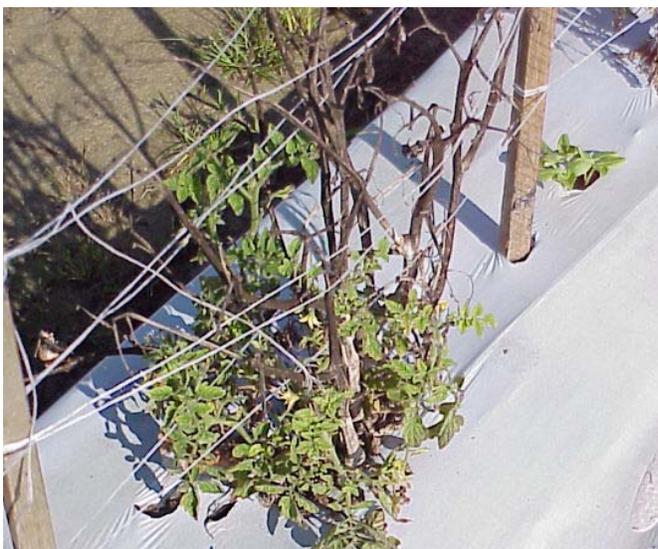




DISEASE MANAGEMENT: Tomato Yellow Leaf Curl



Tomato yellow leaf curl virus (TYLCV)

SIGNS & SYMPTOMS:

- In tomato, symptoms are more severe when infected at an earlier age and vary somewhat among the different cultivars.
- In tomato, upward curling of leaves; mottling and often chlorotic leaf margins.
- In tomato, leaves are reduced in size.
- In tomato, plants are stunted.
- Flower abscission in tomato resulting in greatly reduced fruit set.
- No symptoms are observed in pepper.

DISEASE CYCLE & EPIDEMIOLOGY:

- Virus is acquired by immature and adult whiteflies (*Bemisia tabaci* species complex) and transmitted by adult whiteflies.
- Whiteflies are efficient vectors and one whitefly can inoculate more than one plant.
- TYLCV has alternate crop hosts – beans, pepper, tobacco, lisianthus, petunia and tomato.
- Crop and weed hosts are potential virus reservoirs; old or abandoned fields of known hosts are the most effective reservoirs of TYLCV.

FIELD SIGNATURE:

- Symptomatic tomato plants may be distributed randomly in a field or may be more frequent on the upwind side of a field or may be found in clusters.
- Symptoms in tomato are very obvious, but are not unique to TYLCV; other begomoviruses can cause the same symptoms.
- Infected pepper plants will show no symptoms of virus infection but may show some chlorotic veins due to feeding of whiteflies.

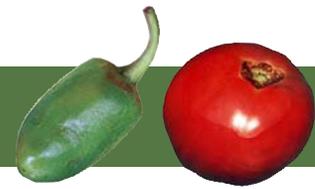
PHOTOS:

Figure 1. Symptoms that are typical for this disease are: yellow leaf edges, leaf cupping, reduced leaf size and flower or fruit drop. Photograph by: Tim Momol.

Figure 2. The impact of TYLC on tomato production can be severe. If plants are infected at an early stage, they won't bear fruit and their growth will be severely stunted. Photograph by: Phyllis Gilreath.

Figure 3. *Tomato yellow leaf curl virus (TYLCV)* infected re-growth from tomatoes in a double-cropped field seeded to cucumber. Infected tomato re-growth can serve as a reservoir for virus which can then be carried to neighboring new fields. Photograph by: Phyllis Gilreath.

DISEASE MANAGEMENT: Tomato Yellow Leaf Curl



CULTURAL CONTROLS:

- Use reflective mulches.
- Use resistant cultivars in tomato when whitefly populations are expected to be high.
- Use virus-free transplants.
- Do not plant new tomato fields next to old fields of tomato, pepper or tobacco.
- Do not plant new tomato fields downwind of old fields of tomato, pepper or tobacco.
- Use TYLCV-immune cultivars of pepper when planting near tomato fields.
- Manage weeds in tomato fields.
- Clean up old fields as soon as possible after harvest.
- Establish and maintain a tomato-free period in tomato production regions.



Figure 4. A tomato plant infected with *Tomato yellow leaf curl virus*, left, stands next to a disease-resistant plant developed by UF/IFAS. Once infected with the disease, tomato plants no longer grow normally, and no longer produce marketable fruit. Photograph by: Ernest Hiebert.

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CHEMICAL CONTROL:

- Use a nicotinoid in the transplant house one week before transplanting to the field.
- Use a nicotinoid in the setting water at a rate that will give 8 weeks of efficacy.
- Once whiteflies begin to reproduce in field, continue a rotation of non-nicotinoid insecticides such as insect growth regulators, contact insecticides, anti-feedants such as pymetrozine, oils and soaps and other IPM management strategies through final harvest.
- Use growth regulators at the end of season to reduce whitefly populations.

RESISTANCE MANAGEMENT:

Since whiteflies have been shown capable of developing resistance to nicotinoid insecticides, and nicotinoids have been shown to be highly effective in reducing incidences of TYLCV-infected plants, growers are encouraged to follow the guidelines for management of resistance to neonicotinoids recommended by the Insecticide Resistance Action Committee (IRAC) (**Appendix 5**).

RESISTANT CULTIVARS:

TOMATO: Tygress (Seminis), HA-3068, HA-3073, HA-3074, HA-3371, TY02-1155, TY02-1184, TY02-1276, TY02-1298, TY02-1314 (Hazera).

PEPPER:

Aladdin X3R (Seminis), Aristotle X3R (Seminis), Double Up (Sakata), El Jefe (Sakata), Heritage HMX 1640 (Ferry Morse), Hungarian Hot Wax (Desert Seeds), Mulato Isleno (Ball Seeds), Patriot HMX 640 (Harris Moran), Red Rooster, Sweet Banana (Ferry Morse), Tiburon (Sakata).

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