2012 DATCP WI Crop Disease Survey Results

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The DATCP Pest Survey Program conducts monitoring and detection surveys for targeted exotic and key endemic agricultural plant pests.

DATCP Pest Bulletin: http://pestbulletin.wi.gov/

DATCP Pest Survey web site:
http://pestsurvey.wi.gov/

(or use the Google machine)

Highlights of 2012 Growing Season

First Wisconsin detection of *Phytophthora sansomeana* on soybeans

First Wisconsin find of *Soybean vein necrosis-associated virus* on soybeans (Dr. Damon Smith, UW)

Increase in *Soybean dwarf virus* positives

Phytophthora sansomeana

Photo credit: Anette Phibbs, DATCP Plant Industry Laboratory

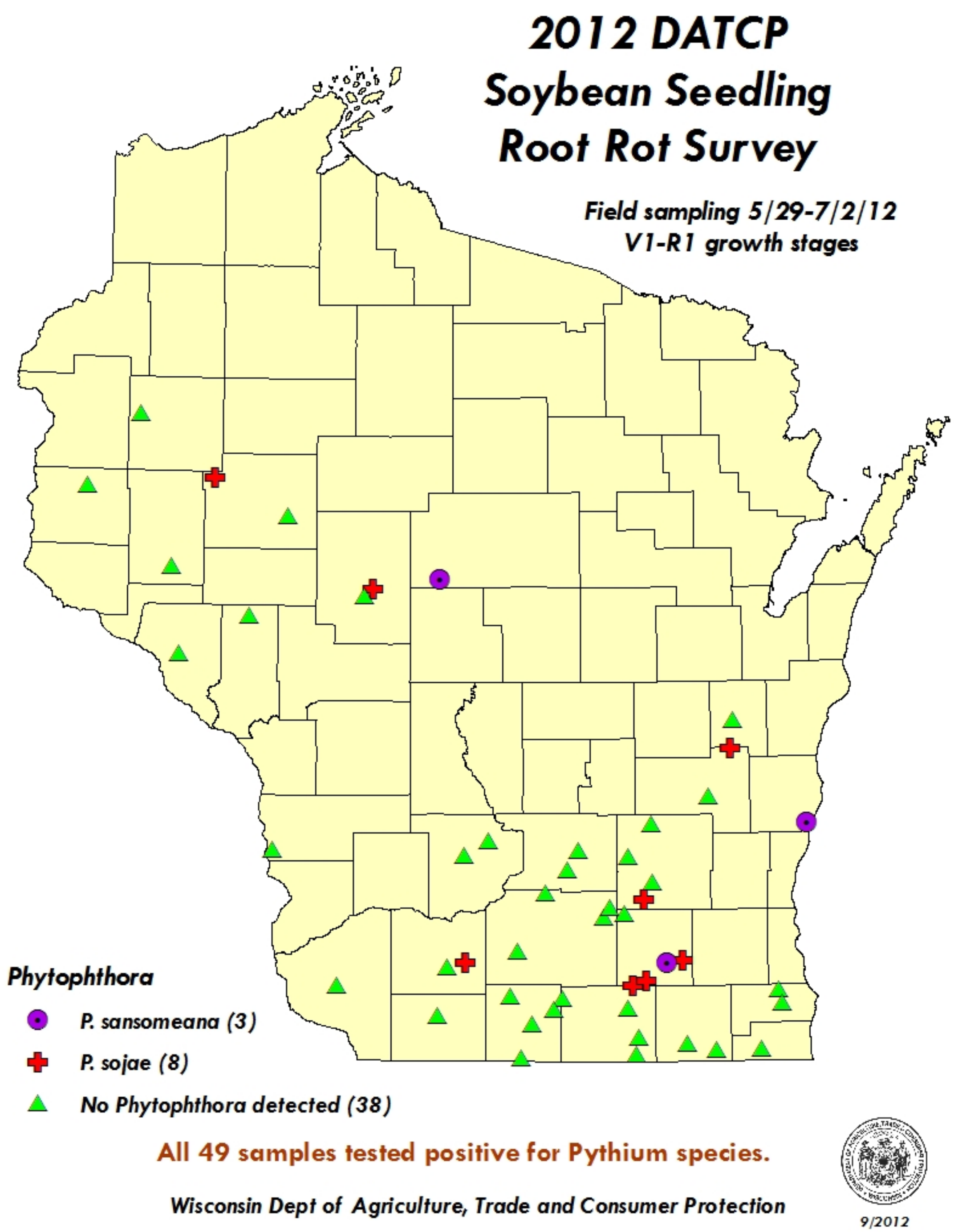
Seedling soybean survey

49 fields sampled

8 *Phytophthora sojae*

3 *Phytophthora sansomeana*

49 positive for *Pythium* (4+ species)



What's the significance of *Phytophthora sansomeana*?

Host range of *P. sansomeana* includes:

corn

alfalfa

Douglas fir and Fraser fir

white clover

white cockle and wild carrot

Host resistance uncharacterized?

Rps 1-k not effective?

Soybean vein necrosis-associated virus (SVNaV)

Photo credit: fieldcroppathology.msu.edu

Mystery symptoms on soybean leaves in late August

Midway up or higher in canopy

Distinct from bacterial blight or bacterial pustule

A New Virus of Soybean Confirmed in Wisconsin

UW Extension
University of Wisconsin–Extension
Learning for life

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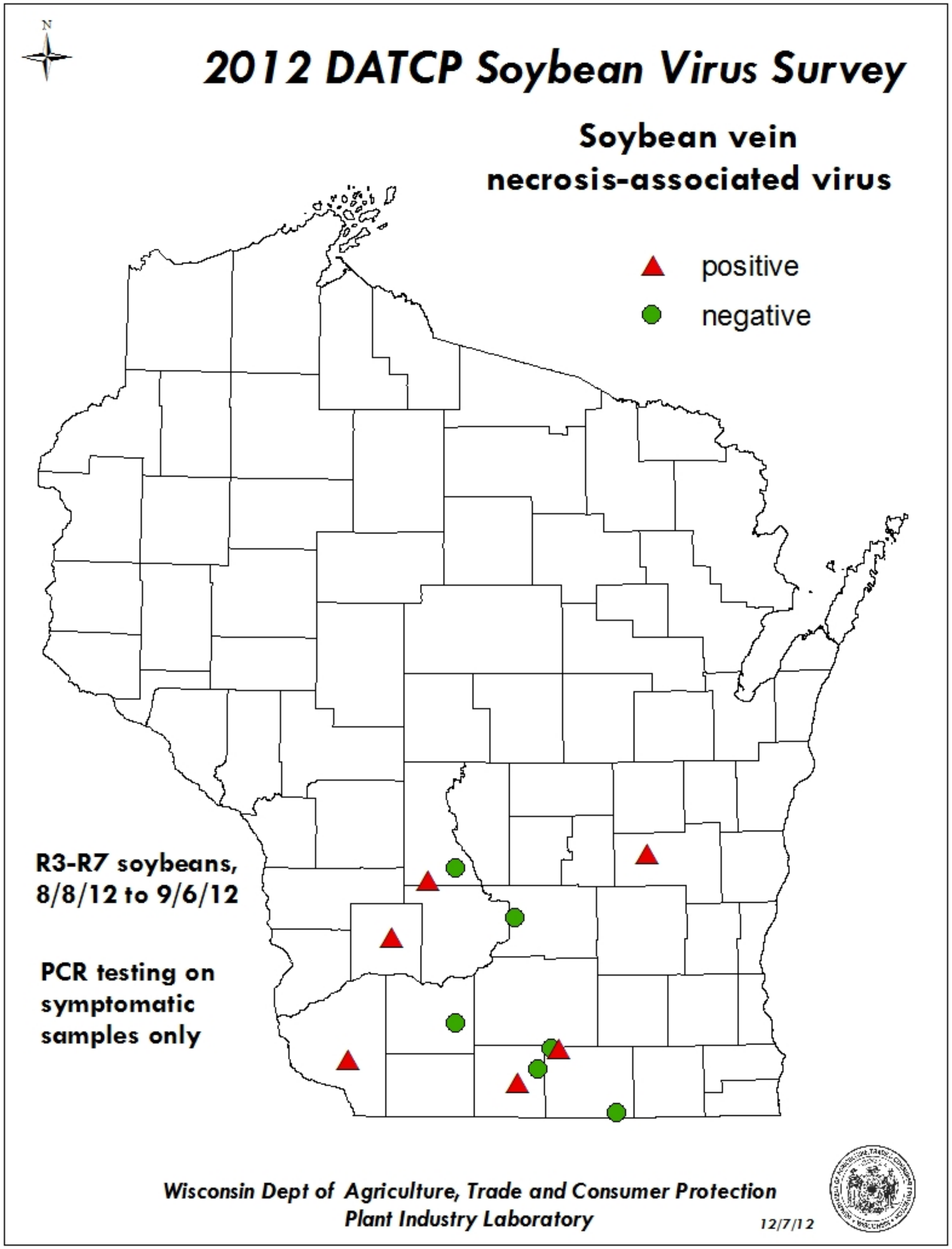
This week our laboratory confirmed the presence of *Soybean vein necrosis-associated virus* (SVNaV) in soybeans sampled in Wisconsin. Samples were taken on several dates during September and processed in our laboratory. Symptoms of the disease caused by the virus include yellowing (chlorosis) of the 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



N
2012 DATCP Soybean Virus Survey
Soybean vein
necrosis-associated virus
positive
negative
R3-R7 soybeans,
8/8/12 to 9/6/12
PCR testing on
symptomatic
samples only
Wisconsin Dept of Agriculture, Trade and Consumer Protection
Plant Industry Laboratory
12/7/12

What's the significance of SVNaV?

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Probably vectored by thrips

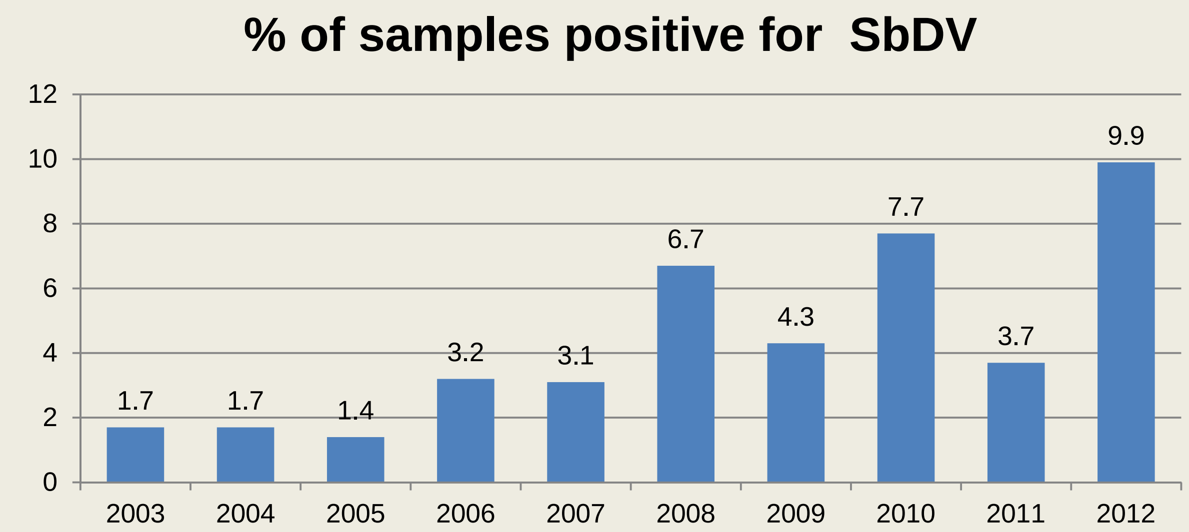
Occurs late in season??

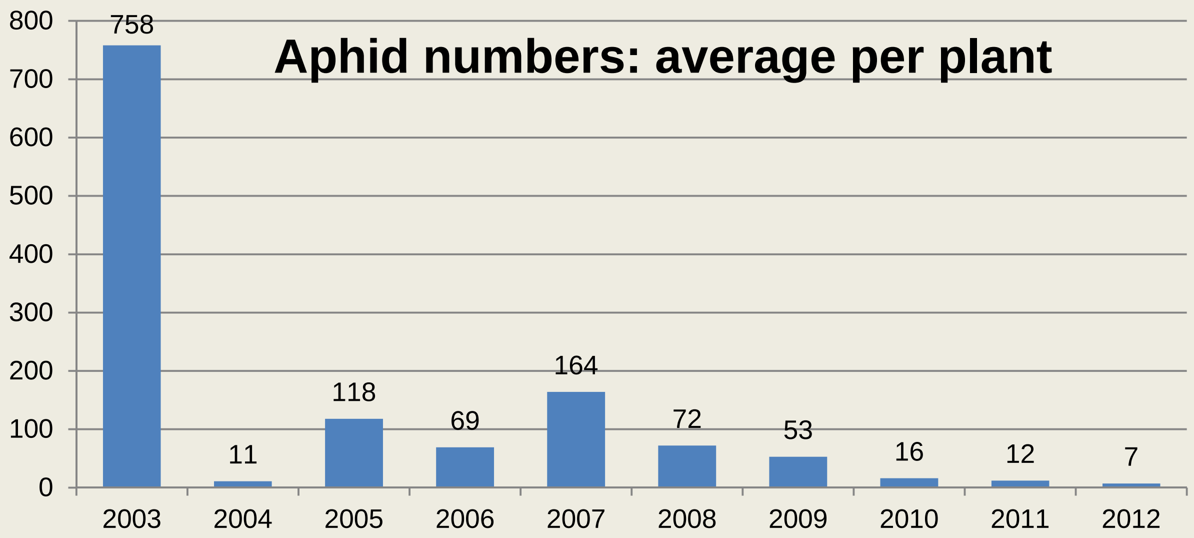
Impact on yield??

For more information: UW Field Crops Pathology site

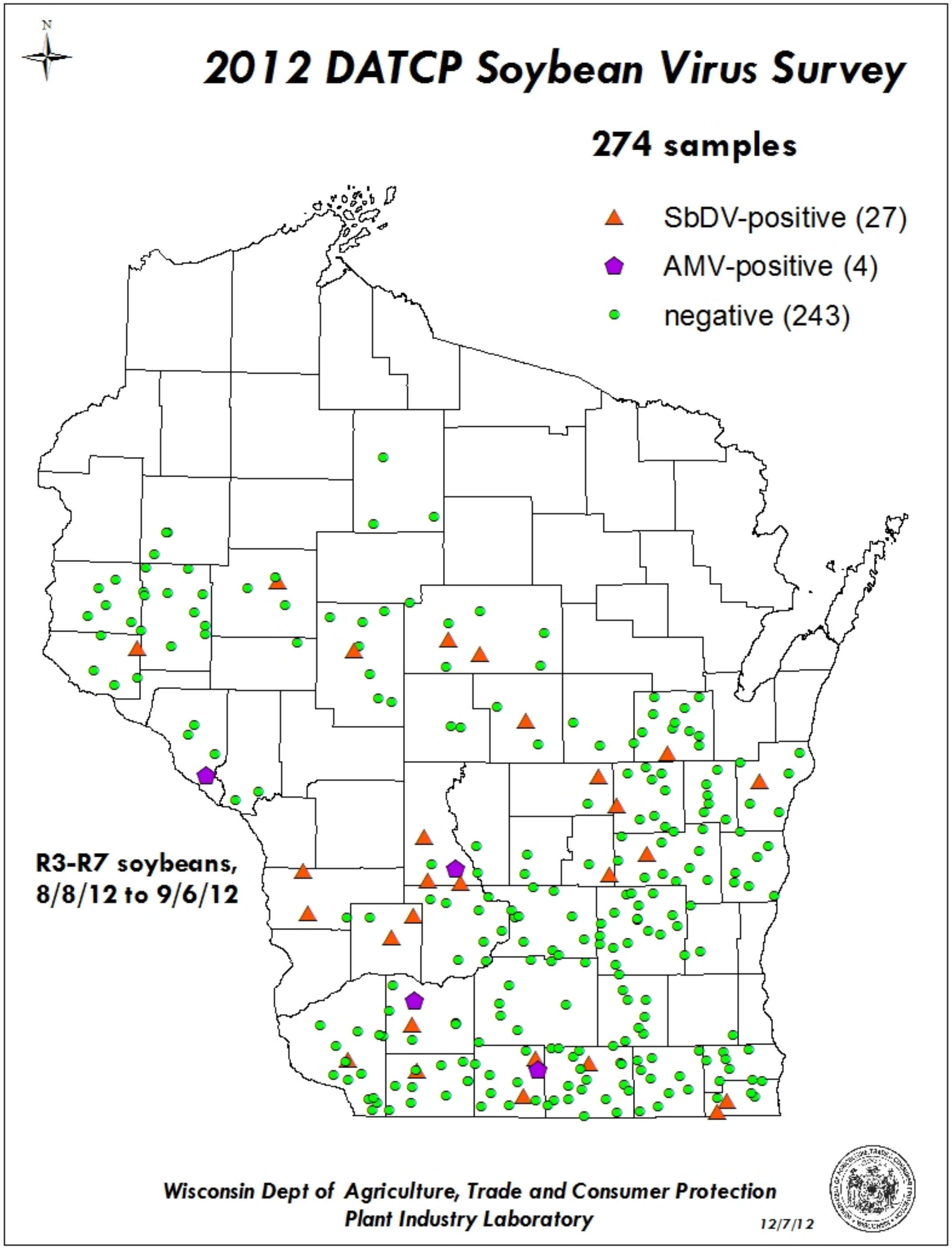
Soybean dwarf virus (SbDV)

Photo credit: Plantwise.org





Aphid data: Krista Hamilton, DATCP Pest Survey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2012 DATCP Soybean Virus Survey
274 samples
SbDV-positive (27)
AMV-positive (4)
negative (243)
R3-R7 soybeans,
8/8/12 to 9/6/12
Wisconsin Dept of Agriculture, Trade and Consumer Protection
Plant Industry Laboratory
12/7/12

What's the significance of SbDV?

???

Vectored by aphids, though soybean aphid is apparently a poor vector

Widespread in red clover

Only found in low numbers until 2012, but is that another anomaly of the year?

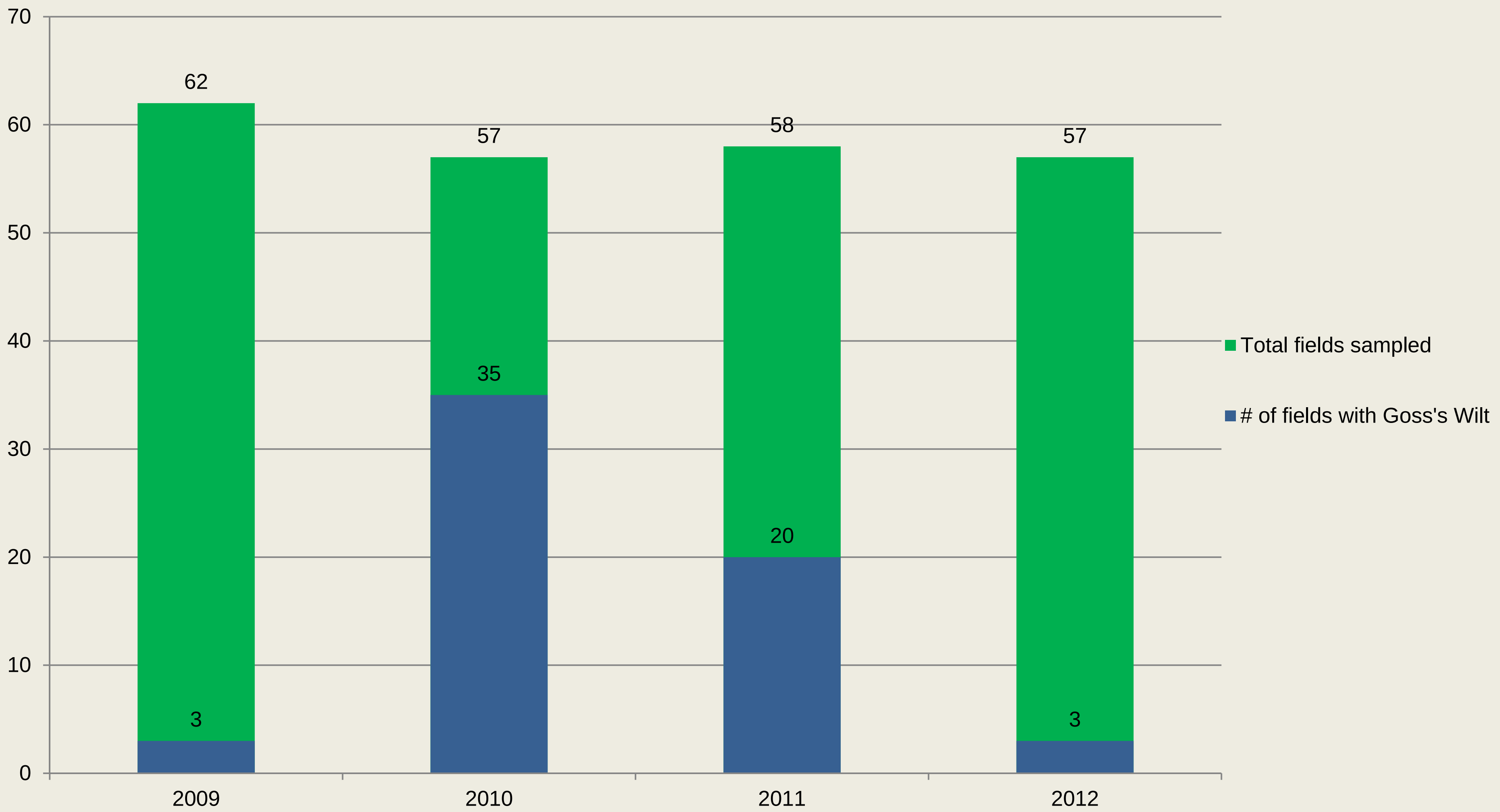
Diseases of Regulatory Concern on Corn

Photo credit: Sue Lueloff, DATCP Plant Industry Laboratory

Corn hybrid seed production fields

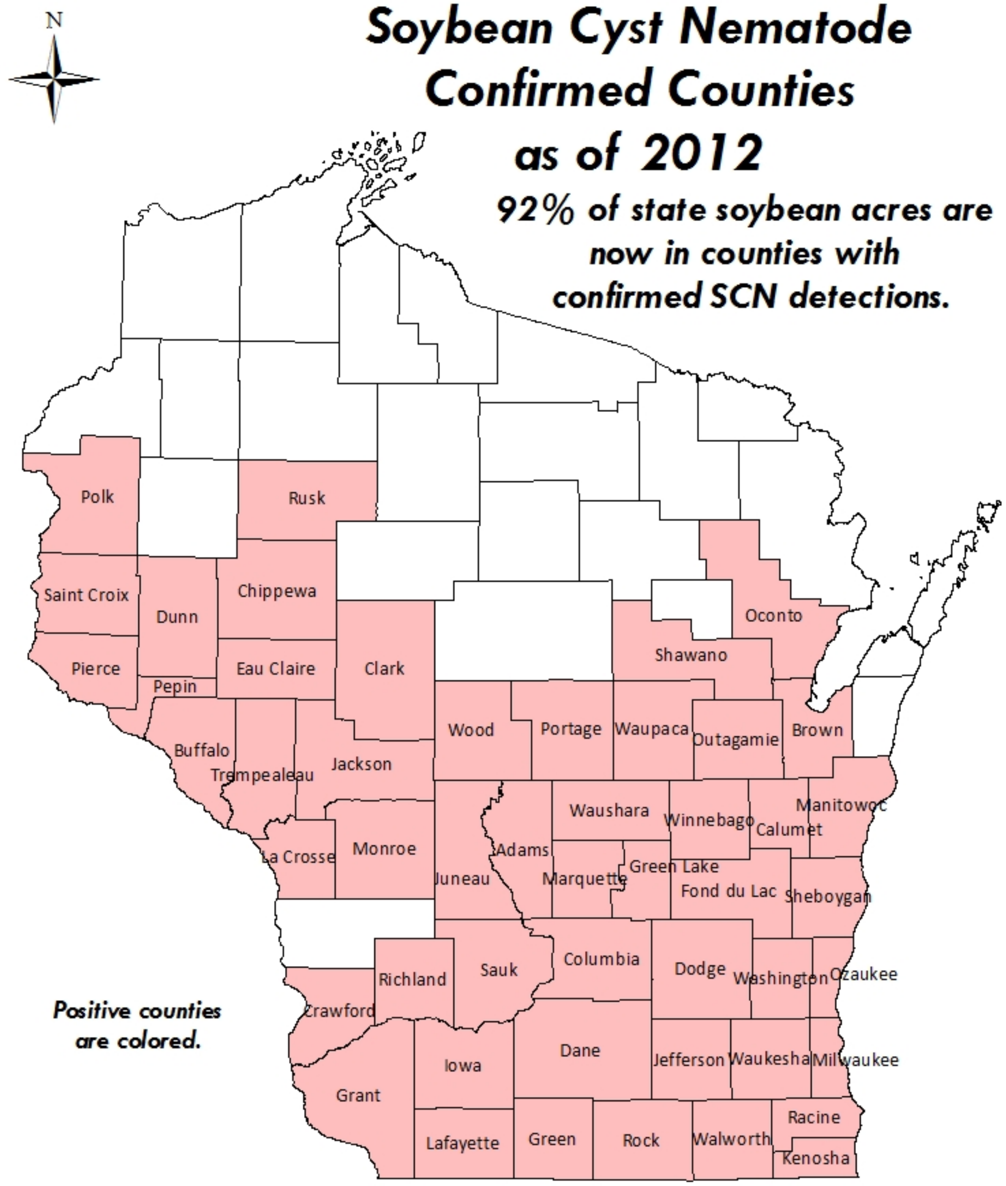
Corn inbreds are the canaries of the field crop world—
they catch everything that comes along

Goss's wilt in corn inbred fields



Soybean Cyst Nematode Confirmed Counties as of 2012

92% of state soybean acres are now in counties with confirmed SCN detections.



Combined DATCP and UW data

Wisconsin Department of Agriculture, Trade and Consumer Protection

Image: August 1942, Vernon County, WI—Library of Congress Collection. Photo by Arthur Rothstein

You have a key role in exotic pest detection!

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