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Source: Florida Entomologist, 95(1) : 205-207
Published By: Florida Entomological Society
URL: https://doi.org/10.1653/024.095.0134
NEW TROPICAL FRUIT HOSTS OF SCIRTOTHrips DORSALis (thysANOPTera: thripidae) AND ITS RELATIVE ABUNDANCE ON THEM IN SOUTH FLORIDA

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The chilli thrips, Scirtothrips dorsalis Hood, has long been a pernicious pest of cotton and various ornamental, vegetable, and fruit crops including citrus in southern and eastern Asia, Africa, and Oceania (Amin 1979; Amin et al. 1981; Ananthakrishnan 1993) where it is known to kill newly emerged seedlings, severely distort leaves, scar the surface of fruits of its hosts, and also vector a number of major plant pathogens. Scirtothrips dorsalis has an extensive host range, and in recent decades has expanded its distribution from south Asia to Australia, the Middle East, Africa, the Caribbean and the Americas (EPPO/CAB 2003; Hodges et al. 2005). Worldwide it attacks more than 200 plant species, belonging to 70 different families (GPDD 2011).

In Florida since its establishment in 2005, S. dorsalis has been reported developing on 38 different ornamental crop species (Klassen et al. 2008; Osborne 2009; Seal & Kumar 2010) and on pepper. In Aug 2010 we discovered this pest infesting 11 different tropical fruit species at a commercial nursery in Homestead, Miami-Dade County, Florida. This is the first report of S. dorsalis damaging tropical fruit species on a significant scale in Florida.

We conducted studies to quantitatively characterize S. dorsalis infestations on a number of tropical fruit hosts at the commercial nursery. Both larvae and adults were found on 9 of 11 tropical fruit species several of which were not reported in the Global Pest and Disease Database (2011) as hosts of S. dorsalis, i.e., avocado (Persea americana Mill.), cashew nuts (Anacardium occidentale L.), canistel (Pouteria campechiana (Kunth) Baehni), dragon fruit (Hylocereus undatus (Haw.) Britton & Rose), guava (Psidium guajava L.), litchi (Litchi chinensis Sonn.), mango (Mangifera indica L.), miracle fruit (Synsepalum dulcificum (Schumach. & Thonn.) Daniell) and sapodilla (Manilkara zapota (L.) D. Royen), while S. dorsalis adults only were found on 2 species, i.e., guavaberry (Eugenia floribunda H. West ex Wild) and malay apple (Spondias dulcis Forst.). The infestation of this pest was responsible for economic damage to these hosts. Interestingly, some of these infested plant species have never been reported either as a feeding or breeding host of S. dorsalis. Scirtothrips dorsalis specimens collected from different host plants were identified using taxonomic characters elaborated by Hoddle et al. (2009) and Kumar et al. (2011). For verification of identification, thrips specimens were sent to the Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

We determined the abundance of S. dorsalis on six species of tropical fruits: avocado, canistel, litchi, mango, miracle fruit, and sapodilla available at nursery, as well as on tea (Camellia sinensis (L.) Kuntze) and cotton (Gossypium hirsutum L.). The latter species were included as reference species, because the rapid population growth of S. dorsalis has been extensively studied on them (Ananthakrishnan 1993; Masui 2007; Seal et al. 2010). Host plants were set in 3.8 L plastic pots following standard cultural practices. Three young, insect-free plants of similar age with newly emerging foliage were selected for each plant species. These were arranged in a randomized complete block design with 3 replications. We counted thrips larvae and adults on the top 5 leaves of each plant with a 30X hand lens weekly for 8 wk during 24 Aug-25 Oct. Plants were scored visually for thrips damage (Kumar et al. 1996) weekly during the entire study period.

Data on abundance of S. dorsalis larvae and adults were analyzed using analysis of variance, and treatment means were separated using the Tukey’s HSD test (SAS Institute Inc. 2003). During the study period, the seasonal mean for larval abundance was significantly higher on cotton (15.25) than on the other hosts (Table 1). Larval abundance on canistel was not significantly different from mango but it was higher than tea, sapodilla, miracle fruit, avocado and litchi with seasonal means of 5.53, 3.56, 1.70, 0.93, 0.33, 0.05 and 0.01 per 5 leaves of these seven plant species, respectively. A somewhat similar pattern of adult abundance was observed on different hosts (Table 1). Among the tropical fruit species, the highest abundance of S. dorsalis adults was recorded on canistel, followed by mango, sapodilla and mira-
cle fruit with seasonal means of 2.88, 2.09, 0.57 and 0.54 per 5 leaves, respectively. Maximum damage score ratings for two tropical fruit hosts, canistel and mango seemed to be alarming after 8 wk, with the highest rating reported on canistel at 2.78 and 2.67 on mango (Table 1). Litchi and avocado did not sustain any damage.

Results from this study are significant in that they identify new hosts of *S. dorsalis* in the United States. In addition, it is important that crops that have never been reported as hosts also be included when scouting and sampling of *S. dorsalis* infestation, as its host range appears to be continuing to widen in recently invaded regions. Furthermore, in order to minimize dispersion of *S. dorsalis* in the United States, intra or inter-state trade of potted nursery plants or retail garden products must be checked carefully for damage symptoms or presence of different life stages of the pest.

**SUMMARY**

During scouting and sampling various of plant species at different commercial nurseries in Miami-Dade County, Florida, 12 different crops were found to be economically affected by *S. dorsalis* in a commercial nursery. An open free choice host susceptibility test was conducted on 6 fruit hosts from the nursery. Canistel, mango, sapodilla and miracle fruit were found to be most affected among the fruit hosts with maximum damage ratings of 2.78, 2.67, 1.67 and 0.77 respectively. Since the host range of this pest is expanding, a careful monitoring and sampling protocols, especially of potted plants, should be diligently implemented to prevent and retard its distribution in different regions.

**ACKNOWLEDGMENT**

We thank various nursery personnel in Miami Dade County for their cooperation in conducting this study. We also thank Tamrat Wuletaw for contribution during data collection in the study. We appreciate Megha Kalsi and an anonymous reviewer for their constructive criticism and helpful comments, which was important in preparation of this manuscript.

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