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A Pictorial Guide to Common Symptoms of INSV in Greenhouse Crops

INSV can cause a broad range of symptoms and symptoms can be quite variable on different hosts. In this e-Gro Alert, we've compiled for reference a few photos of symptoms of INSV on plants that are commonly affected.

Impatiens necrotic spot virus (INSV) is one of the most commonly encountered plant viruses in greenhouse production. This virus has an incredible large host range, known to infect over 300 species from 50 plant families. Hosts include many commonly grown ornamentals—and also weeds and vegetables such as tomato and pepper.

The first step in managing this virus is to recognize it. INSV can cause a broad range of symptoms and symptoms can be quite variable on different hosts. Sometimes symptoms can vary a great deal within a plant species. This often results in the symptoms going unnoticed, or misinterpreted.

Symptoms can include various types of leaf spots or discoloration: small circular spots, spots with concentric ring or zonate patterns, necrotic arc-shaped spots, irregular line



INSV on Impatiens

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patterns, or leaf mottle or striking discoloration. Symptoms of stem or petiole blackening or necrosis and stunting can also occur. To add to the confusion, the coloring of INSV symptoms will vary from white, to yellow, to brown, to black. The same virus that causes a bright yellow mottle in begonia leaves can cause large black spots on New Guinea impatiens leaves. In this e-Gro Alert, we've compiled for reference a few photos of symptoms of INSV on plants that are commonly affected.

To confirm suspected infection by INSV you can call an extension specialist or send a sample to a diagnostic lab or service. There are also in-house diagnostic kits that are available and easy to use; ImmunoStrips® (Agdia, Inc.; www.agdia.com), AgriCheck™ (Hydros, Inc.; www.hydros.cc), and Pocket® Diagnostic (Forsite Diagnostics Ltd.; www.pocketdiagnostic.com) test kits are three options. Know that test kits are specific and will only confirm the presence or absence of the virus for which the kit is designed, and will not provide information about other viruses. For example, a kit designed to test INSV will only confirm whether or not INSV is present, and will not confirm the presence of even INSV's close relative Tomato spotted wilt virus (TSWV), which can cause similar symptoms and is also vectored by Western flower thrips. Some test kits are available that will confirm the presence of more than one virus.

Some tips for managing INSV:

- Scout plants regularly and discard infected plants. If necessary, seek assistance with a diagnosis as soon as possible.
- Manage the thrips vector. Be especially vigilant if INSV has been found in your crops. As greenhouse temperatures warm up, the thrips population may soar if you are not keeping up with your management program. The adult thrips may carry INSV around the greenhouse, moving it from a few infected plants to many others. See previous e-Gro Alerts on thrips management: <http://e-gro.org/pdf/thrips.pdf> and http://e-gro.org/pdf/EGRO_2_08.pdf.
- Use good sanitation practices. Prevent the spread of thrips and INSV from an infested crop to a clean crop by keeping older crops segregated from newly planted crops and by segregating crops from different sources. Stay clean by discarding old plants at the end of the season and roguing-out heavily-infested and damaged plants throughout the season. Manage weeds (possible reservoirs of thrips and/or INSV) inside the greenhouse as well as around the perimeter of the greenhouse.

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INSV on New Guinea Impatiens



INSV on Begonia



INSV on Begonia



INSV on Coleus



INSV on Coleus



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INSV on Pepper



INSV on Torenia - Photo courtesy of Brian Whipker



INSV on Torenia - Photo courtesy of Brian Whipker



INSV on Ranunculus



INSV on Tomato -Photo courtesy of Judson Reid



INSV on Verbena



INSV on Zinnia

Previous e-Gro Alerts on INSV:

3.53 Tips for Diagnosing Impatiens Necrotic Spot Virus (INSV): <http://e-gro.org/pdf/353.pdf>

3.52 INSV on Echinacea: <http://e-gro.org/pdf/352.pdf>

3.51 INSV on Penstemon: <http://e-gro.org/pdf/351.pdf>

3.37 INSV on Coleus: <http://e-gro.org/pdf/337.pdf>

2.04 Torenia: INSV: http://e-gro.org/pdf/E-GRO_Bulletin2_04.pdf

1.07 Kalanchoes: Impatiens Necrotic Spot Virus (INSV):
<http://e-gro.org/pdf/E-GRO%20Bulletin%201-7%20Kalanchoe%20INSV.pdf>

1.06 Non-Stop Begonias: Impatiens Necrotic Spot Virus (INSV):
<http://e-gro.org/pdf/E-GRO%20Bulletin%201-6%20Begonias%20INSV.pdf>

Previous e-Gro Alerts on Thrips and Thrips Management:

3.27 Thrips Tips: <http://e-gro.org/pdf/thrips.pdf>

2.08 Thrips: Fight That the Living Dread: http://e-gro.org/pdf/EGRO_2_08.pdf