

PEST ALERT

FDACS-P-01926

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Florida Department of Agriculture and Consumer Services Division of Plant Industry

Thrips parvispinus (Karny)

Felipe N. Soto-Adames, Ph.D., Bureau of Entomology, Nematology and Plant Pathology
DPIHelpline@FDACS.gov or 1-888-397-1517

INTRODUCTION

On July 30, 2020, a sample of thrips collected in a greenhouse on *Hoya* and *Anthurium* in Orange County was submitted to the Florida Department of Agriculture and Consumer Services Division of Plant Industry (FDACS-DPI) for identification. These thrips were associated with substantial damage to leaves (Fig. 5) and leaf buds (Fig. 9). A preliminary identification as *Thrips parvispinus* (Karny) (Thripidae) was communicated by Lyle Buss (UF/IFAS, Gainesville, Florida) and later confirmed by DPI taxonomists based on a female examined under compound microscope, and DNA barcode sequences from three individuals. This is the first record for *T. parvispinus* in the continental U.S. This species is native to the Asian tropics and has been reported from Indonesia, India, Thailand, Malaysia, Singapore, Taiwan, China, Philippines, Australia and the Solomon Islands (Mound and Collins 2000). However, during the last 20 years the species has been expanding its range and is now found in Greece, France, Spain, The Netherlands, Tanzania, Mauritius, Reunion and Hawaii (The Netherlands Plant Protection Organization Quick scan 2019, Mound et al. 2016). Barcode sequences from specimens collected in Orange County are identical to those found in populations in Indonesia. *Thrips parvispinus* feeds on many plants, but it is most damaging to papaya in Hawaii and Indonesia, peppers and other solanaceous crops in Indonesia and ornamentals in Europe and Indonesia.

IDENTIFICATION

Females and males differ in size and color (Fig. 1–2). Females are nearly 1 mm long, with brown head and prothorax, yellowish brown meso- and metathorax and black abdomen; forewings are dark, with light colored base (Fig. 3); the third antennal segment and the base of the fourth and fifth segments are light colored (either yellow or white). Males are 0.6 mm long and evenly yellow (Fig. 2).

HOSTS AND DAMAGE

Thrips parvispinus is polyphagous with the preferred hosts varying across its geographic distribution. In regions where the species has been long established, the crops most affected are papaya, peppers, potatoes, eggplants, beans, shallots and strawberries. In Indonesia, field pepper yield losses due to *T. parvispinus* reach 23 percent (Johari et al. 2014). Most damage is produced by direct feeding of larvae and adults on leaves and growing buds, but at least in papaya, tissue damaged by the thrips may be secondarily and independently infected by a saprophytic fungus, *Cladosporium* (Lim 1989). *Thrips parvispinus* can also produce important damage to ornamentals such as *Dahlia*, *Chrysanthemum*, *Gardenia*, *Dipladenia* and *Ficus*. *Thrips parvispinus* is not known to transmit tospoviruses. In Florida, *T. parvispinus* has been found only on *Anthurium* and *Hoya* growing in greenhouses. Damage to *Anthurium* is most evident on leaves (Fig. 4–6). Varieties Cyrano, Charade White, Zizou and Sierra White are most susceptible to attack. In *Hoya*, thrips attack and eventually kill the buds (Fig. 7–9).

LIFE HISTORY

Under controlled conditions on chili pepper (*Capsicum annum* L.) in greenhouses, the life cycle is completed in 13–14 days (Hutasoit et al. 2017). Eggs are inserted into leaves; after four to five days, larvae hatch to feed on leaves and flowers. Larvae go through two molts in four to five days, mature and pupate. The two pupal stages last two to three days. Reproduction is sexual and on average females lay 15 eggs. Mated females live nine days. Adult males live six days (Hutasoit et al. 2017).



COLLECTING

Hand collection is the most effective, with an aspirator either directly from leaves, buds and flowers, beating plants on a light color tray or collecting young, curled leaves directly into alcohol. In *Anthurium* the thrips is found on either side of leaves. In *Hoya*, individuals can be seen wandering all over the plant but tend to concentrate on growing buds (Fig. 7). The minute size of the species makes it difficult to detect, even when damage to plants is evident. Suspects should be submitted to the Division of Plant Industry for confirmation.

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Figure 1. Adult female *Thrips parvispinus*. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 2. Adult male *Thrips parvispinus*. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 3. Female *Thrips parvispinus* forewing. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 4. Anthurium leaf damage, dorsal. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 5. Anthurium leaf damage, ventral. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 6. Anthurium leaf damage. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 7. Thrips lodging in Hoya leaf buds. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 8. Hoya, healthy and dead buds. Photo by Felipe N. Soto-Adames, FDACS-DPI.



Figure 9. Hoya, damage to buds. Photo by Felipe N. Soto-Adames, FDACS-DPI.