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Strawflower: Tomato Spotted Wilt Virus (TSWV)

*Leaf mottling and ringspots were observed on a crop of strawflower (*Xerochrysum bracteatum*). These symptoms are typical of what occurs with a virus. This Alert will aid in the identification of a tomato spotted wilt virus (TSWV) infection in strawflower.*



Figure 1. View of a strawflower plant with tomato spotted wilt virus (TSWV). (Photo: Brian Whipker)

Strawflower (*Xerochrysum bracteatum*), formerly called *Bracteantha*, is a heat tolerant species that is native to Australia. On a recent visit to a grower, a few plants were observed with leaf mottling (Fig. 1), and with careful inspection a few ringspots could be identified on the leaves (Fig. 2). There was limited leaf distortion (Fig. 3), but Western flower thrips (WFT) were observed on a few leaves (Fig. 4). There was a lack of overall major stunting that one also typically observes with advanced TSWV infections. This Alert can be used as a visual tool for diagnosing TSWV symptoms on strawflower.

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The plant was tested for tomato spotted wilt virus (TSWV) and it was confirmed with an enzyme-linked immunosorbent assay (ELISA) test (Fig. 5). If you suspect a virus problem, have the plants tested by a diagnostic clinic. You can also conduct in-house testing with ELISA kits from Agdia (<http://www.agdia.com/>). It is important to test multiple leaves from the same plant that is **exhibiting symptoms**. The total leaf area tested should be around 1 square cm (postage stamp size).

Management

Once a plant has TSWV or the other common virus found in greenhouse production, impatiens necrotic spot virus (INSV), it cannot be cured. Discarding infected plants is the only option, and this will help prevent the virus from spreading further. It is important to note that some plants may be asymptomatic, but still have TSWV or INSV. Since the primary method of spreading these viruses in greenhouses is via Western Flower thrips (*Frankliniella occidentalis*) feeding, it is critical to keep them under control. Frank and Baker (2020) report, “Larvae of the western flower thrips can become infected with tomato spotted wilt virus (TSWV) or impatiens necrotic spot virus (INSV) by **feeding on an infected plant for only 30 minutes**. After a latent period of 3 to 18 days, these thrips can then infect new plants after feeding only 5 to 15 minutes.” For additional information about WFT, view their online publication. Adult WFT lifespan varies by temperature (Robb, 1989). With the warmer temperatures, one has to be concerned about controlling Western flower thrips (WFT) in the greenhouse.



Figure 2. Ringspotting due to a tomato spotted wilt virus (TSWV) infection. (Photo: Brian Whipker)



Figure 3. Leaf distortion on strawflower from Western flower thrips feeding. (Photo: Brian Whipker)

Additional Information: There is an excellent, online publication that discusses TSWV in great detail. The abstract lists the following outline: “This datasheet on Tomato spotted wilt orthotospovirus covers Identity, Overview, Distribution, Dispersal, Hosts/Species Affected, Vectors & Intermediate Hosts, Diagnosis, Biology & Ecology, Environmental Requirements, Seedborne Aspects, Impacts, Uses, Prevention/Control, Further Information”. Check it out if you want to learn more.

<https://www.cabdigitalibrary.org/doi/full/10.1079/cabicompendium.54086>

References

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Robb, K.L. 1989. Analysis of *Frankliniella occidentalis* (Pergande) as a pest of floricultural crops in California greenhouses. PhD dissertation. Univ. of California-Riverside. pp. 57.

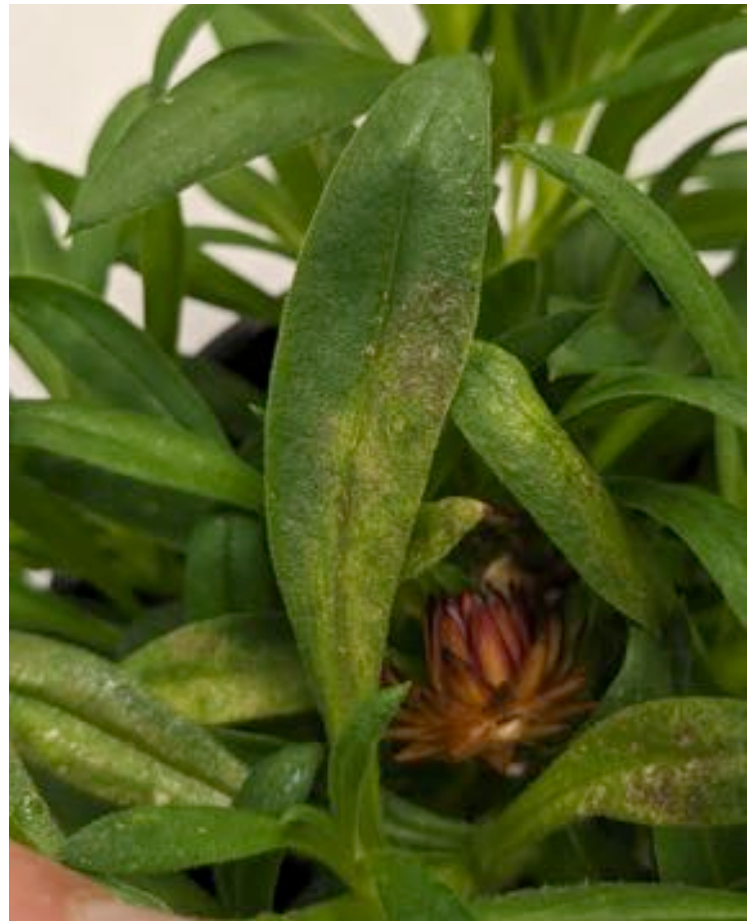


Figure 4. Western flower thrips observed on strawflower. (Photo: Brian Whipker)

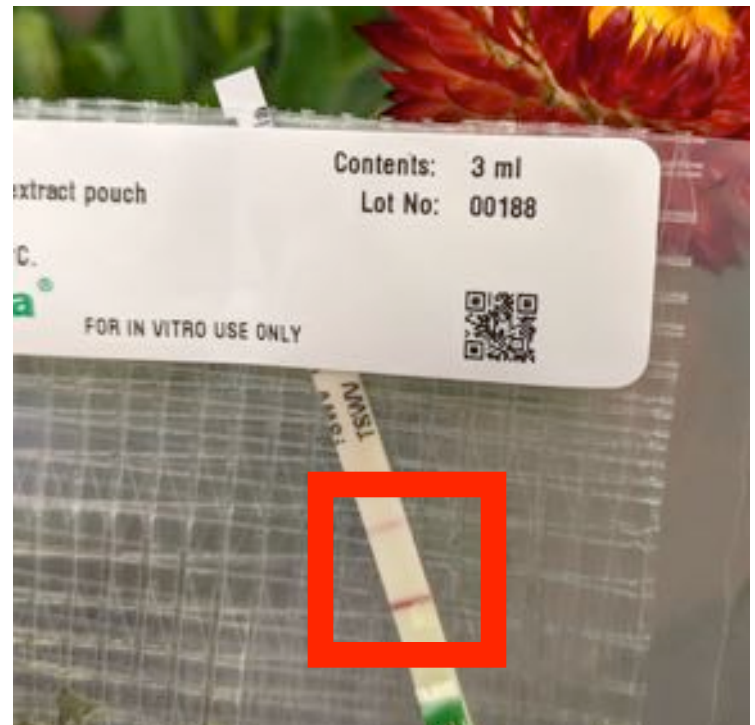


Figure 5. Double-line confirmation of TSWV with an enzyme-linked immunosorbent assay (ELISA) test. (Photo: Brian Whipker)

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