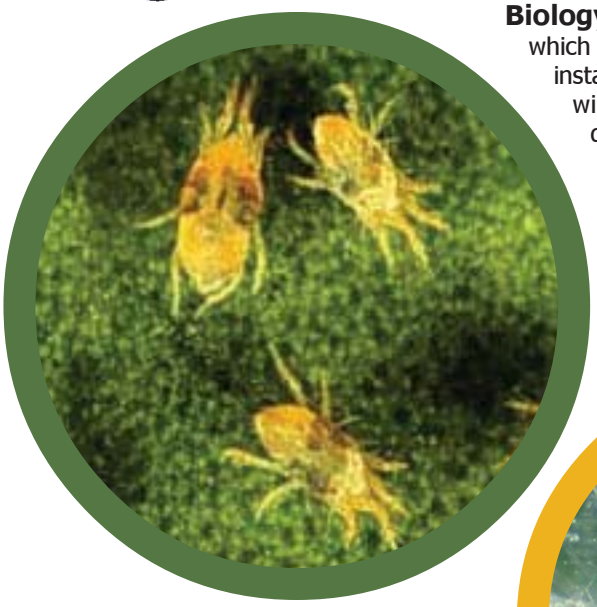
Twospotted Spider Mite: *Tetranychus urticae*
Spider Mite: *Tetranychus evansi*



Biology & Lifecycle: Eggs are laid singly on the undersides of lower leaves, which are covered with silk strands. There is one larval instar and two nymphal instars, all of which occur on the undersides of lower leaves. The population will move up to younger foliage as mite densities increase. At very high densities, mites may aggregate at the highest parts of the plants and are picked up by the wind via a silk strand and dispersed **(Figure 4)**. The egg to adult period is one to two weeks.

Environmental Factors: Present year round, but are usually more abundant during hot, dry weather such as occurs April-June. The mites over summer on volunteer plants and on weeds such as American black nightshade, *Solanum americanum* and castor bean, *Ricinus communis*.

Adult: Adults are about 0.5mm in length and have four pairs of legs. Females are oval shaped, males are triangular-shaped and both sexes have dark spots on either side of the top of the body. *T. urticae* is usually greenish yellow or nearly translucent **(Figure 1)** and *T. evansi* is reddish-orange; however, *T. urticae* may also have reddish-orange forms.

Immatures: The stage hatching from the eggs is the spherical larval stage, which has three pairs of legs and is translucent, yellowish or pinkish. The next two nymphal stages resemble the adults and are green to red and have four pairs of legs **(Figure 2)**.

Host range: Both *T. urticae* and *T. evansi* have broad host ranges. The former attacks numerous vegetables, with tomato, bean and cucurbit crops being attacked most often. In Florida, the spider mite most often found attacking solanaceous crops like tomato, eggplant and potato is *T. evansi*. Tomatoes are more often attacked than pepper.

Damage to Tomato: Adults, larvae and nymphs have piercing-sucking mouthparts Feeding on the undersides of lower leaves produces yellow spotting or stippling on the upper surfaces **(Figure 3)**. Leaves may turn yellow to bronze, desiccate and drop. Damage may appear to be due to nutritional deficiencies or plant disease to the untrained eye.

Figure 1. *T. urticae* adults on leaf. Photograph by: James Castner.

Figure 2. *T. evansi* nymph, egg and silking on tomato. Photograph by: Dave Schuster.

Figure 3. Leaf stippling by spider mite feeding on underside of leaf. Photograph by: Dave Schuster.

Actual Size:

Adult
0.5mm

Monitoring:

Scouting: The undersides of the terminal three leaflets of one leaf per six plants are examined for the presence of mites. Leaf damage may be ranked 1-5, where 1 is few yellow stipples and 5 is total leaf area covered with stippling and dry patches present.

Action Thresholds: 10 adults, larvae or nymphs per plant or damage ranking of 2 or above

Adult *T. evansi*. Photograph by: Dave Schuster.

Prepared by: Dr. David Schuster

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CULTURAL CONTROLS:

Start Clean: Transplants should be free of eggs, larvae, nymphs or adults.

Field Manipulations: Planting in hot, dry periods should be avoided. Dusty conditions interfere more with mite predators than with spider mites, which are partially protected by their silk webbing.

Increasing plant spacing and applying overhead irrigation may reduce mite infestations.

Excessive nitrogen should be avoided and plants should not be water stressed.

New crops should not be planted near infested crops and infested crops and weeds should be destroyed.

CHEMICAL CONTROLS:

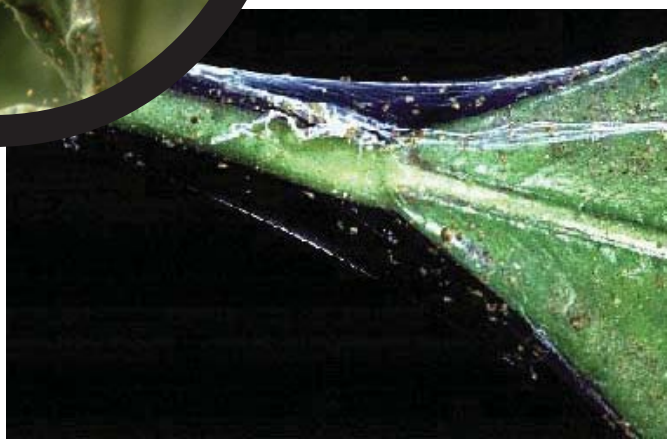
- Miticides should be applied when the action thresholds are reached. The heavy silk webbing associated with higher mite populations provides some protection from miticides and may make control more difficult.

RESISTANCE MANAGEMENT:

- Resistance to Agri-Mek® (avermectins, 6) in *T. urticae* has been documented in Florida, but resistance has been managed with judicious use and rotation with other chemical classes.

Figure 4. Spider mites aggregating for wind dispersal. Photograph by: Dave Schuster.

Figure 5. Webbing produced by twospotted spider mites. Photograph by: James Castner.



NATURAL ENEMIES:

- Spider mites are often kept in check by numerous natural enemies, especially predaceous mites. Predaceous mites can be distinguished from spider mites because they have longer legs, they are more active and they are often red or orange in color.
- Releases of commercially available predaceous mites have been successful for managing spider mites on greenhouse crops, but limited releases on field-grown tomatoes in Florida have been unsuccessful to date.
- Timed applications of selective miticides and avoidance of broad spectrum insecticides/ miticides can enhance biological control.

CONTACT INFORMATION:

Dr. David Schuster
UF/IFAS GCREC- Balm
14625 CR 672
Wimauma, FL 33598
dschust@ufl.edu
813-633-4124

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