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INSV on Echinacea

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Impatiens necrotic spot virus (INSV) caused various symptoms ranging from small necrotic spots and mottled areas to irregularly-shaped, bright yellow patches on different Echinacea cultivars.



Over the past summer, Impatiens Necrotic Spot Virus (INSV) has been found on several perennials that we have been using in research at Virginia Tech. INSV first appeared in *Penstemon barbatus* 'Prairie Dusk' and *Penstemon x mexicali* 'Pike's Peak Purple' in April and May (see e-GRO Alert 3.51). With a high population of the INSV vector, Western flower thrips, symptoms appeared on *Echinacea* grown in the same greenhouse in late June. In this article, we will share our observations about INSV symptoms in *Echinacea*.

INSV in *Echinacea* 'Marmalade' appeared as small necrotic spots on the leaves, often with a lighter colored center and with a yellow outline or halo around the spots. The necrotic spots were very dark brown to purple-brown.



Echinacea 'Marmalade' with a necrotic spot surrounded by a yellow area, or halo. The spots were brown to purple and often had a lighter center as seen here. Necrotic spots like these also appeared in *Echinacea* 'Solar Flare' and *Echinacea* 'Hot Papaya.'

e-GRO Alert

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Echinacea 'Harvest Moon' had different INSV symptoms than 'Marmalade.' Leaf spots started out as lighter green areas on the leaf often with a necrotic spot in the center. The light green area was a subtle symptom that was easy to overlook. After several plants had been diagnosed with INSV with only this symptom, it became easier to spot in the other plants.



Echinacea 'Harvest Moon' with light green/yellow area. The yellow/green color tended to be in an irregular oval to round shape and frequently had a necrotic spot in the center.

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Over time these spots developed into large, bright yellow spots on leaves. The spots were irregular in shape and often were right next to necrotic area.

Echinacea
'Harvest Moon'
with yellow and
necrotic spots.
The yellow spots
were often
irregular in shape
and bright yellow
in color.



Diagnosis of INSV

Symptoms like these leaf spots could be caused by a host of other factors including nutritional factors, environmental factors, insect pests or other diseases. We needed to test to be sure that these leaf spots were caused by INSV.

After previously observing INSV in Pentstemon, we were suspicious of any unusual leaf symptoms in Echinacea. For an initial diagnosis, we brought several plants to the Plant Disease Clinic at Virginia Tech (<https://www.ppws.vt.edu/extension/plant-disease-clinic/index.html>). After these plants tested positive for INSV, we used INSV Immunostrips from Agdia (www.agdia.com) to check other plants with similar symptoms. These test kits are inexpensive and allow

you to quickly see if your plant has INSV. See e-GRO Alert 3.53 for tips on INSV testing.

Management and Prevention Techniques

INSV does not have a cure; once you have a confirmed diagnosis of INSV, you should destroy affected plants right away and take steps to prevent further spread of the disease:

- Get the thrips population under control as soon as possible
- Remove any weeds in or around the greenhouse that may harbor thrips
- Check new plants as they arrive for signs of thrips
- Do not propagate any affected plant

Because INSV is spread by thrips, reducing thrips in the greenhouse is crucial to reducing the spread of the virus. Even though we disposed of many of the Penstemon diagnosed with the virus, the overwhelming thrips population caused the disease to spread to Echinacea. Of course, it is best to scout frequently and take steps to manage thrips as soon as you see a problem so the population does not get out of control.

While INSV cannot be cured, managing thrips and scouting carefully can go a long way to reducing the impact of this virus.

Tips on how to control thrips can be found at: <http://e-gro.org/pdf/thrips.pdf>. And be sure to check out the new e-GRO Alert Insect and Mite Advisor at www.egro.mobi/ for the latest control product information.