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2002 Florida Citrus Pest Management Guide: Flower and Orchid Thrips¹

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Thrips are small, elongate insects in the Order Thysanoptera and vary in size from less than 0.2 mm to over 2.0 mm in length. Because of their minute size they are easily overlooked.

The life cycle of a thrips species consists of an egg, two larval feeding stages, a non-feeding pre-pupal stage, a non-feeding pupal stage and feeding adults. About 14-18 days are required to complete development from egg to adult in some *Frankliniella* species.

Flower Thrips

Flower thrips, *Frankliniella bispinosa* and *F. kellyae*, have been identified as causing injury to developing flowers of navel and 'Valencia' oranges. Crop loss on other citrus varieties has not been evaluated to date. *F. bispinosa* is the prevalent species throughout the citrus growing areas of the state while *F. kellyae* occurs on citrus from Vero Beach and Hardee County in the north to Dade County in the south. Their feeding results in cellular evacuation 1 - 5 cells deep and subsequent necrosis that can result in abortion of the flower or small

fruitlet. Adult populations of these two species are migrating as "aerial plankton" prior to and during the regular flowering cycle between January-April each year. Both species have very wide host ranges and utilize flowers or pollens of many plants as food sources. High populations of these thrips can cause economic loss in navel or 'Valencia' orange by reducing fruit set. Both thrips species insert their eggs singly into all floral parts. Two potential factors (thrips and the fungal pathogen, *Colletotrichum acutatum*) involved in reduced fruit set on navel or Valencia orange during the flowering cycle in Florida (see Postbloom Fruit Drop, PP-45).

Examine orange blocks during flowering at least twice each week to identify periods when high populations of thrips (i.e. *Frankliniella* spp.) are migrating into the trees. However, numbers of thrips per citrus flower that cause economic loss have not been determined. The adult thrips are about 1 mm long and yellow to straw colored. Dark banding along the upper surface of the abdominal segments may be evident on some adult specimens. Larvae are white or yellow. Thrips are capable of entering buds as soon as individual petals begin to separate.

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Examine individual flowers, at random, with a 5-10X magnification (head set) and observe their numbers. Residual activity of insecticides is very short (i.e. 3-7 days). Timing of one application to protect the major flowering period between maximum bud swell and full bloom should be considered. This is best achieved by treating the block at maximum bud swell or onset of full bloom. Delay will allow thrips to enter the opening flowers and reduce exposure to the insecticide. Treatment recommendations (Table 1) are based on the need for chemical control to optimize fruit set for fresh market. Remember, the recommended insecticides are toxic to honeybees.

Orchid Thrips

The orchid thrips, *Chaetanaphothrips orchidii*, *Danothrips trifasciatus*, and the greenhouse thrips, *Heliothrips haemorrhoidalis*, cause rind blemish problems on developing fruit (i.e. ring spotting or irregular russetting) on immature and mature clustered fruit or where a leaf or twig is in direct contact with a fruit. The orchid thrips females are yellow to straw colored with distinctive dark banding on the wings. Larvae are white or yellow with distinctive minute spines present on the upper surface of the eighth abdominal segment. Adult female greenhouse thrips are black while the larval and pupal stages are white. All stages of the greenhouse thrips are occasionally found on the fruit. Economic loss to growers has been restricted to red grapefruit varieties in Florida. However, they are capable of causing damage to white grapefruit varieties also. The orchid thrips is the most commonly found species associated with damaged grapefruit and occur throughout the year. *Danothrips* is usually present in lower numbers with the orchid thrips.

Examine interior clusters of red grapefruit at random with a 5-10X magnification (head set) beginning the first week of May or just as clustered fruit begin to touch for presence of orchid thrips, *Danothrips trifasciatus*, and greenhouse thrips larvae and adult females. Either wash suspected individual infested fruit in a bucket containing 80% alcohol and record the grove location to verify pest thrips or collect three or more samples of 20 clustered fruit at random from each 10 acre red grapefruit block. Each of the 20 interior canopy red grapefruit should be

immediately washed in a bucket containing about one pint of 80% alcohol. Fruit should be collected at random with not more than 4 fruit taken per tree and a minimum of five trees per sample. One or two insecticide applications (Table 2) between May and July may be required to prevent rind blemish damage on red or white grapefruit varieties.

Recommended Chemical Controls

READ THE LABEL.

See Table 1 and Table 2.

Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. To treat smaller trees with commercial application equipment including handguns, mix the per acre rate for mature trees in 250 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.

Table 1. Flower thrips on navel or 'Valencia' orange.

Pesticide	Mature Trees Rate/Acre ¹	Comments	Other Pests Controlled
Dimethoate	See label		Aphids, scale insects except citrus snow and black scale
Lorsban 4 EC Lorsban 50 W	4 pt 4 lb		Mealybugs, orangedog, katydids, aphids, grasshoppers, scale insects
¹ Lower rates may be used on smaller trees. Do not use less than minimum label rate.			

Table 2. Orchid thrips, *Danothrips trifasciatus* and greenhouse thrips on developing red or white grapefruit.

Pesticide	Mature Trees Rate/Acre ¹	Comments	Other Pests Controlled
Ethion 4 EC + Petroleum Oil 97+% (FC 435-66, FC 455-88, or FC 470-01)	5 pt + 5 gal	Do not apply by air. Do not apply when temperatures exceed 94°F. FC 470-01 has not been evaluated for effects on fruit coloring or ripening. These oils are more likely to be phytotoxic than lighter oils.	Citrus rust mites, spider mites, whitefly, sooty mold
Lorsban 4 EC Lorsban 50 W	5 pt 5 lb		Mealybugs, orangedog, katydids, aphids, grasshoppers, scale insects
¹ Lower rates may be used on smaller trees. Do not use less than minimum label rate.			