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A New Virus of Soybean Confirmed in Wisconsin

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This week our laboratory confirmed the presence of *Soybean vein necrosis-associated virus* (SVNaV) in soybeans sampled in Wisconsin. Samples were taken on several dates during September and processed in our laboratory. Symptoms of the disease caused by the virus include yellowing (chlorosis) of the leaf veins (Fig. 1), yellowing of the leaves, and browning (necrosis) of the leaf veins and leaves (Fig. 2). The first report of the virus in the USA was from symptomatic soybean plants in Tennessee in 2008. Since this discovery in 2008, SVNaV has been confirmed in other states including Kentucky, Arkansas, Missouri, and most recently Wisconsin. In addition, it was confirmed in Ontario, Canada in 2012.

Figure 1. Yellowing and necrosis of leaf veins as a result of soybean vein necrosis disease, in the field. Photo Credit: Damon Smith

Figure 2. Necrotic symptoms of soybean vein necrosis disease on soybeans. Photo Credit: Damon Smith

What is SVNaV?

SVNaV is a member of the family *Bunyaviridae.* What is interesting about this family is that it has only one genus, *Tospovirus,* which is capable of infecting plants. Other members of the family include human viruses, such as Hantaviruses. Common plant-infecting viruses in the genus *Tospovirus* include *Tomato spotted wilt virus* (TSWV), *Impatiens necrotic spot virus* (INSV), and *Iris yellow spot virus* (IYSV). SVNaV is different from these other related viruses. In fact, sequencing of the genetic material that comprises the virus has revealed that SVNaV is in a new cluster of its own.

What damage do *Tospoviruses* cause and how are they typically spread?

Tospoviruses are known to cause damage in many crops that results in the loss of yield and quality. These viruses can affect legumes and other plants such as ornamentals and vegetables. *Tospoviruses* are known to be transmitted by thrips. SVNaV is also thought to be transmitted by soybean thrips, but this has not been confirmed. It is possible that SVNaV is brought into the

North-central region each year by thrips as they travel in the wind currents from the southern U.S.A.

What is the Significance?
Very little is understood about this virus and its effects on soybeans. SVNaV may or may not have impact on soybean yield. Observations on several soybean cultivars, suggest that the symptoms are observed later in the season and yield reductions due to SVNaV alone may not occur. However, if several viruses occur simultaneously in the same plant, yield reductions could be possible.

Management Recommendations
More research needs to be done to assess the impact of SVNaV on soybeans. It is not recommended to spray insecticides to control thrips. Until further research is conducted to determine where the virus overwinters and how it is transmitted to soybean, specific control recommendations for SVNaV are not recommended. Ongoing research is being conducted at several universities around the country to assess the impact of SVNaV on soybean.

For More Information
Contact your local UW Extension agent or the authors with questions. For other information about *Soybean vein necrosis-associated viru*s, check out the following links:

Arkansas Agricultural Communication Services - http://arkansasagnews.uark.edu/5423.htm

Michigan State University Extension - http://msue.anr.msu.edu/news/soybean_vein_necrosis-associated_virus_svnav_confirmed_in_michigan

Missouri Integrated Pest Management Program - http://ipm.missouri.edu/IPCM/2012/8/Something-New-to-Look-for-in-Soybean-Fields-Soybean-Vein-Necrosis-Virus/

Pennsylvania State University Extension - http://extension.psu.edu/field-crop-news/news/2012/07/soybean-vein-necrosis-virus