



## Anthurium Thrips Damage to Ornamentals in Hawaii

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**A**nthurium thrips, *Chaetanaphothrips orchidii* (Moulton), (Thysanoptera: Thripidae), formerly known as the orchid thrips, was first collected in Hawaii in 1926 and has since become a common pest of ornamentals. It is a widely distributed species, infesting greenhouses and outdoor landscapes in the Dominican Republic, South America, Australia, Japan, Puerto Rico, India, many European countries, and, within the USA, it has been reported in Florida, Kentucky, Washington DC, New York, Louisiana, Illinois, and California, as well as Hawaii. The anthurium thrips is similar in appearance to two other introduced *Chaetanaphothrips* species, the banana rust thrips, *C. signipennis* (Bagnall), and *C. leeuweni* (Karny), that share similar hosts including banana, ti, and anthurium.

### Hosts

While the anthurium thrips shows a preference for anthuriums, it is a polyphagous feeder, attacking many other flowers, ornamentals, herbs, fruits, vegetables, grasses, and weeds. Its host plants include dendrobium orchid, begonia, bird-of-paradise, bougainvillea, chrysanthemum, night-blooming cereus (*Peniocereus greggi*), wandering jew (*Tradescantia fluminensis*), parsley, citrus, sweetpotato, lychee, banana, and corn.

### Damage

The appearance of feeding damage caused by anthurium thrips varies among host plant species. In most cases, thrips prefer to feed on very young, succulent, immature fruits, flowers, and foliage.

Adult and immature thrips begin feeding within the unopened anthurium spathe soon after the bud emerges from the leaf axil. Damage to anthurium appears as white streaks or scarring on the front and back of the spathe,

deformed spathes, and, with age, bronzing of injured tissues. Generally, the white streaks and scarring on spathes caused by anthurium thrips are wider than those caused by banana rust thrips. In severe cases, anthurium spathes fail to open, foliage may be deformed with bronzing and streaking, and plant growth may be reduced (see Fig. 1).

### Biology

No male anthurium thrips has been observed; reproduction occurs without mating and is continuous throughout the year. The adult uses a sharp ovipositor to deposit up to 80–100 eggs into a bud or sheath. After 6–9 days, the eggs hatch into nymphs that are whitish and look like adult thrips but are smaller and lack wings. The nymphs crawl and feed on the plant tissues for about a week, causing damage with their sucking-rasping mouthparts. Late-stage nymphs are yellow to orange and migrate off the host plant to molt into the prepupal stage. Prepupae look similar to nymphs but have wing pads; pupae have longer wing pads. Pupation occurs in the soil or growth medium beneath the host plant, and neither the prepupal nor the pupal stage feeds. In severe infestations, prepupae can occur in silken cocoons on the plant. The adult (Fig. 2) emerges from the pupal cells after approximately 20 days and reinfests the host plants. It is yellow with banded wings and is about the size of the period at the end of this sentence ( $\frac{1}{25}$  inch). The entire life cycle (egg to adult, Fig. 3) is completed in approximately 28–32 days, but it may extend to 3 months, depending on the temperature. Higher temperature and humidity and new growth of host plants appear to be favorable to thrips' feeding and breeding, leading to heavier infestations and greater damage during the summer months (Fig. 4).

### Control

Anthurium thrips are a serious pest to the anthurium industry. Damage occurs 6–8 weeks before flower harvest. Feeding by only a few thrips can cause white streaks on spathes. Since thrips prefer feeding in unopened buds and unfurled leaves and pupate in the medium or soil beneath the host plant, they are concealed throughout most of their life cycle and may be difficult to detect. To avoid ineffective control measures, it is important to identify the particular thrips species in an infestation. Using a hand lens, check in rolled leaves and unfurled buds, or collect samples to submit for professional diagnosis and species identification to the Hawaii Department of Agriculture or to the CTAHR Agricultural Diagnostic Service Center via any CTAHR Cooperative Extension Service office.

### Biological control

In Hawaii, anthocorid bugs (*Orius tristicolor*, *O. persequens*, and *O. insidiosus*) are general thrips predators, although the extent of their effectiveness against anthurium thrips is not documented. Certain lacewings, ladybird beetles, and predatory mites may also exert some control on nymph and adult thrips, while ants may prey on pupae in the soil. Several fungi, including *Paecilomyces* species and *Verticillium lecanii*, have been isolated from other thrips species and may infect anthurium thrips as well.

### Cultural control

Remove infested flowers and foliage from the field or greenhouse to eliminate existing sources of thrips. Control weeds and grasses, and remove old stock plants that may serve as hosts to anthurium thrips. Obtain thrips-free propagative material when restocking.

There are no reports of anthurium cultivars that are resistant or susceptible to anthurium thrips, but injury is more noticeable on pastel shaded cultivars such as ‘Marian Seefurth’.

### Biorational control

A hot-water dip before planting at 120°F (49°C) for 10 minutes can disinfest anthurium propagative material of thrips. Anthurium cultivars that tolerate hot water treatment as rooted plants with leaves include ‘White Lady’, ‘Blushing Bride’, and ‘Kozohara’, while ‘Ozaki’ can-

**Figure 1. Damage to anthurium by anthurium thrips (top to bottom): leaves; unfurled spathe; front of spathe, ‘Marian Seefurth’ cultivar; back of spathe.**



not tolerate hot-water dipping except as whole stem pieces (*gobo*).

**Chemical control**

Because pesticide registrations may change, consult a chemical sales representative, the Hawaii Department of Agriculture, or the CTAHR Cooperative Extension Service for information on insecticides currently approved for use against thrips in anthurium.

Remove infested flowers and foliage from the field or shadehouse to allow increased insecticide penetration and coverage. Because thrips prefer young, growing plant tissue, good spray coverage at the base of plants where spathe development occurs is essential to contact any exposed thrips. Caution should be used if applying insecticides on anthurium, because phytotoxicity can occur under hot, dry conditions. Granular contact insecticides are effective against the prepupal and pupal stages of anthurium thrips that occur in the soil,

**Figure 2. Adult anthurium thrips.**



medium, and plant debris near the base of the host plant, but no granular insecticide is currently registered for use in anthurium.

Generally, anthurium thrips populations increase during the summer and decrease during the winter due to fluctuations in temperature and rainfall. Consequently, repeated spray applications may be needed only from May through August. Depending on the insecticide used, three to four applications at 2-week intervals may be necessary to protect newly developed anthurium flowers from moderate to severe infestations.

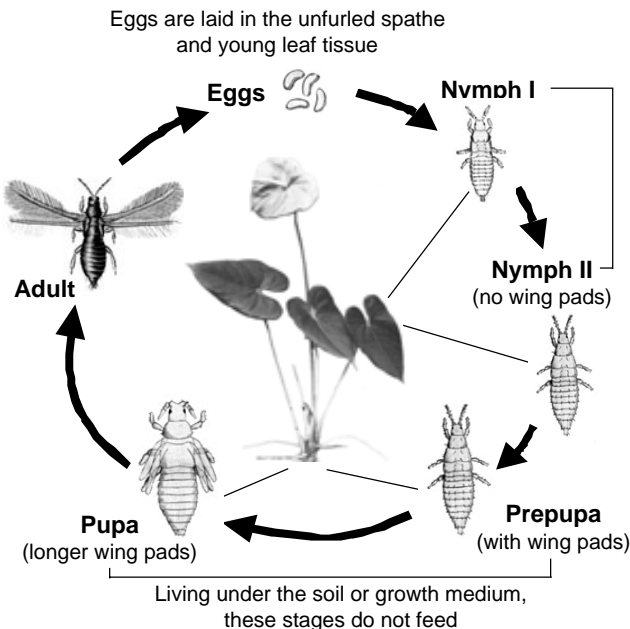
When thrips injury is sustained during the bud stage, injured anthurium flowers will be harvested for at least a month following application of an effective insecticide.

**References**

Anathakrishnan, T.N. 1984. Bioecology of thrips. Indira Publishing House, MI. pp. 77–78.  
 Hara, A.H., R.F.L. Mau, D.M. Sato, and B.C. Bushe. 1987. Effect of seasons and insecticides on orchid thrips injury of anthuriums in Hawaii. HortScience 22(1):77–79.  
 Hara, A.H., K.T. Sewake, and T.Y. Hata. 1990. Anthurium thrips. HITAHR Brief no. 086. College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa. 1 p.  
 Hata, T.Y., and A.H. Hara. 1992. Anthurium thrips, *Chaetanaphothrips orchidii* (Moulton): biology and insecticidal control on Hawaiian anthuriums. Tropical Pest Management 38(3):230–233.

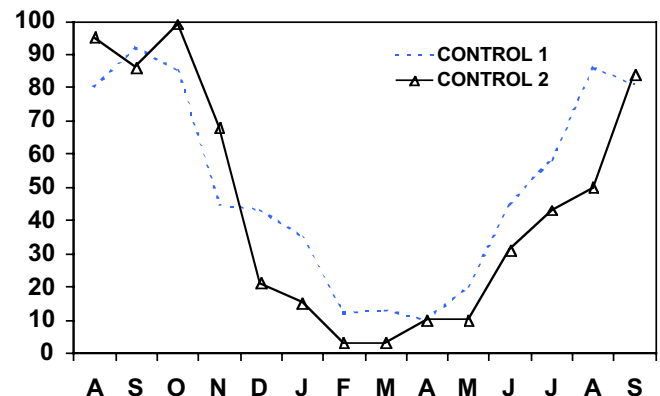
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**Figure 3. Life cycle of the anthurium thrips.**



Insect drawings from D. Schulz; plant photo from Higaki et al. (see References).

**Figure 4. Seasonal fluctuation of thrips injury (%) to anthurium flowers at Mountain View, Hawaii (Hara et al., 1987).**



- Higaki, T., J.S. Lichty, and D. Moniz (eds.). 1994. Anthurium culture in Hawaii. Research Extension Series 152, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
- Jacot-Guillarmod, C.F. 1974. Catalogue of the Thysanoptera of the world. Annals of the Cape Provincial Museums (Natural History) 7 (Part 3):634.
- Pelikan, J. 1954. Remarks on the orchid thrips *Chaetanaphothrips orchidii* (M.). Folia Zoologica et Entomologica 3:3–12.
- Pinese, B., and R. Piper. 1994. Bananas; insect and mite management. Queensland Department of Primary Industries, Australia. 67 pp.
- Sakimura, K. 1975. *Danothrips trifasciatus*, new species, and collection notes on the Hawaiian species *Danothrips* (Thysanoptera: Thripidae). Proc. Hawaiian Entomol. Soc. 22:125–132.
- Schulz, D. ca. 1950. Department of Entomology, University of Illinois at Urbana-Champaign. <<http://www.life.uiuc.edu/Entomology/insectgifts/>>.