2009 WISCONSIN CROP DISEASE SURVEY

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This is a summary of disease surveys conducted by plant pathologists at the Department of Agriculture, Trade & Consumer Protection (DATCP). In 2009, field surveys focused on the following crops and diseases: Phytophthora Root Rot of Soybean Seedlings, Viruses of Snap beans, Foliar Diseases of Winter Wheat; and Stewart's wilt of Seed Corn. Laboratory diagnosis was provided by DATCP's Plant Industry Laboratory.

Phytophthora Root Rot of Soybeans Seedlings

2009 was the second consecutive year, the pest survey team conducted a statewide survey for Phytophthora root rot (*Phytophthora sojae*) of soybeans. Cool spring conditions deferred the start of the survey to the second week of July. From July 6 to17, fifty randomly selected soybean fields in early vegetative stages were sampled throughout Wisconsin. While fields were selected randomly, surveyors chose seedlings from areas within each field that showed declining soybean seedlings. Symptomatic seedlings were carefully dug up and transported to DATCP's Plant Industry Laboratory for testing.

Seedling roots were tested for the presence of the root rot pathogen *Phytophthora* by culturing on semi-selective media and molecular methods. Results of culturing revealed only 3 out of 50 samples tested positive (6%). Results from molecular testing (PCR=polymerase chain reaction) of DNA extracted from cleaned root tissue showed 9 of 50 samples (18%) tested positive for *Phytophthora sojae*. For comparison, in 2008, 10 of 50 samples (20%) tested positive by PCR and only 4 (8%) cultures could be identified by morphology. PCR is not surprisingly the more effective method to determine seedling infections with this pathogen.

P. sojae infected fields were found in all soybean growing regions of the state. Roughly one fifth of randomly chosen fields surveyed, tested positive for *P. sojae* consistently over two years. More information on soybean plant health and root rot caused by *P. sojae* can be found at this University of Wisconsin website: http://www.plantpath.wisc.edu/soyhealth/prr.htm.

Viruses of Snap Bean

The DATCP pest survey team, in cooperation with processors and fresh market producers conducted a survey for snap bean diseases caused by plant viruses. A total of 101 fields were sampled between July 6 and August 13, 2009.

Fields were sampled at approximately 48 days post-planting. Ten leaves (five from the top of the plants and five mature leaves) were collected at each of four locations, in each sampled field. Notes were made on disease symptoms present, and counts of aphids were made on ten additional plants at each location. Leaf tissue was kept on ice and promptly transported to DATCP Plant Industry Laboratory for testing.

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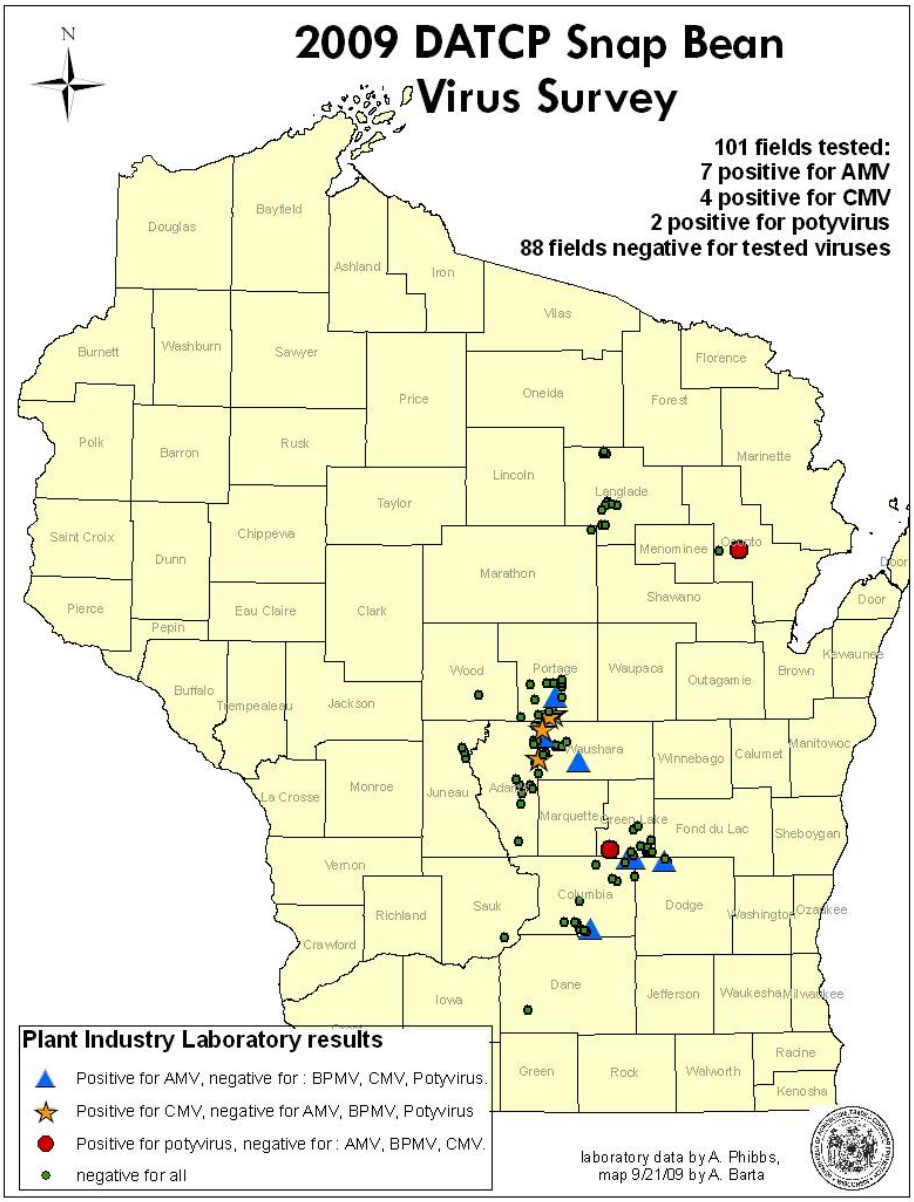


Foliage was tested for the following viruses: alfalfa mosaic virus (AMV), bean pod mottle virus (BPMV), cucumber mosaic virus (CMV), and the potyvirus group that includes bean common mosaic virus and bean yellow mosaic virus. Most of these viruses are seed transmitted to some degree and can also be spread by aphids.

Laboratory analysis was conducted using reverse-transcription polymerase chain reaction (RT-PCR) for AMV, and enzyme-linked immunosorbent assay (ELISA) for all others.

Survey staff observed eleven fields with symptoms of white mold infection. Aphid counts were negligible throughout the sampling period. Laboratory results showed seven fields positive for AMV, no finds of BPMV, four fields positive for CMV and two for potyviruses that were not further characterized (Table 1).

Table 1. Snap bean virus summary from 2003 to 2009

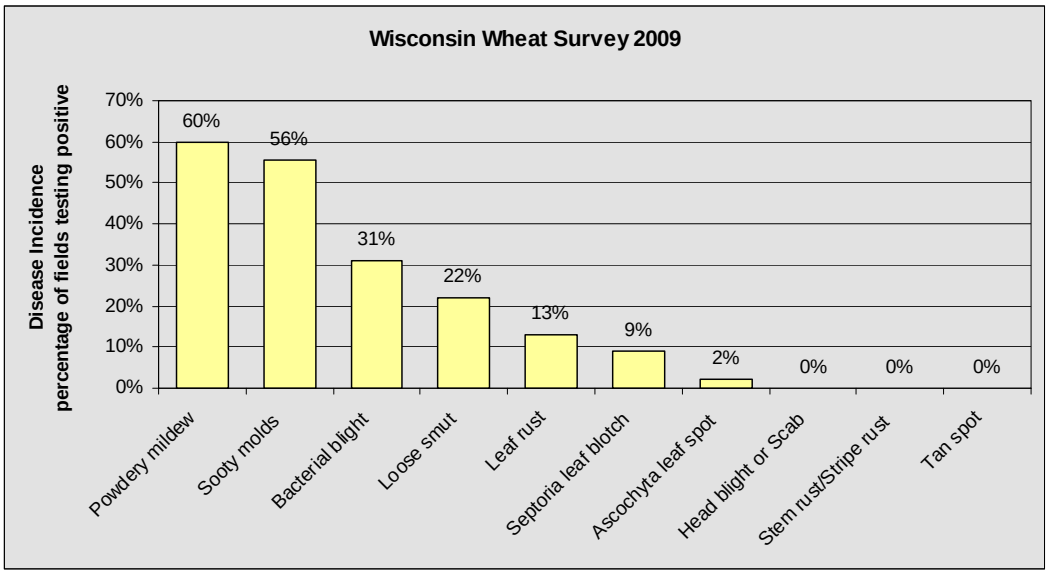
Year	Total No. of Fields Surveyed	AMV (%)	BPMV (%)	CMV (%)	Potyvirus group (%)
2003	25	NA	0	**72**	**4**
2005	33	NA	0	**3**	**9**
2006	62	NA	0	0	0
2008	25	**4**	0	**8**	0
2009	101	**7**	0	**4**	**2**

(%) Positive testing field over total number of fields tested.

Foliar Diseases of Winter Wheat Survey

In June 2009, 45 wheat fields in 13 Wisconsin counties, showed very low disease incidence overall. Wheat fields ranged in maturity from Feekes Stage 8 (flag leaf visible) to Feekes 10.5.3 (flowering complete to base of spike). Powdery mildew (*Blumeria graminis)* and sooty molds were commonly observed, in 60 and 56% of fields, but severity was very low. Powdery mildew increased in severity after the middle of June with 12 out of 23 fields, reaching or surpassing threshold levels (average of 1-5 pustules per flag leaf). Bacterial blight infected leaves showed characteristic yellow striping or stippling. Laboratory testing confirmed the presence of the bacterium *Pseudomonas syringae* in 31% of fields including one field infected with *Xanthomonas campestris*. Traces of leaf rust (*Puccinia triticina*) were found in 13% of fields, no stem (*P. graminis*) or stripe rust (*P. striiformis*) was detected.

Loose smut (*Ustilago tritici*) showed up in 22% of fields compared to 2% in 2008, but at trace levels only. Ascochyta leaf spot (*Ascochyta tritici*) was observed only in 2% of fields compared to 12 % last year. Septoria leaf blotch (*Septoria tritici*) infected 9% of fields in 2009 compared to 26% in 2008. Staff collected foliar samples for future virus and phytoplasma testing. Seventy-six percent of fields showed at least trace levels of reddish-purple streaked leaves symptomatic for several viruses or aster yellows phytoplasma. Scab (*Fusarium spp*.) or tan spot disease (*Pyrenophora tritici-repentis*) were not observed during the survey period.



Seed Corn Survey

Corn field inspections for export regulatory pests were performed on 62 sites in Columbia, Dane, Eau Claire, Grant, Rock, Portage and Pierce Counties. Four of the locations in Dane and Eau Claire Counties test positive for Stewart's wilt (*Pantoea stewartii*). Gray leaf spot (*Cercospora zeae-maydis*) was detected in one field each in Grant and Pierce counties.