



Mara Grossman
mgrossman@vt.edu

Tips for Diagnosing Impatiens Necrotic Spot Virus (INSV)

by Mara Grossman, Erika Lyons, Margaret Aiken, Mary Ann Hansen and Joyce Latimer, Virginia Tech

Learn how to use ImmunoStrips (Agdia, Inc.) to rapidly diagnose INSV in plants on-site in the greenhouse.



Impatiens Necrotic Spot Virus (INSV) has been seen in all types of ornamental plants, including annuals and perennials. This virus causes symptoms that vary depending on the plant affected, but include leaf and stem spots and/or discoloration, and stunted growth. The virus is rapidly spread by the insect vector, the Western flower thrips, and there is no cure for the disease. Due to its potential spread to other plants grown in the same area, it is very important to act quickly to remove and destroy affected plants. Therefore, a rapid diagnosis of INSV is crucial so that growers can determine if plants are diseased and act without delay.



INSV on *Monarda didyma* (photo Mary Ann Hansen) top and on *Echinacea* 'Harvest Moon' bottom.

e-GRO Alert

www.e-gro.org

CONTRIBUTORS

Dr. Nora Catlin
Floriculture Specialist
Cornell Cooperative Extension -
Suffolk County
nora.catlin@cornell.edu

Dr. Kristin Getter
Floriculture Outreach Specialist
Michigan State University
getterk@msu.edu

Dan Gilrein
Entomology Specialist
Cornell Cooperative Extension -
Suffolk County
dog1@cornell.edu

Dr. Brian Krug
Floriculture Ext. Specialist
Univ. New Hampshire
brian.krug@unh.edu

Dr. Joyce Latimer
Floriculture Extension & Research
Virginia Tech
jlatime@vt.edu

Dr. Roberto Lopez
Floriculture Extension Specialist
& Research
Purdue University
rglopez@purdue.edu

Dr. Paul Thomas
Floriculture Extension & Research
University of Georgia
pathomas@uga.edu

Dr. Brian Whipker
Floriculture Extension & Research
NC State University
bwhipker@ncsu.edu

Copyright © 2014

Where trade names, proprietary products, or specific equipment are listed, no discrimination is intended and no endorsement, guarantee or warranty is implied by the authors, universities or associations.

This is where INSV ImmunoStrips from Agdia (www.agdia.com) can play a key role in testing and diagnosis. In a nutshell, these test kits allow growers to quickly determine if a plant has INSV on-site, without any special equipment. For a discussion of other in-house test kits, including testing for other pathogens and other vendors which sell test kits, see e-GRO 3.17 (<http://e-gro.org/pdf/3-17.pdf>).

Selecting the tissue sample

Select a leaf which is showing symptoms of INSV. Do not collect the dead tissue. Sample symptomatic tissue at the edge of the necrotic area. Collect a sample by cutting a section of the leaf approximately 1” square, or about the size of a quarter.

Running the test

INSV ImmunoStrips test kits come with test strips and individual bags containing a buffer solution. To use the test kit, cut off the top of the bag with the buffer solution, being careful not to spill the solution. Place the sample in the bag between the mesh linings. Rub the leaf section against the mesh in the bag with the back of a pen or other blunt object in order to extract the sample; the buffer solution will turn green when plant sap is released from the cells. Insert the test strip into the empty slot along the side of the bag; the strip should be submerged only as far as the white line on the test strip.

Reading the Results

Test results appear within 30 minutes, but may be visible as quickly as 5 minutes. When the test is completed, one pink line will appear on the test strip as a control. The presence of this line indicates that the test is working; if no pink line appears, the test is invalid and should be repeated. If the control line is the only line that appears, this indicates a negative result (no INSV detected). The presence of two pink lines (the control line and a second test line) indicates a positive result (INSV is present).

Cooperating Universities



Cornell University
Cooperative Extension
of Suffolk County



THE UNIVERSITY OF GEORGIA
**COOPERATIVE
EXTENSION**

College of Agricultural and Environmental Sciences
College of Family and Consumer Sciences

NC STATE UNIVERSITY
Floriculture



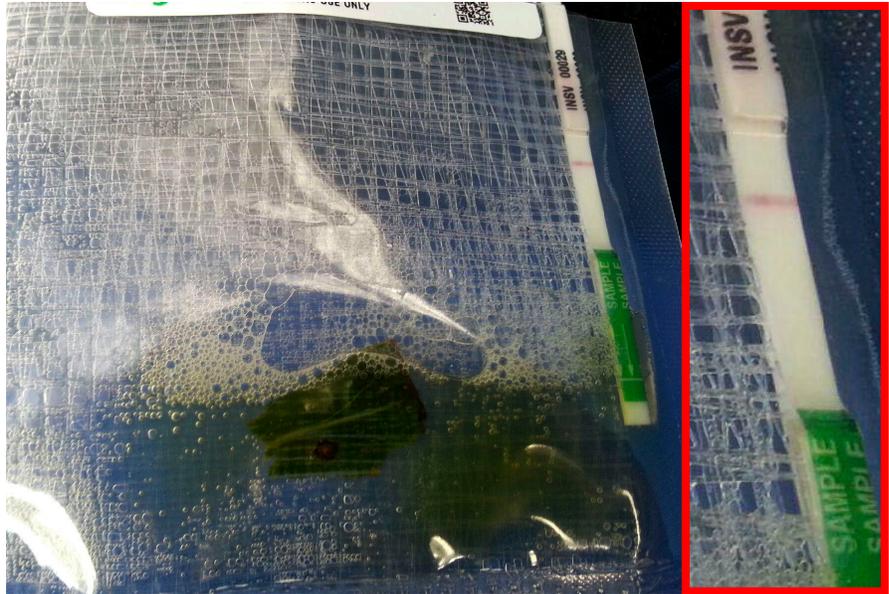
VirginiaTech
Invent the Future[®]

**MICHIGAN STATE
UNIVERSITY**



UNIVERSITY
of NEW HAMPSHIRE

**In cooperation with our
local and state greenhouse
organizations**



This is a test kit which shows a negative result, no INSV detected. Note the single pink line on the test strip; this is the control line.



This is a test kit that shows a positive result. Note the two pink lines on the test strip.

The Agdia INSV ImmunoStrips test kit user guide has more detailed instructions on conducting the test and interpreting results (<https://orders.agdia.com/Documents/m175.pdf>). View the following video to see a demonstration on how to use an ImmunoStrip test:



Other tips for using ImmunoStrips:

- The test kits should be stored refrigerated but allowed to come to room temperature before use.
- Use the proper amount of leaf tissue: 1 inch” square or 0.15 grams.
- Use clean tools to cut leaf samples.

Other testing options for INSV, including professional testing services and ELISA test kits, are available; however, these tests require lab equipment. In addition, the cooperative extension service in your state may offer virus testing through a plant disease clinic, so check with your local extension agent.

The Agdia ImmunoStrip test kits are easy to use, do not need any special equipment, and give fast and reliable results. In the battle against INSV, the test kits can provide growers with an important tool for a fast diagnosis. The ability to quickly diagnose the disease allows growers to implement control measures rapidly in order to effectively control the problem.

For tips on controlling thrips, see e-GRO alert 3.27 (<http://e-gro.org/pdf/thrips.pdf>).