Wisconsin Department of Agriculture, Trade and Consumer Protection

2014 WISCONSIN CROP DISEASE SURVEY

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Adrian Barta

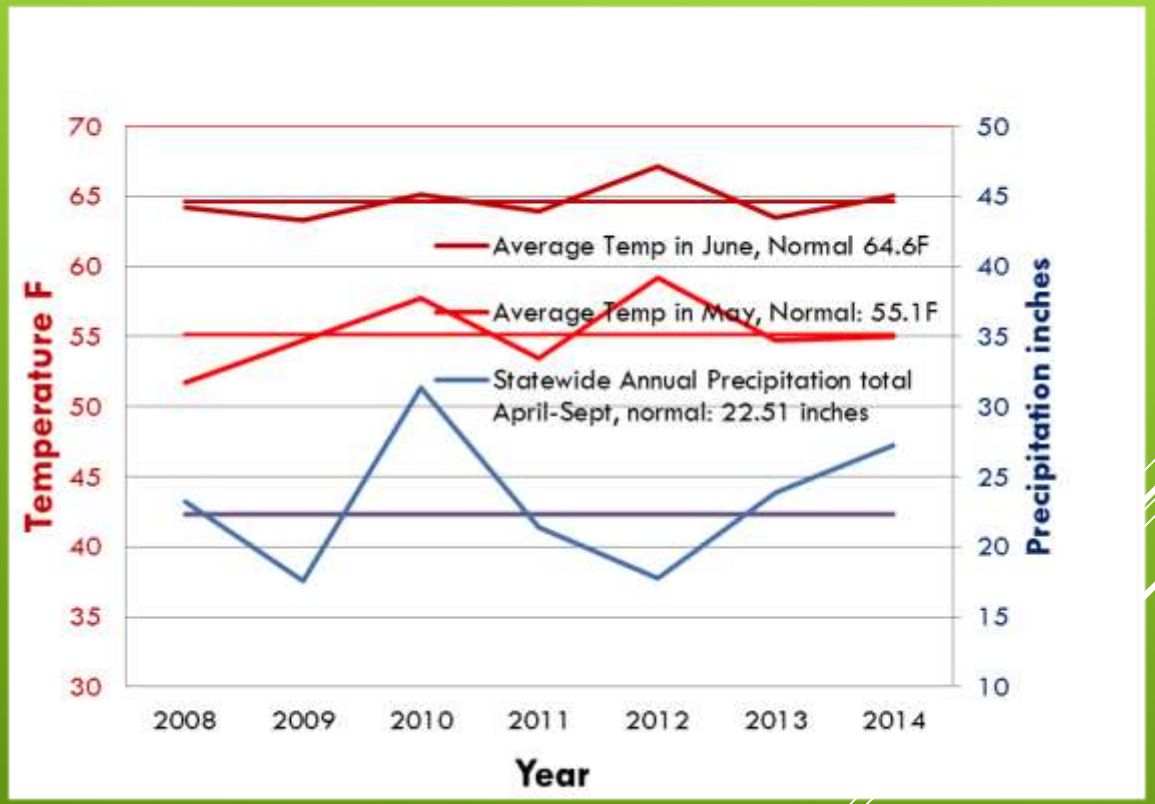
http://pestsurvey.wi.gov/

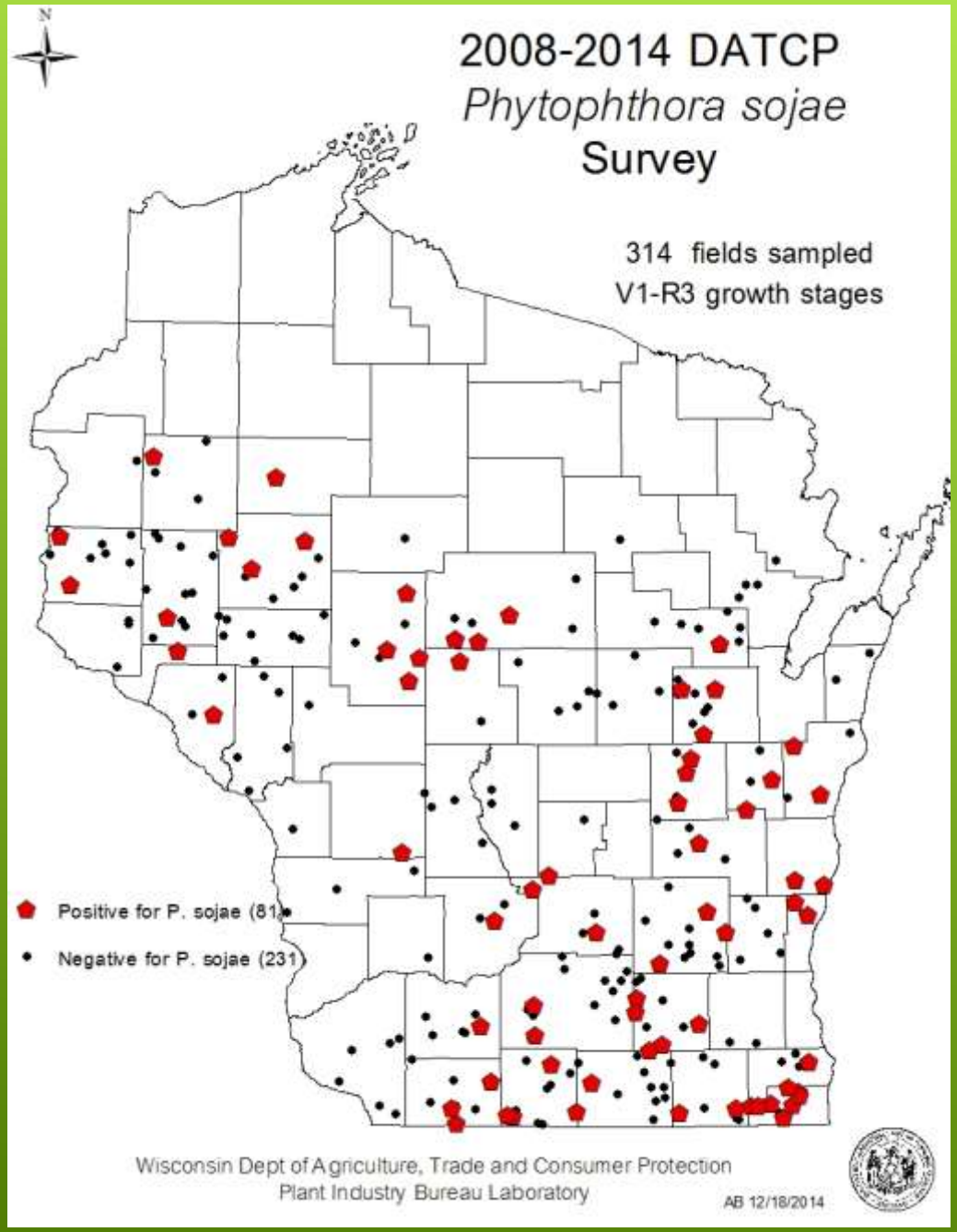
Wisconsin Department of Agriculture, Trade and Consumer Protection

- New Phytophthora spp. on soybeans
- Pythium spp. on soybeans
- Soybean viruses
- Seed field certification

WISCONSIN STATEWIDE WEATHER TRENDS (USDA NASS)

- 2008 cold wet spring
- 2009 cold dry spring
- 2010 warm May, flooding in June
- 2011 cold wet spring
- 2012 record drought
- 2013 cold wet spring, dry summer, cold harsh winter
- 2014 cold wet spring, warmer in SW





- ***P. sojae*** **can affect any soybean life stage**
- **Seed rot**
- **Pre- and post - emergence damping off,**
- **Rotting lateral and tap roots**
- **Stem rot of older seedlings**

NEW PHYTOPHTHORA SPP. ON SOYBEANS

Phytophthora sansomeana and *Pythium* infecting fine and tap roots of soybean seedlings.

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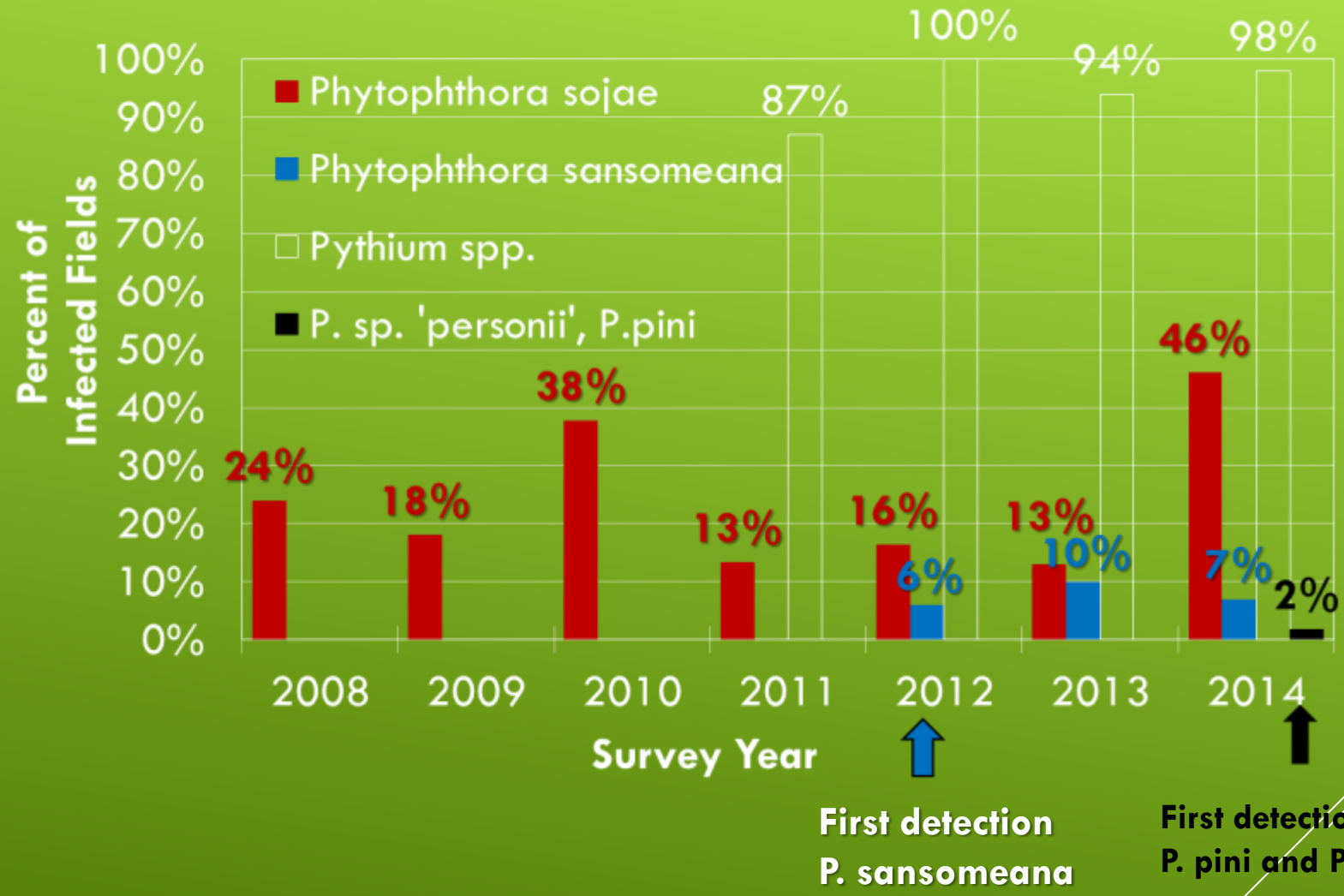
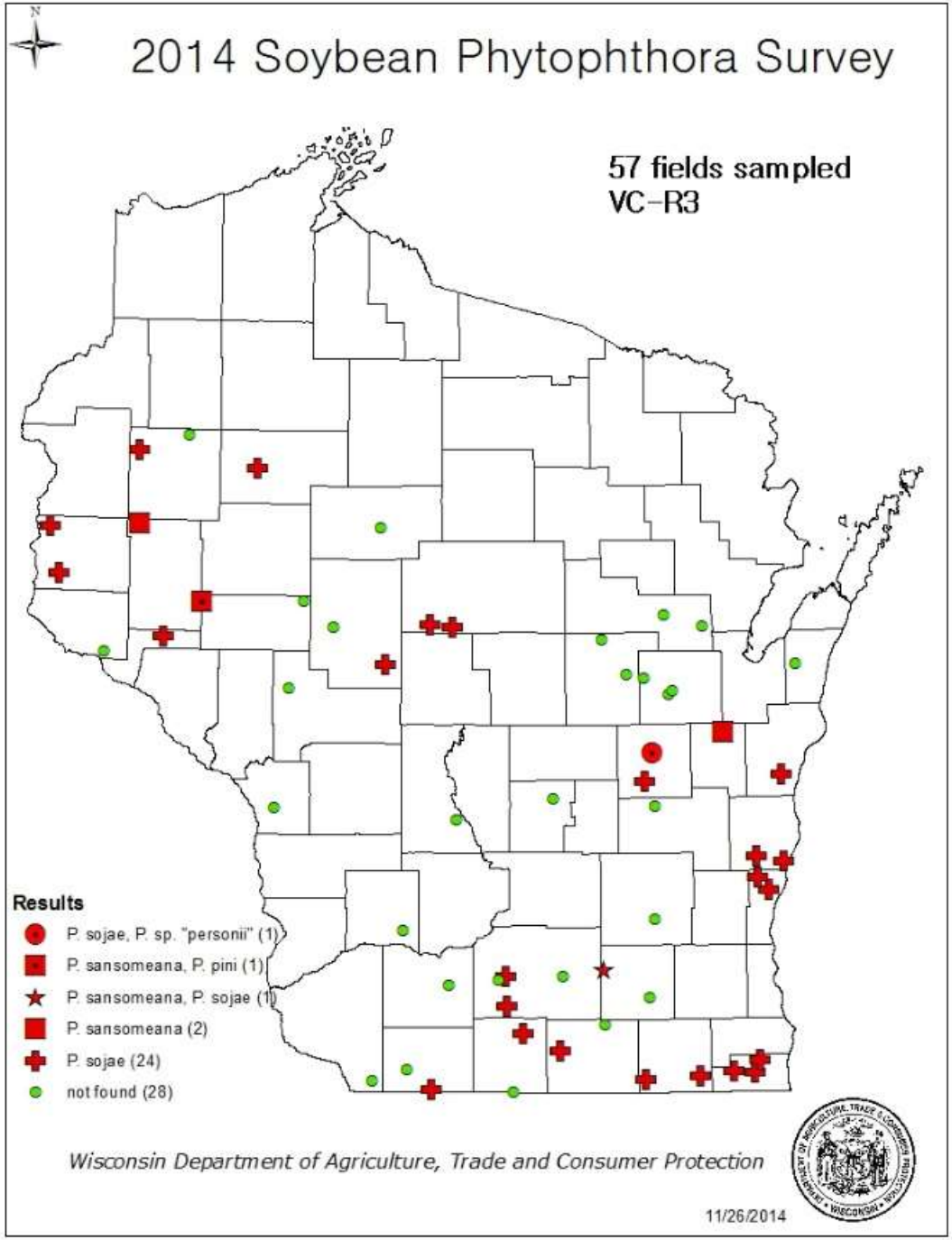
2008-2014 SOYBEAN ROOT ROT SURVEY





FOUR PHYTOPHTHORA SPECIES ON SOYBEANS

- *P. sojae*
- *P. sansomeana* detected in 2012.
- *P. pini and*

  P. sp. 'personii' detected in 2014.

HOSTS OF *PHYTOPHTHORA SANSOMEANA*

- Corn
- Soybean
- Weeds in alfalfa fields
- Christmas trees: on Balsam, Fraser fir, Douglas fir

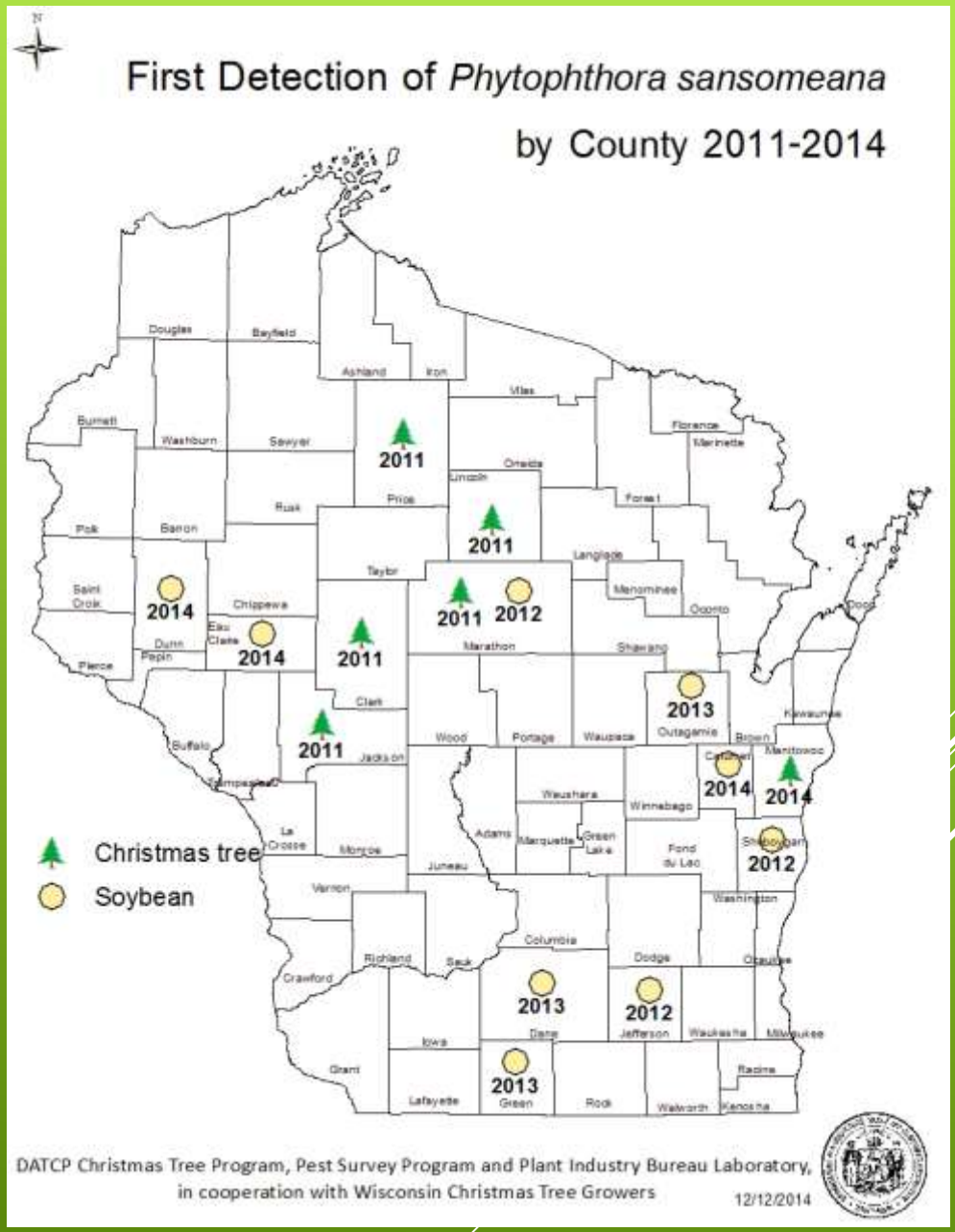
Fraser fir with Phytophthora root rot

WISCONSIN COUNTIES WITH PHYTOPHTHORA SANSOMEANA DETECTIONS

On soybeans / Christmas fir trees

- Calumet
- Clark
- Dane
- Dunn
- Eau Claire
- Green
- Jackson
- Jefferson
- Lincoln
- Manitowoc
- Marathon
- Outagamie
- Price
- Sheboygan

Total 14 counties



NEW PHYTOPHTHORA SPP. ON SOYBEANS

Rhododendron with Phytophthora shoot and leaf blight

- ***Phytophthora pini***
- **Syn. with P. plurivora, P. citricola**
- **On rhododendron, red pine, boxwood, pieris**
- **Survives well in irrigation reservoirs and rivers.**
- **Found in soy roots in mixed infection with *P. sansomeana* in Eau Claire Co.**

NEW PHYTOPHTHORA SPP. ON SOYBEANS

Hyphal swellings

- ***Phytophthora sp. 'personii'***
- **Hosts unknown**
- **Found in Australia in aquatic, riparian or wetland soils, horticultural crops.**
- **2 reports in U.S.**
- **Found in soy roots in mixed infection with *P. sojae* in Winnebago Co.**

RESEARCH & COLLABORATIONS

- Dr. Damon Smith,
  University of Wisconsin,
  Plant Pathology Department
- Dr. Gary Chastagner,
  Washington State University
- Dr. Gloria Abad, USDA APHIS
  Beltsville Laboratory, MD.
- Dr. Yilmac Balci,
  University of Maryland, MD.
- Dr. Frank Martin, USDA ARS, CA.

Phytophthora sansomeana culture on rye agar.

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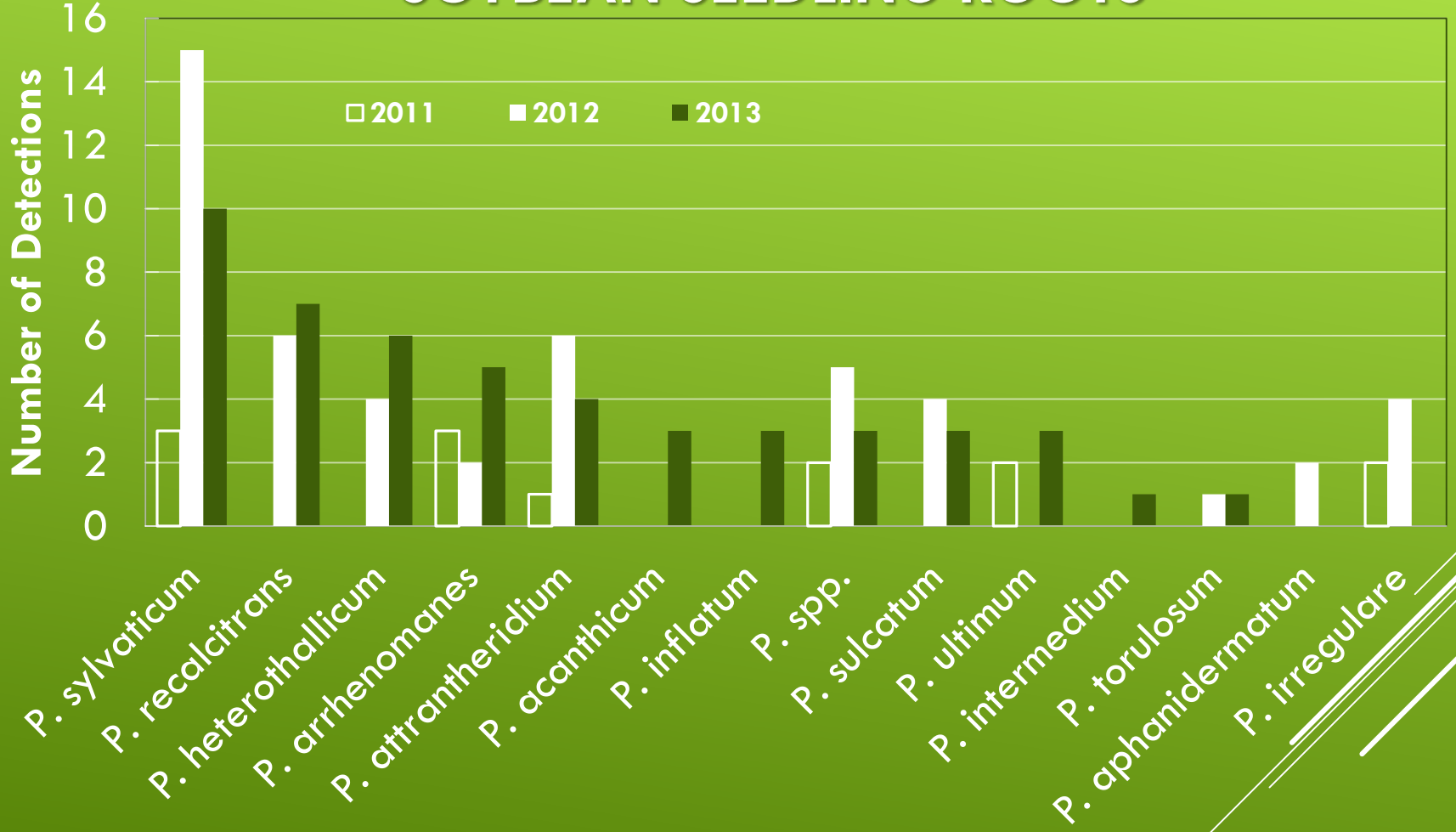
PYTHIUM SPECIES IN WISCONSIN SOYBEAN, 2011-2013

P. acanthicum
P. aphanidermatum (common on greenhouse plants)
P. arrhenomanes (common on corn)
*P. attrantheridium **
P. heterothallicum (common on wheat)
*P. inflatum **
P. intermedium
P. irregulare
*P. recalcitrans **
P. sulcatum
P. sylvaticum
P. torulosum
P. ultimum
P. spp. undetermined

Pathogenic on soybean
* Recent first reports

PYTHIUM SPECIES ASSOCIATED WITH SOYBEAN SEEDLING ROOTS



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SOYBEAN VEIN NECROSIS VIRUS

- SVNV causes soybean vein necrosis disease.
- First detected in Tennessee in 2008.
- Most common virus in soybeans in 2012 & 2013.
- Transmitted by soybean thrips.

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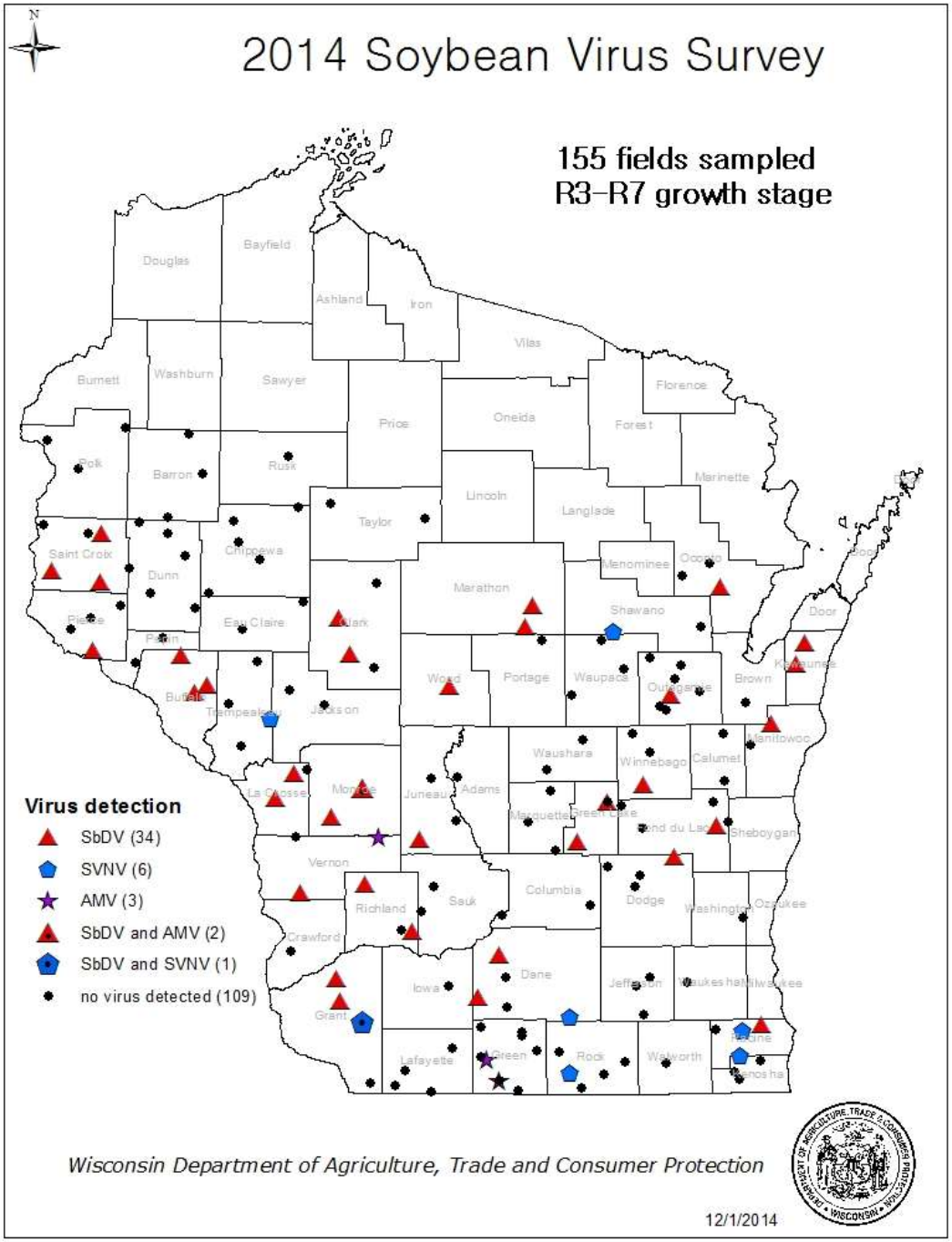
SOYBEAN VIRUSES

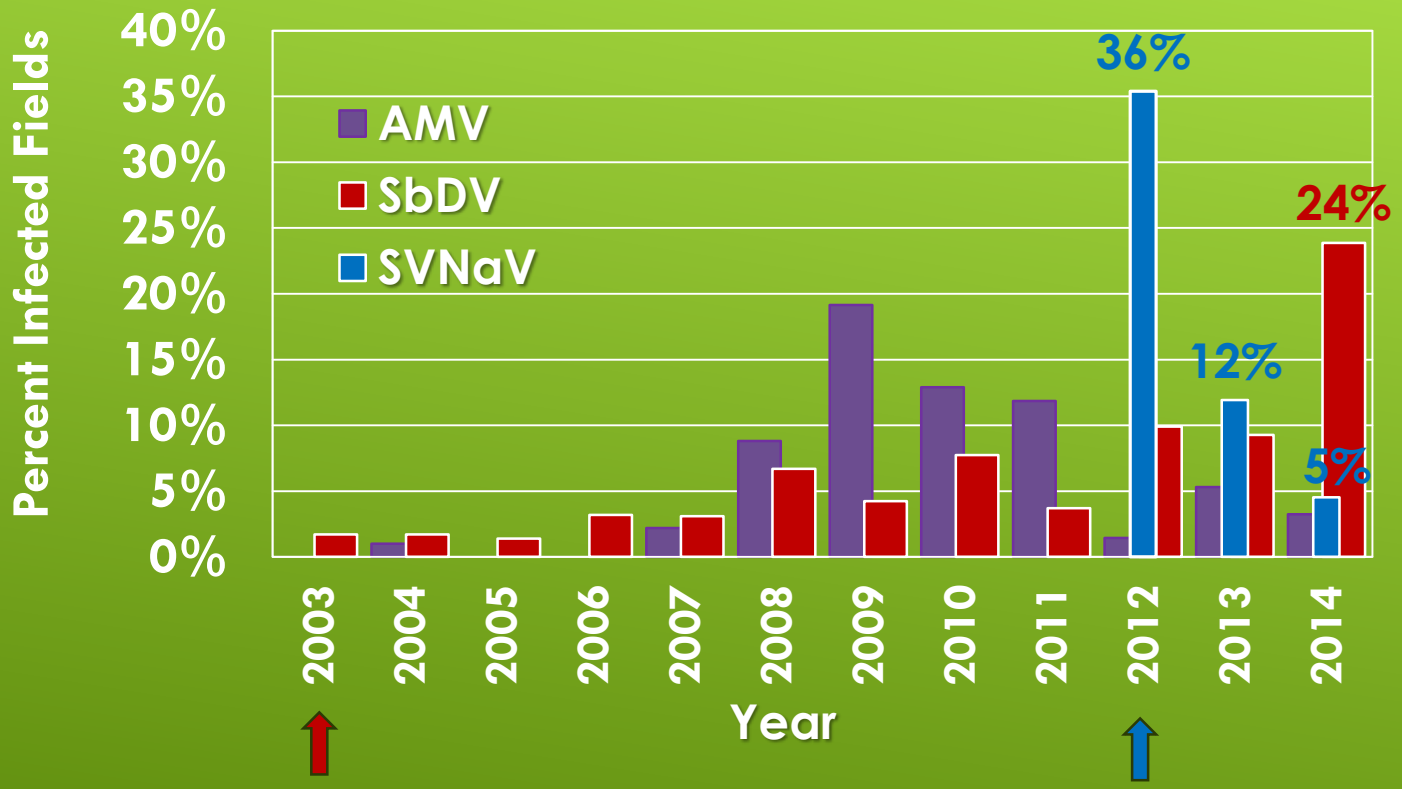
- Survey from July 28 to August 28, 2014.
- Total fields tested: 155.
- Soybean dwarf virus: 37 (24%) positive fields.
- Soybean vein necrosis virus: 7 (5%) positive fields.
- Alfalfa mosaic virus: 5 (3%) positive fields.



SOYBEAN DWARF VIRUS

- In 2003 SbDV was first detected on Wisconsin soybeans.
- Wisconsin clovers infected 43-66% (2004-2006).
- SbDV causes severe yield losses on soybean in Japan.
- No significant damage in Wisconsin.
- Dwarfing strain most prevalent in WI, few yellowing strain.
- Transmitted by persistently feeding aphids,
- soybean aphids in US.

SOYBEAN VIRUS SURVEY



SbDV
first detection

SVNV
first detection

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SOYBEAN DISEASES

- **Asian soybean rust (*Phakopsora pachyrhizi*) has not been detected in Wisconsin as of 2014.**
- **Found in 8 states (AR, AL, GA, FL, OK, LA, MS, TX).**
- **IPM PIPE** http://sbr.ipmpipe.org/cgi-bin/sbr/public.cgi

Look-alike Septoria brown spot disease

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SOYBEAN DISEASES

- **Frogeye leaf spot (*Cercospora sojina*).**
- **In Wisconsin since 2000.**
- **Infected 68% of fields in 2010.**
- **Not detected during surveys in 2013 and 2014.**

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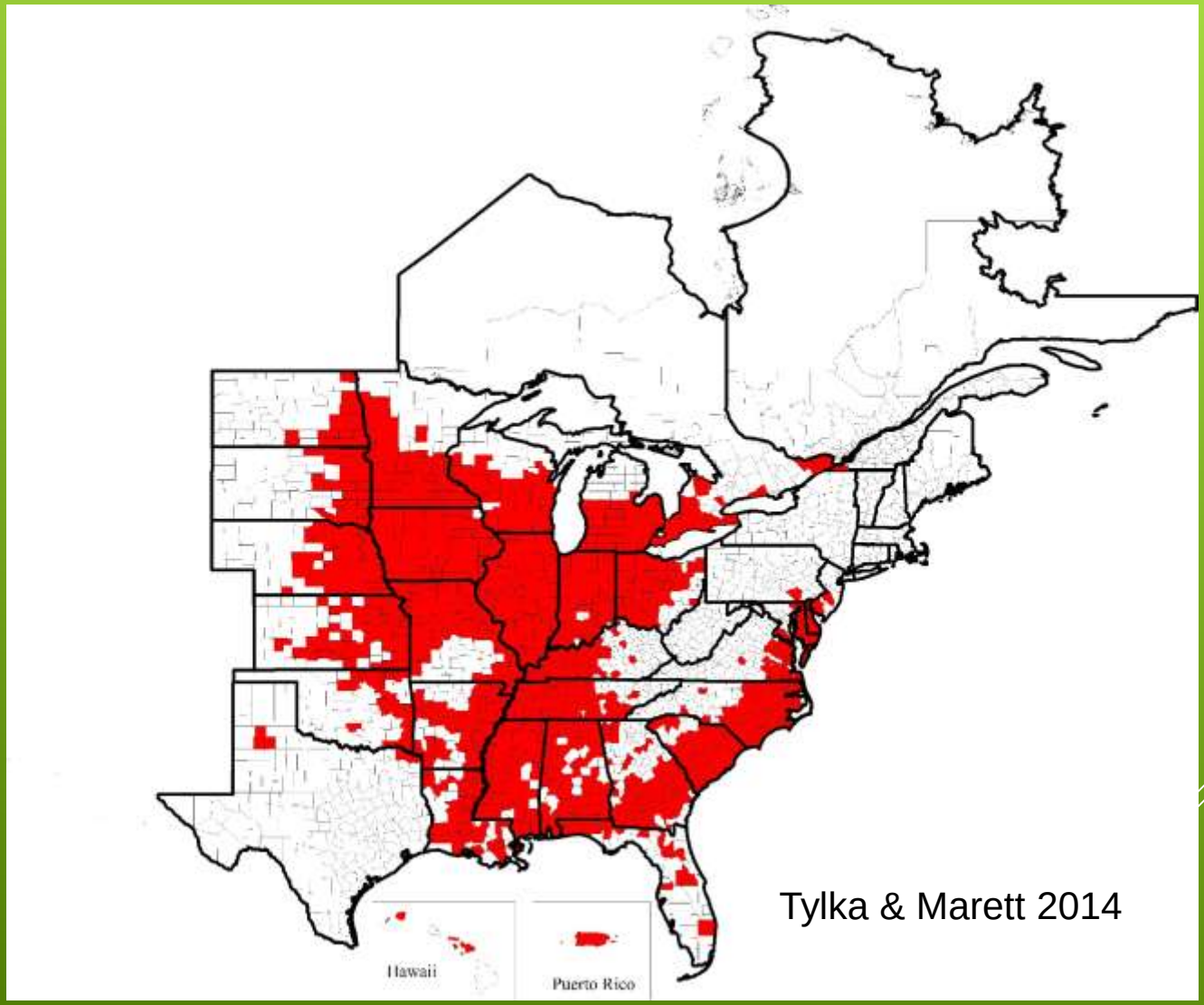
  Please contact Ellen Hermanson at (608) 224-4576

  http://datcp.wi.gov/Plants/Plant_Shipment_and_Exports/index.aspx

- **Changes in Canada import requirements.**

SOYBEAN CYST NEMATODE DISTRIBUTION IN THE UNITED STATES AND CANADA



Tylka & Marett 2014

SEED FIELD INSPECTIONS AND CERTIFICATION

- Corn: Stewart's wilt, Goss's wilt, Gray leaf spot, Crazy top, HPV, SCMV (MDMV), WSMV.
- Soybean: Soybean cyst nematode, viruses, fungi.
- Cucurbits, tomatoes, peppers, onions….

CORN DISEASES

- In 2014, 93 corn fields from 11 counties tested.
- No Stewart's Wilt, since 2010.
- 11 of 93 (12%) tested positive for Goss's wilt.
- Goss's wilt has been more frequent since 2010.
- No Viruses detected: HPV, SCMV (MDMV), WSMV.
- 3 of 93 (3%) positive for Gray leaf spot.
- No southern rust

Gray leaf spot, *Cercospora zeae-maydis*

Goss's wilt, *Clavibacter michiganensis nebraskensis*

DATCP Plant Industry Laboratory

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