e-GRO Alert


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Volume 14 Number 14 March 2025

Heliotropium: Inconspicuous INSV

Heliotropium (Heliotropium arborescens) plants with necrotic spots on the lower leaves were observed. A few plants had necrotic patches on the stem. The leaf necrosis was non-descript, but the stem necrosis made us virus test, which to our surprise was positive for INSV. This Alert highlights the nondescript leaf symptomology of INSV in heliotropium, which can go undetected and become a "Typhoid Mary" in the greenhouse.

Heliotropium plants are a favorite species because of their interesting blue flowers and strong fragrance, so if they are growing in a greenhouse they tend to get scouted. Over the past 10 years, lower leaf necrotic spots have been observed on plants (Fig. 1) and there has been a desire to conduct some nutritional research studies to try to figure out what was occurring.

Figure 1. Lower leaf necrotic spotting on heliotropium. (Photo: Brian Whipker)

During an Extension Agent training in 2023 (and again this spring 2025), we came across a few heliotropium plants with lower leaf necrotic spots (Fig. 2). In this case, the symptoms looked more disease-like than nutritional. The other new symptom observed was stem necrosis (Fig. 3). Viruses can manifest varied symptoms, and for both impatiens necrotic spot virus (INSV) and tomato spotted wilt virus (TSWV), that includes possible stem necrosis. For example, torenia readily develop stem necrosis when

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infected with either INSV or TSWV (Fig. 4). Therefore, with it being an Extension Agent training, and we had enzyme-linked immunosorbent assay (ELISA) tests on hand, we decided to test the plants. To our surprise, they came up positive for INSV.

The INSV infection in heliotropium did not produce the typical virus symptomology of mottled leaves, ringspots, or stunting. When plants were observed, they appeared to be growing normally, and a few lower leaves had necrotic spots (Fig. 5). Age, crowding, mechanical injury, and elevated electrical conductivity (EC) could all be possible causes. The possibility of it being a virus did not enter the equation until the necrotic stems were noticed and the plants were tested. The challenge here is that virus-containing plants may go undetected in the greenhouse and serve as a reservoir of infection for other plants if thrips are present. Since the primary method of spreading these viruses in greenhouses is via Western Flower thrips (*Frankliniella occidentallis*) feeding, it is critical to keep them under control. The possibility of plants carrying over viruses and other pathogens between crops can pose serious disease challenges for the following season. Removing all plant material and keeping stock plants and or propagation separated from production areas is important in preventing asymptomatic plants from serving as a reservoir for the pathogen that may be asymptomatic.

Figure 2. Advanced lower leaf necrotic spotting on heliotropium. (Photo: Brian Whipker)

Figure 3. Close-up of necrotic stems. (Photo: Brian Whipker)

Management

Therefore, it may be worth scouting your heliotropium plants for lower leaf necrosis. 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 or multiple plants that are exhibiting symptoms. Once a plant has either INSV or TSWV, it cannot be cured. Discarding infected plants is the only option, and this will help prevent the virus from spreading further.

This Alert provides the first indication that inconspicuous leaf spots can be a potential problem and we observed it in both 2023 and 2025. If Western Flower thrips are not an issue in your greenhouse, the virus is not able to spread. Be on the lookout and consider testing if you suspect a problem.

Figure 4. Necrotic stems on torenia infected with TSWV. (Photo: Brian Whipker)

Figure 5. Top view of heliotropium plants with healthy growth, while a few understory older leaves have necrotic spots. (Photo: Brian Whipker)

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