



Melon Thrips: *Thrips palmi*

Biology & Lifecycle: Adult thrips insert individual eggs into the developing flower buds, fruit pods and under heavy populations, the leaves of pepper. The eggs hatch in about 8 days. Larval development requires 4 to 12 days depending on temperature. The adults live about 3 weeks and feed primarily on flower tissues and pollen.

Environmental Factors: Melon thrips live year-round in southern Florida. Populations are greatest in the winter and spring. A generational cycle takes about 20 days. Populations are not usually damaging in central Florida. Populations are not established in northern Florida.

Adult: Very small ($\frac{1}{10}$ inch), light yellow with fringe wings (**Figure 1**). Adults aggregate in the flowers and small fruits.

Larvae: Minute and off-white (**Figure 2**). Both larval instars aggregate in the flowers and small fruit of pepper, and sometimes are found on the leaves. The pre-pupae move to the soil surface and the pupae occur just beneath the soil surface under the plant.

Economic Importance: Cosmetic damage on fruits is an economic problem under some conditions in southern Florida.

Host range: Melon thrips reproduce on peppers (*Capsicum* spp). Pepper is a poorer host than winter melon (*Benincasa hispida*), eggplant or cucumber. Tomato is not a host. Other reproductive hosts in Florida include a wide range of crops, weeds and native plant species. The adults are common in the flowers feeding on the pollen of other plant species that are not reproductive hosts.

Damage: Feeding by the adults and larvae can result in flecking on the surface of fruit and under heavy infestations, fruit deformity (**Figure 3**). The larvae and adults aggregate under the calyx and on the parts of the fruit touching leaves and stems. Damage can sometimes occur on leaves.

Monitoring:

Scouting: The total number of thrips of all species and the number of minute pirate bugs can be estimated in the field by beating individual flowers, fruits and leaves onto a white plastic board. Differentiating melon thrips from other species under field conditions requires specific training and equipment. Thrips can be placed in vials of alcohol and examined at 40X magnification using a stereoscope in order to distinguish melon thrips from the common flower thrips species.

Action Thresholds: In pepper, 2 or 3 thrips larvae and adults per flower or fruit is tolerable. A ratio of one minute pirate bug per 180 thrips is adequate to result in suppression of thrips.

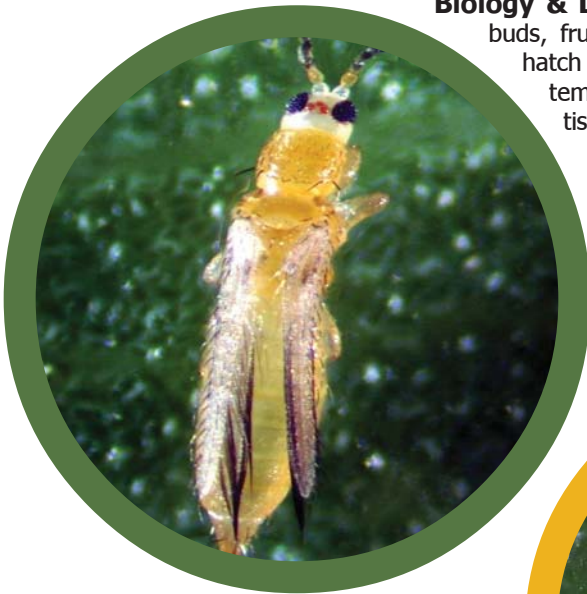


Figure 1. Melon thrips adult female. Photograph by: Kelly Sims.

Figure 2. Melon thrips larva. Photograph by: Kelly Sims.

Figure 3. Flecking on pepper due to feeding by the adults and larvae. Photograph by: Jyotsna Sharma.

Actual Size:



Melon Thrips: *Thrips palmi*



CULTURAL CONTROLS:

Ultraviolet-Reflective Mulch: UV-reflective mulch reduces the influx of migrating adults into production fields (**Figure 4**).

Monitor: Frequent monitoring of once or twice weekly is needed to assess melon thrips numbers. Distinguishing the adults of melon thrips from the Florida flower thrips, *F. bispinosa*, and the western flower thrips, *F. occidentalis*, is not reliable using a hand lens.

NATURAL ENEMIES:

- The key natural enemy capable of suppressing populations is the minute pirate bug, *Orius insidiosus* (**Figure 5**).
- These predators naturally invade fields, and management programs of pepper and other crops in Florida designed to conserve its populations.

CHEMICAL CONTROLS:

- Spray peppers with reduced-risk insecticides to conserve minute pirate bug, *Orius insidiosus*, populations when numbers of adults or larvae exceed the action threshold. Natural infestations of this predator typically control thrips for most of the production season.
- During periods of intense infestations, reducing thrips numbers below the action threshold with insecticides is not possible.

- Spraying broad-spectrum insecticides especially pyrethroids (numerous products; 3) suppresses populations of the predator minute pirate bug, and frequently results in a great buildup in melon thrips populations.

RESISTANCE MANAGEMENT:

- Melon thrips have developed resistance to organophosphate (several products; 1B) and pyrethroid (numerous products; 3) insecticides.
- Employ alternative cultural control and biological control in an IPM program as the best option to avoid the development of insecticide resistance.
- Rotation of chemical classes is a resistance management option, although it does not guarantee against the development of insecticide resistance.

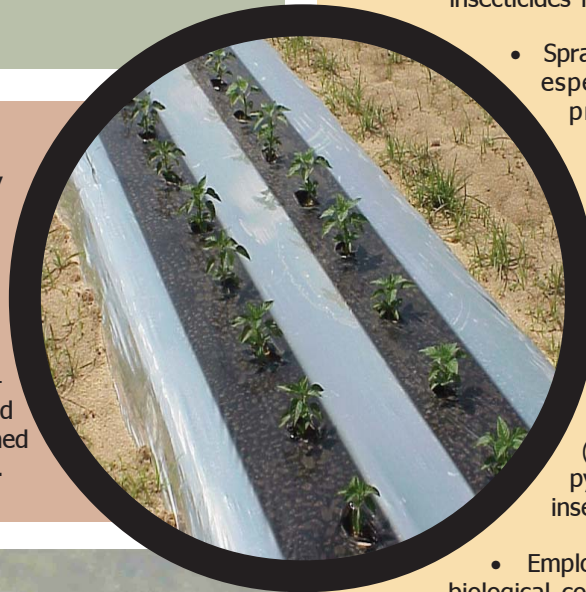


Figure 4. UV-reflective mulch with black strips to increase soil temperature. Photograph by: Joe Funderburk.

Figure 5. Biological control in action, the minute pirate bug preying on melon thrips. Photograph by: Joe Funderburk.

CONTACT INFORMATION:

Dr. Joe Funderburk
UF/IFAS NFREC- Quincy
155 Research Rd
Quincy, FL 32351-5684
jef@ufl.edu
850-875-7146

References:

Funderburk, J., S. Olson, J. Stavisky and Y. Avila. 2004. Managing thrips and tomato spotted wilt in pepper. UF/IFAS Pub. EENY-658, <http://edis.ifas.ufl.edu/IN401>.

Capinera, J.L. 2000. Melon thrips, *Thrips palmi* Karny (Thysanoptera: Thripidae). UF/IFAS Pub. EENY-135, http://creatures.ifas.ufl.edu/veg/melon_thrips.htm.

Tsai, J.H., B. Yue, S.E. Webb, J.E. Funderburk and H.T. Hsu. 1995. Effects of host plant and temperature on growth and reproduction of *Thrips palmi* (Thysanoptera: Thripidae). *Environmental Entomology* 24: 1598-1603.