaded, well-watered and/or well-fertilised locations.

DAMAGE

Direct crop damage occurs when whitefly adults and immature stages suck sap, causing plants, (for example rockmelons), to collapse. With high populations plants may die. Low numbers of insects in highly cosmetic crops such as ornamentals can affect their marketability. Overseas, good breeding hosts like rockmelon and cotton in the field and poinsettia and euphorbia Snowflake in nursery situations are badly damaged. Crops like tomatoes are damaged by the pest, but are more severely affected when grown near a good breeding host such as rockmelon. In California, the poinsettia whitefly has affected grapefruit, other citrus and grape plantations when populations in the vicinity have been in very high numbers. Moulds growing on the copious honeydews produced by the insects cause ornamentals to look unsightly and can reduce photosynthesis affected plants.

In some hosts, damage can result from toxins produced by the feeding activities of immature insects. *Cucurbita* species, squash, zucchini, some varieties of pumpkin, and particularly gramma (butternut, Japanese, Asian and other varieties) can develop a silvering of the leaves along the upper surface known as squash silver leaf and also a whitening of the leaf stalks and stems. The silver leaf starts as a lightening of the veins of new foliage growth. On the next oldest leaves this paleness intensifies. Finally, a large portion of the upper leaf area can become silver in colour. Infestation on tomatoes can cause blotchiness or irregular ripening rendering them unsaleable. Broccoli and other brassicas develop a phytotoxic disorder called "white streaking" as a result of the feeding activities of the immature stages. Poinsettias and the blackberry nightshade weeds (*Solanum americanum* and *S. nigrum*) may develop "vein-clearing" symptoms when only low numbers of juveniles had fed on the plants.

ROLE IN DISEASE TRANSMISSION

The sweet potato whitefly transmits the serious tomato leaf roll disease caused by the Australian tomato leaf curl geminivirus to tomatoes (Refer Agnote I25, Tomato Leaf Roll - A Serious Disease in the Top End). The poinsettia whitefly is known to transmit several geminiviruses including strains of tomato yellow leaf curl geminivirus and tomato mottle geminivirus. Worldwide, poinsettia whitefly is capable of transmitting viruses that cause more than 40 crop diseases.

DETECTION OF POINSETTIA WHITEFLY

There are many ways that the insect may be detected.

1. In contrast to the sweet potato whitefly, the new poinsettia whitefly breeds extremely well on rockmelon plants. Consequently, numerous whiteflies in a rockmelon planting are a good indication of this new pest.
2. The sweet potato whitefly does not breed on tomato plants. Any whitefly breeding on tomatoes in this area is likely to be poinsettia whitefly.
3. The weed *Euphorbia heterophylla* is very attractive to the whitefly especially when growing in moist shady locations which can allow rapid breeding. The pest can be detected either as the fluttering adults or as the immature scale-like insects on the underside of older leaves.
4. If white flying insects are observed building-up on susceptible plants such as poinsettia, euphorbia snowflake, hibiscus or gerbera it is likely that the poinsettia whitefly is involved.
5. Another good indication of the presence of poinsettia whitefly is a silver leaf appearance of the upper leaf surface of grammas, pumpkin, most varieties of squash and zucchini and some varieties of pumpkin. Only a few immature stages are necessary to cause the silver leaf reaction.
6. Any sudden build-up of small whitish fluttering insects on plants should be investigated as a possible infestation.

CONTROL

Since there are very few insecticides registered which will give effective control of the poinsettia whitefly, every effort should be made to prevent the entry of the whitefly to uninfested properties or areas. It is important to carefully check ornamental plants before purchase, for the presence of adults or the scale-like immature stages on the underside of the leaves.

The use of several chemicals, such as insect growth regulators, insecticidal (potassium) soaps, petroleum and vegetable oils are now covered by Minor Use Permits from the Australian Pesticides and Veterinary Medicines Authority. Details can be obtained from www.apvma.gov.au or from the Entomology Section on (08) 8999 2259.

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