HOST LIST OF PLANTS SUSCEPTIBLE TO TOMATO SPOTTED WILT VIRUS (TSWV)

ACKNOWLEDGMENTS

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INTRODUCTION
Spotted wilt of tomato was first described by Brittlebank (1919) in Australia. Samuel et al. (1930) characterized the pathogenic agent as a virus and named it tomato spotted wilt virus (TSWV). Since then the disease has been reported in several tropical and temperate regions and is considered worldwide in distribution.

TSWV is unique because it is one of only two plant viruses known to be transmitted by thrips. Pittman (1927) was the first to establish that TSWV could be transmitted by the onion thrips. Six thrips species are known TSWV vectors:
1) the western flower thrips, Frankliniella occidentalis (Pergande) (Gardner et al., 1935);
2) the common blossom thrips, Frankliniella schultzei (Trybom) (Samuel et al., 1930);
3) the onion thrips, Thrips tabaci Lindeman;
4) the tobacco thrips, Frankliniella fusca (Hinds) (Sakimura, 1963);
5) Scirtothrips dorsalis Hood (Amin et al., 1981); and
6) Thrips setosus Moulton (Kobatake, 1984).

Only the first three species are known to occur in Hawaii. Of these, the western flower thrips is the most common vector (Yudin et al., 1986, 1987). TSWV can be acquired from diseased plants only by larval thrips; after a latent period of three to 12 days it can be transmitted by both larval and adult stages.

TSWV produces a variety of disease symptoms including a range of chlorotic, necrotic, stunting, and enation symptoms in all parts of the plant (le, 1970). TSWV symptoms on lettuce generally start as necrotic brown leaf spots on one side of the plant, becoming systemic and extending to the heart leaves. This results in a cessation of development, causing the plant to twist to one side. The outer leaves wilt and eventually the whole head collapses. On tomatoes, symptoms are characterized by initial chlorosis of leaves and terminal shoots, developing into bronzing and necrosis. Symptoms on mature fruits are blotchiness of color and rugosity of the fruit surface.

In Hawaii, TSWV has seriously affected production of lettuce, tomato, and bell pepper in the major vegetable-production areas of the state. These areas include the Lalalilo and Pukapu areas on the island of Hawaii, the Kula area on Maui, and the Waianae area on Oahu. This disease has been quite devastating in recent years, when losses of 50 to 90 percent have been observed in lettuce and tomato production, particularly during the warm, dry summer months.

Several additional new plant hosts have been identified since 1981, and this paper presents an up-to-date listing of TSWV-susceptible plant species. Several references listed in the table cite original articles demonstrating TSWV susceptibility of plant species or host lists of TSWV-susceptible plants.
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Lactuca sativa var. longifolia Lam.*  -- romaine
Lactuca scariola L.  --
Lathyrus odoratus L.  -- sweet pea
Layia elegans Torr. & Gray  --
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Lilium tigrinum Ker-Gawl.  -- tiger lily
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*Important TSWV reservoir hosts associated with Hawaii's vegetable-growing regions.
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