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## INSV on Penstemon

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*Impatiens necrotic spot virus (INSV) caused symptoms ranging from small necrotic ring spots to irregularly shaped necrotic areas on Penstemon.*



Over the course of the summer at Virginia Tech, Floriculture research has had confirmed cases of Impatiens Necrotic Spot Virus (INSV) in several species of perennials. The perennials most affected were *Penstemon* and *Echinacea*. This article will primarily focus on the symptoms of INSV seen in two *Penstemon* cultivars. INSV symptoms in *Echinacea* will be discussed in a later article.

### Cause of INSV

INSV is a plant virus that is spread by Western flower thrips. As larvae, these thrips acquire the virus by feeding on an infected plant. Once the larvae contain the virus, they can continue to spread and transmit the virus as adults. The heavier the population of thrips, the higher the risk that infection will occur from



Figure 1. Necrotic ring spot on *Penstemon barbatus* 'Prairie Dusk'.

## e-GRO Alert

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plant to plant. This was the case in our own greenhouse. The warmer temperatures and the arrival of new plants created an explosion in the thrips population.

### Symptoms in Penstemon

The first plants to become infected in our floriculture research were the *Penstemon*. The first cases of INSV were found in liners of *Penstemon barbatus* 'Prairie Dusk' in late March and continued to persist in transplanted plants in April and May. The primary symptom that alerted us of a potential disease was small, necrotic ring spots (Figure 1) appearing on the leaves of the penstemon. We sent a sample to the Plant Disease Clinic at Virginia Tech ([www.ppws.vt.edu/extension/plant-disease-clinic/index.html](http://www.ppws.vt.edu/extension/plant-disease-clinic/index.html)), and the plant tested positive for INSV.

At first, there were only a few liners diagnosed with the disease, which were destroyed. But, as the population of thrips increased, so did the number of cases of INSV in 'Prairie Dusk.' In addition to necrotic ring spots, *Penstemon* 'Prairie Dusk' also displayed irregularly shaped necrotic areas (Figure 2) across the leaves. Around some of the necrotic spots, there was also some slight, halo-shaped chlorosis (Figure 3) as well. Several of the plants had multiple necrotic ring spots (Figure 3) on one leaf, whereas others only had a single spot.



Figure 2. Irregularly shaped necrotic areas on *Penstemon barbatus* 'Prairie Dusk'.

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Figure 3. Multiple necrotic ring spots on one leaf of *Penstemon barbatus* 'Prairie Dusk' along with slight chlorotic halos around the spots.

With this high population of thrips, INSV was eventually spread to other plants in the greenhouse. In June, *Penstemon x mexicali* 'Pike's Peak Purple' was the second *Penstemon* cultivar to display symptoms of INSV. Again, these symptoms consisted of necrotic ring spots on the leaves. Due to the pressure of high numbers of thrips and the quick spread of INSV in this crop, the 'Pike's Peak Purple' research plants were destroyed.

Management and Prevention

There is no cure for INSV, and so it is best to dispose of any plants diagnosed with the disease in order to prevent future infections. It is also critical to continue scouting and controlling the thrips population because they can continue to act as vectors and spread the disease. Remember to remove any weeds from the greenhouse that could possibly conceal more thrips. Finally, vegetative cuttings should not be taken from infected plants because of the risk of those cuttings also being infected with the disease.

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/](http://www.egro.mobi/) for the latest control product information.