

DISEASE MANAGEMENT: Tomato Spotted Wilt



Tomato spotted wilt virus (TSWV)

SIGNS & SYMPTOMS:

- Small, light brown flecks first appear on leaves.
- These spots later turn brown, followed by a general browning of leaves that die and appear drooped on stems.
- Plants are often stunted, and with the droopy leaves, give one the impression that they are wilted.
- Green fruit show concentric rings of yellow or brown alternating with the background green color, and striking brown rings occur on red-ripe fruit.

DISEASE CYCLE & EPIDEMIOLOGY:

- The virus is transmitted from plant to plant by different species of thrips.
- Thrips can only transmit the virus if it is acquired during their larval stages, although both larval and adult thrips are able to transmit the virus.
- The virus has a very wide host range, including tomato, pepper, potato, tobacco, lettuce and many other plants.

FIELD SIGNATURE:

- It occurs randomly. Although sometimes, plants in a row will get infected.

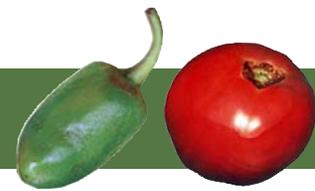
PHOTOS:

Figure 1. Leaf symptoms caused by TSWV on tomato. Photograph by: Hank Dankers.

Figure 2. Fruit symptoms caused by TSWV on tomato. Photograph by: Hank Dankers.

Figure 3. Leaf symptoms caused by TSWV on pepper. Photograph by: Hank Dankers.

DISEASE MANAGEMENT: Tomato Spotted Wilt



CULTURAL CONTROLS:

- Use highly reflective UV mulch (metalized mulch) on tomato.
- Conduct effective weed control in and around tomato or pepper fields.
- Do not plant tomatoes and peppers near TSWV susceptible crops (i.e. peanut, tobacco).

CHEMICAL CONTROL:

- Apply insecticides specific to vector thrips. Do not use broad-spectrum insecticides that kill natural enemies of thrips like minute pirate bug on peppers.
- Acibenzolar-*S*-methyl was shown to reduce incidence of TSW when used with other management tools (i.e. UV metalized mulch).
- Acibenzolar-*S*-methyl (Actigard) should not be used on pepper due to potential adverse effects.

RESISTANCE MANAGEMENT:

- Chemical control should be integrated with cultural and other methods to reduce selection pressure for resistance development.



Figure 4. Fruit symptoms caused by TSWV on pepper. Photograph by: Hank Dankers.

RESISTANT CULTIVARS:

TOMATO:

Some resistant cultivars are commercially available, such as Amelia, Bella Rosa, BHN 555, BHN 602, BHN 640, Crista, Quincy and Talladega. However, resistance-breaking isolates of TSWV overcoming resistance on tomato have been identified. **See pgs. 10-11 for resistant tomato cultivars.**

PEPPER:

There are a few resistant pepper cultivars commercially available, such as Heritage VR and Stiletto. However, resistance-breaking isolates of TSWV overcoming resistance on pepper have been identified. **See pg. 13 for resistant pepper cultivars.**

CONTACT INFORMATION:

Drs. Tim Momol and Pingsheng Ji
UF/IFAS NFREC
155 Research Road
Quincy, FL 32351
tmomol@ufl.edu
850-875-7154

References:

- Funderburk, J., S. Olson, J. Stavisky and Y. Avila. 2004. Managing thrips and tomato spotted wilt in pepper. ENY-658. University of Florida, IFAS, Cooperative Extension Service, <http://edis.ifas.ufl.edu/IN401>.
- Momol, M.T., S.M Olson and J.E. Funderburk. 2005. Recommended management strategies for tomato spotted wilt on tomato caused by *Tomato spotted wilt virus* (TSWV). NFREC Extension Report No. 2005-9. <http://nfrec.ifas.ufl.edu/tomato3.htm>.
- Momol, M.T., S.M. Olson, J.E. Funderburk, J. Stavisky and J.J. Marois. 2004. Integrated management of tomato spotted wilt on field-grown tomatoes. Plant Dis. 88: 882-890.
- Roberts, P.D. and K.L. Pernezny. 2003. Varieties of vegetables with resistance to disease. PPP-63. University of Florida, IFAS, Cooperative Extension Service. <http://edis.ifas.ufl.edu/VH100>.