NOTES ON *Chaetoanaphothrips orchidii* (Moulton) FOUND ATTACKING CITRUS FRUIT IN FLORIDA

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In 1937 some mature grapefruit with rather unusual surface markings were sent to the Citrus Experiment Station at Lake Alfred from a grove on Merritt Island, near Cocoa, Brevard County. The writer visited the grove and observed nymphs of some species of thrips on the marked fruit. In December, 1937, the writer, accompanied by J. R. Watson¹, visited the grove and collected an adult thrips on a marked fruit. Watson has identified the thrips as *Chaetoanaphothrips orchidii* (Moulton). A. M. Boyce² had recently described a similar injury on oranges in California that was caused by the greenhouse thrips, *Heliothrips haemorrhoidalis* (Bouche). During February, 1938, the writer visited groves in La Ceiba, Honduras, and observed markings on grapefruit similar to those described by Boyce on oranges in California and also much like the markings on the grapefruit in Florida. The thrips collected on the fruit in Honduras were identified by J. R. Watson as greenhouse thrips. One particular difference between the marked fruit in Honduras and that in Florida was the visible excrement deposited by the greenhouse thrips, as described by Boyce, while on the fruit in Florida no excrement was visible. During 1938 periodical visits were made to two infested groves in the vicinity of Cocoa, Florida. The

¹J. R. Watson, Entomologist, Florida Agricultural Experiment Station.
²The California Citrograph, Vol. 23, No. 1, November, 1937.
C. orchidii were more abundant in a neglected grove than in one that received the regular spray program for disease and insect control. All sprays except an oil spray contained sulfur. During 1939 the thrips were observed in groves in the following counties: Brevard, Indian River, St. Lucie, Hardee, Manatee, Polk and Orange (marked fruit only). The C. orchidii have been collected on oranges and tangelos in addition to grapefruit. It is interesting to note also that a few greenhouse thrips were collected in groves in Brevard and Indian River Counties.

The adults of the C. orchidii are a light yellowish color. The wing shoulders are dark with a light area right back of the shoulders and the remainder of the wing is dark in color, giving the appearance of two black stripes down the back when the wings are folded. There are three small scarlet-colored dots between the eyes (ocellar crescents) that can barely be seen through the hand lens (10X). The adults are very lively when disturbed or when in direct sunlight. The young nymphs are colorless, seemingly almost transparent but the older nymphs are a very light yellowish color and, as they become more mature, the abdomen has a pinkish tinge of color. The nymphs, like the adults, become quite active when exposed to direct sunlight.

The life history has not been studied but young nymphs were observed 10 days after adults had been placed on the fruit and in 33 days (September 30 to November 2) adults were observed. On the average there were only four to six nymphs per infested fruit but 16 nymphs and four adults have been found on a single fruit.

The C. orchidii feed in sheltered areas on the fruit much as do the greenhouse thrips and are found chiefly at the point of contact between fruit in clusters although they are also found where a leaf is in close contact with the fruit. An occasional nymph has been found on the under surface of a leaf where the leaf was directly over an infested fruit. The thrips appear to prefer green, immature fruit. Where both green fruit and mature fruit were on the same tree there was a higher percentage on infested green fruit than mature fruit.

The appearance of the injury caused by C. orchidii differs according to the age of the fruit at the time it is attacked. When young fruit are attacked the injury appears as a solid area due to the fact that the contact between the fruit is practically a point contact. After the fruit has matured the early injury
has the appearance of a silvery to dark brown-colored blotch, sometimes two to three inches wide. The injury produced on the more matured fruit usually takes the form of a dark brown ring since the mature fruit have flattened to form an area of contact into which the thrips are unable to penetrate so that the injury takes place around the area of contact.

The *C. orchidii* is probably not a very new species in Florida since the ringed injury on grapefruit has been observed for some years and was thought by many to have been the result of an oil burn from the rind of the fruit caused by the oil being pressed out of the rind by the weight and rubbing of large fruits hanging in clusters.

Commercial damage has been observed in only a limited number of groves and in each case no sulfur or only a minimum number of sulfur sprays had been applied during the spring and summer. In one portion of a commercial grove an unsprayed check plot had thrips injury on 57 percent of the fruit hanging singly and 70 percent of the fruit hanging in clusters. Sulfur sprays applied for rust mite control are apparently a factor in keeping the thrips population at a minimum. In various experimental plots receiving sulfur sprays there was less marked fruit than in the unsprayed checks although none of the sprays were applied for thrips control. In one preliminary experiment for thrips control on grapefruit the thrips population was decreased 84 percent with 1.5 percent lime-sulfur solution supplemented with 6 pounds of wettable sulfur per 100 gallons.

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