

TOMATO SPOTTED WILT VIRUS IN GREENHOUSE CROPS

Since the report on the tomato spotted wilt virus in the Fall 1986 issue of the Ornamentals Northwest Newsletter (Green, 1986), severe losses of greenhouse crops have been reported in the United States and Canada. The tomato spotted wilt virus has the widest host range of any virus (Francki and Hatta, 1981). It has been reported in 166 species of 34 families of cultivated plants and weeds. Species within the families Solanaceae, Compositae, and Leguminosae account for over one hundred of the recorded hosts. Some of the hosts are perennials and probably play an important role in virus survival from year to year.

Hosts of tomato spotted wilt virus (TSWV): Flowering greenhouse plants on which the tomato spotted wilt virus has been reported include African violet, amaryllis, anemone, aster (dead tan areas in leaves, brown surface blotches on stems), baby's breath, begonia, bellflower, calceolaria, calendula, calla lily (whitish, then brown spots and streaks), China aster, chrysanthemum, cineraria, columbine, coreopsis, cosmos, cyclamen, dahlia, delphinium, dusty miller, evening primrose, exacum, forget-me-not, fuchsia, gaillardia, geranium, gladiolus, gloxinia, hydrangea (ring spot symptoms), impatiens, lobelia, marigold, morning-glory, nasturtium, peony, petunia, phlox, poppy, primula, ranunculus, salvia, snapdragon, stephanotis, stock, sweet pea, tiger lily, Transvaal daisy, verbena, and zinnia.

Weed hosts of tomato spotted wilt virus include: *Amaranthus* spp., beggar ticks, bindweed, bull thistle, *Capsella* sp., chickweed, clover, *Conyza bonariensis*, coreopsis, *Crepis* spp., datura, *Emilia* sp., *Gaillardia* sp., *godetia*, lupin, malva, *mesembryanthemum*, *Montia* sp., nightshades, *Physalis* sp., poppy, saxifrage, sow thistle, wild tobacco.

TSWV can also occur on a wide range of non-ornamental crops such as broad bean, cauliflower, celery, chicory, coriander, copea, eggplant, endive, lettuce, papaya, peanuts, peas, peppers, pineapple, snap bean, spinach, tobacco, tomato.

Transmission of TSWV: Seed transmission of tomato spotted wilt virus through 96% of the seeds of Cineraria and tomato has been reported (Ie, 1970); the virus is apparently carried in the testa, not in the embryo. **Insect transmission:** The only reported insect vectors are four thrips species - *Thrips tabaci*, *Frankliniella fusca*, *Frankliniella occidentalis*, and *Frankliniella schultzei*.

The virus is acquired from infected plants by the thrips larvae when feeding, but not by the adults. Only adults, however, transmit the virus to plants. Thus transmission is only by adults

that fed on infected plants during their larval stage. Thrips can retain the virus for life, but they do not transmit virus to their progeny. TSWV appears to be the only virus transmitted by thrips (Francki and Hatta, 1981).

Control of TSWV: There is no cure for TSWV. The current control recommendations are to rogue out infected plants and to control thrips.

REFERENCES

Allen, T.C., J.P. McMorran, and E A. Locatelli. 1983. Isolation of tomato spotted wilt virus from hydrangea and four weed species. *Plant Disease* 67:429-431.

Francki, R.I.B. and T. Hatta. 1981. Tomato spotted wilt virus. Chapter 17, pages 492-511. In: *Handbook of Plant Virus Infections and Comparative Diagnosis*. E. Kurstak, editor. Elsevier/North-Holland Biomedical Press. 943 pp.

Green, J.L. 1986. Tomato spotted wilt virus transmitted by Western Flower Thrips. *Ornamentals Northwest Newsletter* 10-2:8-9, Fall 1986.

Ie, T.S. 1970. Tomato spotted wilt virus. In: *Descriptions of Plant Viruses* No. 39, October 1970. Issued jointly by the Commonwealth Mycological Institute (CMI) and the Association of Applied Biologists (AAB), Kew, Surrey, England.

Westcott, C. 1979. *Westcott's Plant Disease Handbook*. Fourth Edition revised by R. Kenneth Horst. Van Nostrand Reinhold Co. 803 pages. §

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