WISCONSIN DISEASE SURVEY 2005 AND NEAR MISSES

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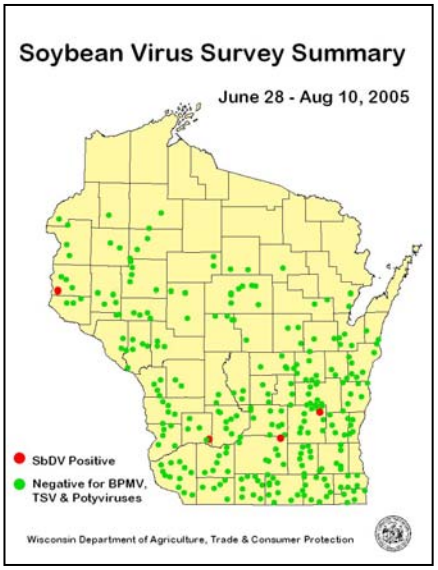
Highlights of 2005 Survey

Soybean viruses scarce.
Soybean dwarf virus found again.
Frogeye leaf spot (*Cercospora sojina*) reappears.
Viruses on snap beans were minimal.
Four counties added to soybean cyst nematode map.
No wheat streak mosaic virus or High Plains virus found in corn or wheat; only one incident of maize dwarf mosaic virus in surveyed corn.
Twenty-one corn seed production fields found to have Stewart's wilt (*Pantoea stewartii*).

Soybean Virus Survey

A statewide survey for viruses and soybean aphid prevalence was conducted from June 28th to August 10th, 2005. Observations and samples were collected from 276 R2-R5 soybean fields across Wisconsin. At four points in each field, the uppermost fully-unfurled trifoliate was picked from 10 plants and stored on ice until delivered to the Plant Industry Laboratory. Soybean aphid populations were counted, an estimation of defoliation percent made, and plants were examined for soybean rust.



In the laboratory, samples were ground and tested by ELISA for bean pod mottle virus (BPMV), soybean dwarf virus (SbDV), tobacco streak virus (TSV) and a broad potyvirus test (includes bean common mosaic virus, bean yellow mosaic virus, soybean mosaic virus and others). Tests were conducted using DAS ELISA kits from Agdia Inc., Elkhart, IN, in accord with manufacturer's protocols.

In the samples tested, no BPMV, no TSV and no potyviruses were detected, and only four of the 276 fields were positive for soybean dwarf virus. No soybean rust was detected in any surveyed Wisconsin field in 2005.

Soybean Dwarf Virus

Soybean dwarf virus was first detected in soybeans in Wisconsin in 2003. In 2004, the virus was detected in five of 293 soybean fields sampled. In 2005, SbDV was detected in four of 276 fields sampled. Companion surveys of clover (also reported to be a host) found the virus in 33 of 77 samples in 2004, and in 61 of 92 samples collected in 2005. (One note regarding the clover results: ELISA is notoriously difficult with clover, due to "noise" in the system. The actual incidence of SbDV in clover may be less than indicated.)

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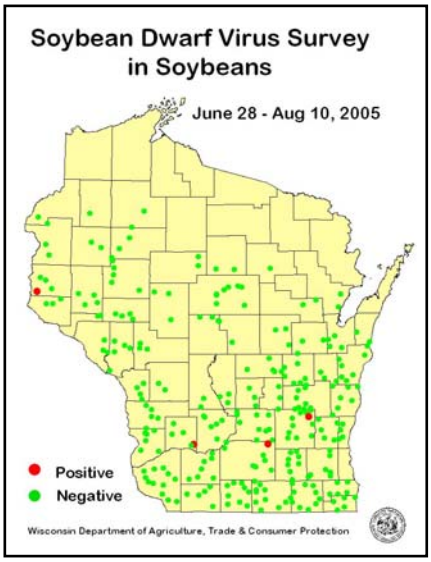
Several strains of SbDV are known to exist, with different aphid vector relations. Work is underway to classify the strain or strains in Wisconsin soybeans and clover. Certain strains of SbDV have been shown to be vectored by *Aphis glycines* under greenhouse conditions, but the apparent large reservoir of virus present in clover and the relative low rate of infection in the soybean crop suggest that the soybean aphid is an inefficient vector of the disease, or that as-yet-unrecognized differences in strains exist in the state. *A. glycines* will feed on red clover under greenhouse conditions, but is rarely reported to do so in the field, and does not overwinter on clover.



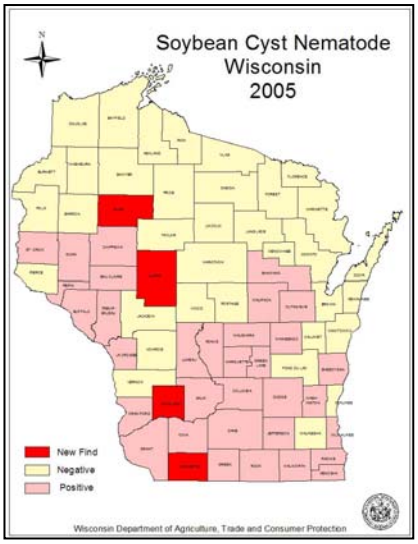
The apparent widespread prevalence of the virus in clover does raise concerns about the potential threat from a mutation in either insect or virus, or from a new vector entering the system in the future.

Viruses on Snap Bean

A survey of 33 commercial snap bean fields detected cucumber mosaic virus in three fields, and one field (Portage County) tested positive for the potyvirus group. All samples were negative for BPMV and TSV.

Frogeye Leaf Spot

A soybean field in Richland County was found to have frogeye leaf spot, caused by *Cercospora sojina*. This disease is common in the Mississippi delta region, and is reportedly increasing in incidence in Iowa. *C. sojina* overwinters on soybean residue. The first reported DATCP detection was made in 2000 in Iowa County; one detection was made in 2001 in Richland County. Frogeye leaf spot may be a growing concern for WI soybean growers in the future.



Soybean Cyst Nematode

In 2005, four counties (Lafayette, Richland, Clark and Rusk) were added to the list of Wisconsin counties known to be infested by soybean cyst nematode, *Heterodera glycines*. This brings the total number of counties infested in Wisconsin to 37, comprising the great majority of the soybean acreage in the state. Growers in counties where SCN has been identified should test for the organism. Guidance in management of the nematode is available at http://www.plantpath.wisc.edu/soyhealth/scn.htm.

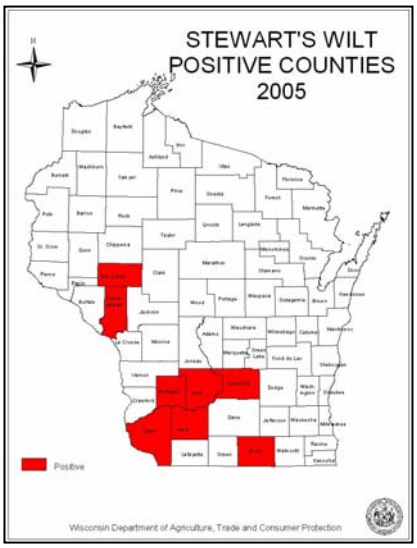
Wheat Streak Mosaic Virus, Maize Dwarf Mosaic Virus and High Plains Virus

A survey of the state's wheat crop for wheat streak mosaic virus (WSMV), the High Plains virus (HPV) and maize dwarf mosaic virus (MDMV) was conducted from June 6 to June 20, 2005. High Plains virus is not known to occur in Wisconsin, nor is the vector of both HPV and WSMV, the wheat leaf curl mite (*Aceria tosichella*), known to occur here. Samples were collected at 82 wheat fields across the eastern half of the state and tested in the laboratory. No WSMV, MDMV or HPV was detected in wheat.

Between August 28th and September 9th, samples were collected from 44 fields of corn seed production inbreds. These samples were also tested for the three viruses. All samples were negative for all three viruses, except one field in Dane County, which tested positive for MDMV.

Stewart's Wilt

Since appearing in 1999 after a 56 year absence, Stewart's wilt (caused by the bacteria *Pantoea stewartii*) has been found in inbred and sweet corn fields almost every year. In 2000, the disease was found in 10 counties of the state; in 2001, no disease was detected. In the years 2002-2004, only one or two infected fields were detected each year. The 2005 seed field inspections found the disease in 21 of 44 fields surveyed, or 48% of the fields visited. The disease occurred in eight counties, as far north as Eau Claire County.



Stewart's wilt is of regulatory concern, and importation of seed from *Pantoea*-infected fields is prohibited by at least 23 countries worldwide. The bacteria is vectored by the corn flea beetle (*Chaetocnema pulicaria*), which is also the overwintering reservoir. Winter temperatures are likely the primary factor regulating the incidence of this disease in Wisconsin, by influencing flea beetle winter mortality.