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HOST SUITABILITY OF SELECTED *FICUS* SPECIES FOR *THRIPS PALMI* (THYSANOPTERA: THRIPIDAE)

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The melon thrips, *Thrips palmi* (Karny) (Thysanoptera: Thripidae), which is a pest on many ornamentals (Faust et al. 1992) and a known virus vector (Iwaki et al. 1984), probably originated in Southeast Asia (Girling et al. 1992). In the United States, it is reported from Florida and Hawaii, and since 1991, south Florida has experienced problems with *T. palmi* on potatoes, eggplant, bush beans, bell peppers, and yellow squash (Girling et al. 1992). It has a large host range of over 50 plant species (Dentener et al. 2002), of which eggplants and orchids are among the preferred hosts. Although not a problem on *Ficus* in Florida, *T. palmi* was reportedly intercepted in 1992 on *Ficus benjamina* cultivars from Florida in the Netherlands (Parrella & Mound 1998; Vierbergen 1996). Whether this was simply incidental, or whether *T. palmi* can use *Ficus* as a host plant for feeding and reproduction is unclear.

In this study we determine the suitability of *Ficus* cultivars as host plants for *T. palmi* compared to known host plants: *Dendrobium* orchids (Hata et al. 1991) and eggplant (Kitamura & Kawai, 1983), and record the presence/absence of *T. palmi* in a production *Ficus* nursery in Homestead, Florida, and surrounding areas. Experiments were conducted from October 1997 through March 1998 in a lab and an 8.08 hectare outdoor nursery planted with 4 *Ficus* spp. cultivars as rootstocks and 7 *Ficus* spp. in pots. The nursery was adjacent to a field planted with yellow squash from October to December 1997, and bush beans from January to February 1998. Weather parameters were recorded from the local Homestead weather station throughout the experiment.

To determine the host suitability, adult females of *T. palmi* were placed onto *Ficus benjamina* 'Monique', *Selanum melogena* (eggplant) and a *Dendrobium* orchid cultivar in no-choice tests and eclosion of larvae was monitored. Thrips used for these experiments were collected from cucumber and eggplant in southern Florida and reared on eggplant in a greenhouse. Individual plant sleeves (0.05 cm Reemay spun bound polyester; Kleen Test, Milwaukee, WI) were placed over 6 eggplant plants and 6 orchid flower spikes, with 2 sleeves fitted on to 2 plants or spikes containing no thrips (control) and 4 sleeves fitted on to 4 plants or spikes containing 10 adult female thrips. Each of 3 *Ficus* plants had 2 control sleeves with no thrips and 4 sleeves containing 10 adult female thrips per sleeve placed over individual stems. The mesh sleeves retained thrips on the plants although movement was not hindered. All adult thrips were counted and removed from each sleeve after 5 days, and eclosion of larvae was assessed by daily visual examination over the next 21 days. This experiment was replicated three times. Plants were kept in a lab maintained at 24°C with continuous fluorescent lighting. The average number of thrips larvae per plant/per day/plant species was compared across the three plant species by one-way ANOVA and Dunn's pairwise comparisons test at 0.05 level of significance.

The presence of thrips was recorded on 11 *Ficus* cultivars planted as rootstock or in pots in the outdoor nursery. Twenty *Ficus* plants were randomly selected and thrips were collected at weekly intervals by beating branches (3 strikes per branch; one branch per tree) over a white tray. In addition, twenty-five yellow sticky traps (SeaBright Laboratories, Emeryville, CA) (10.16 × 17.78 cm), set at 1 m above the ground, were placed throughout the nursery and replaced at weekly intervals over a 14-week period. The numbers and identities of thrips collected on each trap were recorded weekly.

The field adjacent to the *Ficus* nursery, as well as 10 fields containing bush beans, eggplant and squash within a 16 km radius of the nursery, were monitored weekly by visually inspecting 10 randomly selected plants within each field and recording the total count of *T. palmi*.

Thrips were slide-mounted and identified to species level with keys (Mound and Marullo 1996, Nakahara 1994, Bailey 1957) and deposited in the Bohart Museum of Entomology, UC Davis.

Ficus benjamina did not support reproduction of *T. palmi* ($H = 172.9$, $df = 2$, $P = <0.0001$) (Fig. 1). Eggplant (SEM = 4.43) supported significantly higher numbers of larvae than *Dendrobium* orchids (SEM = 1.87). Similarly, no live adult thrips were found on *Ficus*, whereas adult thrips were found alive on eggplant seedlings and orchid spikes (1-2 adults per sleeve/plant). *Thrips palmi* was not observed on the control eggplants, orchids or *Ficus*, although thrips could move through the mesh.

Numbers of *T. palmi* collected on sticky traps were low throughout the experiment, and only one adult was collected from the beating samples. Fifteen individuals of *T. palmi* were collected on cucumbers in a field approximately 16 km north of the nursery. *Thrips palmi* was not collected in weekly inspections of bush bean, eggplant, or squash fields.

Individuals of *T. palmi* on sticky traps in the nursery may have been dispersing adults from nearby vegetable fields. *Thrips palmi* is usually abundant on eggplant, bush beans, peppers, and potatoes from September to April (Frantz et al.

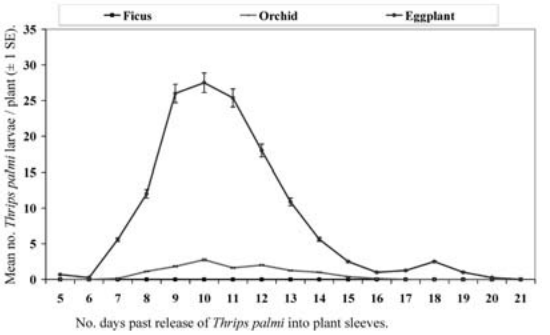

Fig. 1. The average number of larvae of *Thrips palmi* found per day/plant on 3 different host species. Numbers are based upon the average of three experiments for a total of 6 eggplants, 6 orchids, and 3 *Ficus* plants, with 6 sleeved replicates each. Standard error bars are shown for each plant type.

1995; Seal 1997). The low number of *T. palmi* collected throughout the experimental period may reflect low populations that only began to build up in vegetable fields late in the season. In fact, potato fields 12 km southeast of the nursery became heavily infested with *T. palmi* in late March 1998.

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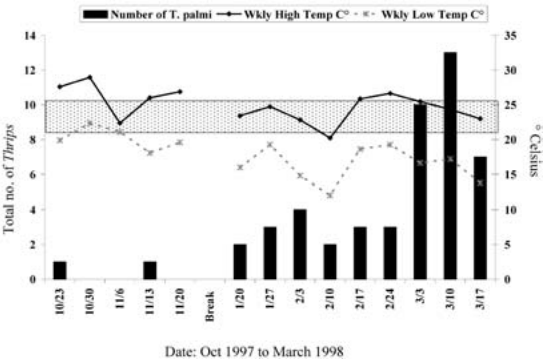

Fig. 2. Total number of *Thrips palmi* collected weekly on all 25 sticky traps at the *Ficus* nursery (bars) and temperature (solid line = high temp., dotted line = low temp.) taken from the weather station in Homestead, Florida, throughout the 14 weeks. The stippled area indicates the range of temperature that Teramoto et al. (1982) reported as the preferred egg-laying temperature for *Thrips palmi*. During the experiments, the average relative humidity ranged from 72-84% and the average precipitation from 0-11.91 cm per week. The average weekly low and high temperatures ranged from 12-22°C and 20-29°C, respectively.

Summary

Ficus was shown to be an unsuitable host for *T. palmi* because thrips confined to *Ficus benjamina* in a greenhouse produced no eggs, and no larvae, and only one adult of *T. palmi* was found on *Ficus* plants in the nursery, despite the presence of thrips on sticky cards. In contrast, eggs and larvae of *T. palmi* were detected on eggplant and orchid control plants in the greenhouse. Thus, *T. palmi* is likely a casual visitor when found on *Ficus*.

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