

2010 SOYBEAN VIRUS SURVEY

<http://pestsurvey.wi.gov/>

In 2010, the annual state-wide survey of soybean fields for viruses focused on alfalfa mosaic virus (AMV) and soybean dwarf virus (SbDV). Transmitted by probing aphids and via seed, AMV is a common virus with many hosts such as alfalfa, peas, clover, potatoes and tomatoes. Symptoms include distorted and/or mottled leaves, stunting, a reduction in pod number and seed discoloration that result in lowered seed quality and marketability.

SbDV in soybeans was first found in Wisconsin in 2003(3). Due to the wide host range of more than 50 plants which includes peas, beans, lupines, clovers, beets and spinach, this annual survey was continued to document the spread of this new virus since 2002 (Figure 1). Recent studies indicate that soybean aphid is capable of vectoring SbDV to soybeans.

In 2010, 155 fields were sampled during the R2 to R6 stage. The number of soybean fields for sampling was chosen based on soybean acres in each county (4). Randomly choosing four sites in each field, two leaflets from upper and mid-canopy were collected from 5 plants at each site. Kept on ice, foliage was delivered to Plant Industry Laboratory for testing. AMV and SbDV were diagnosed utilizing a molecular method, reverse transcription (RT) - polymerase chain reaction (PCR) (1, 2).

Both viruses have been increasing in prevalence in Wisconsin soybean fields since 2003. Throughout the state in 2010, twenty fields (13%) tested positive for AMV and twelve fields (nearly 8%) tested positive for SbDV; all of which were the dwarfing strain of SbDV. The map below shows the location of sampled fields and test results. To our knowledge, no visual symptoms such as dwarfing or chlorosis attributable to SbDV have been observed in Wisconsin soybean fields so far.

Year	Total No. of Fields Surveyed	AMV	BPMV	CMV	Potyvirus group	SbDV
2002	177	NA	29.9%	NA	NA	NA
2003	286	NA	4.2%	0.3%	0.3%	1.7%
2004	293	1.0%	0.0%	0.0%	0.0%	1.7%
2005	276	NA	0.0%	NA	0.0%	1.4%
2006	188	NA	0.0%	NA	0.0%	3.2%
2007	227	2.2%	0.4%	0.0%	0.4%	3.1%
2008	238	8.8%	NA	NA	NA	6.7%
2009	47	19.1%	NA	NA	NA	4.3%
2010	155	13%	NA	NA	NA	7.7%

Figure 1. Percentage of virus infected soybean fields in Wisconsin from 2002 to 2010.

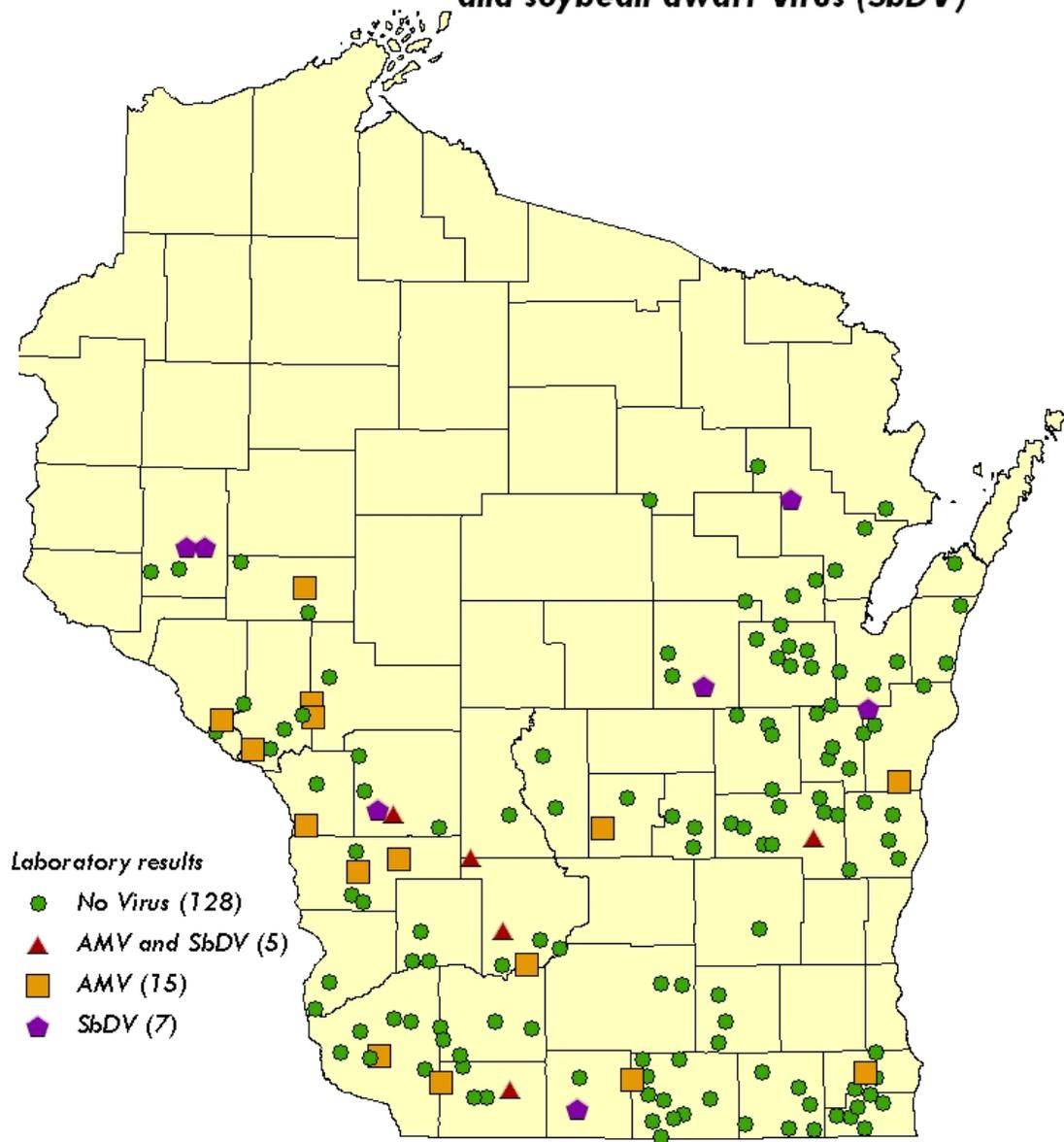
References

1. Harrison et al. Plant Dis. 89:28-32, 2005.
2. Martinez-Priego, Plant Dis. 88:908, 2004.
3. Phibbs et al. Plant Dis. 88:1285, 2004.
4. Visual sample plan statistical software designed by US Department of Energy and Arc Map.

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and soybean dwarf virus (SbDV)



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