


**Wisconsin Department of Agriculture, Trade
and Consumer Protection**

**2015 WISCONSIN
CROP DISEASE SURVEY**

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

Wisconsin Department of Agriculture, Trade and Consumer Protection

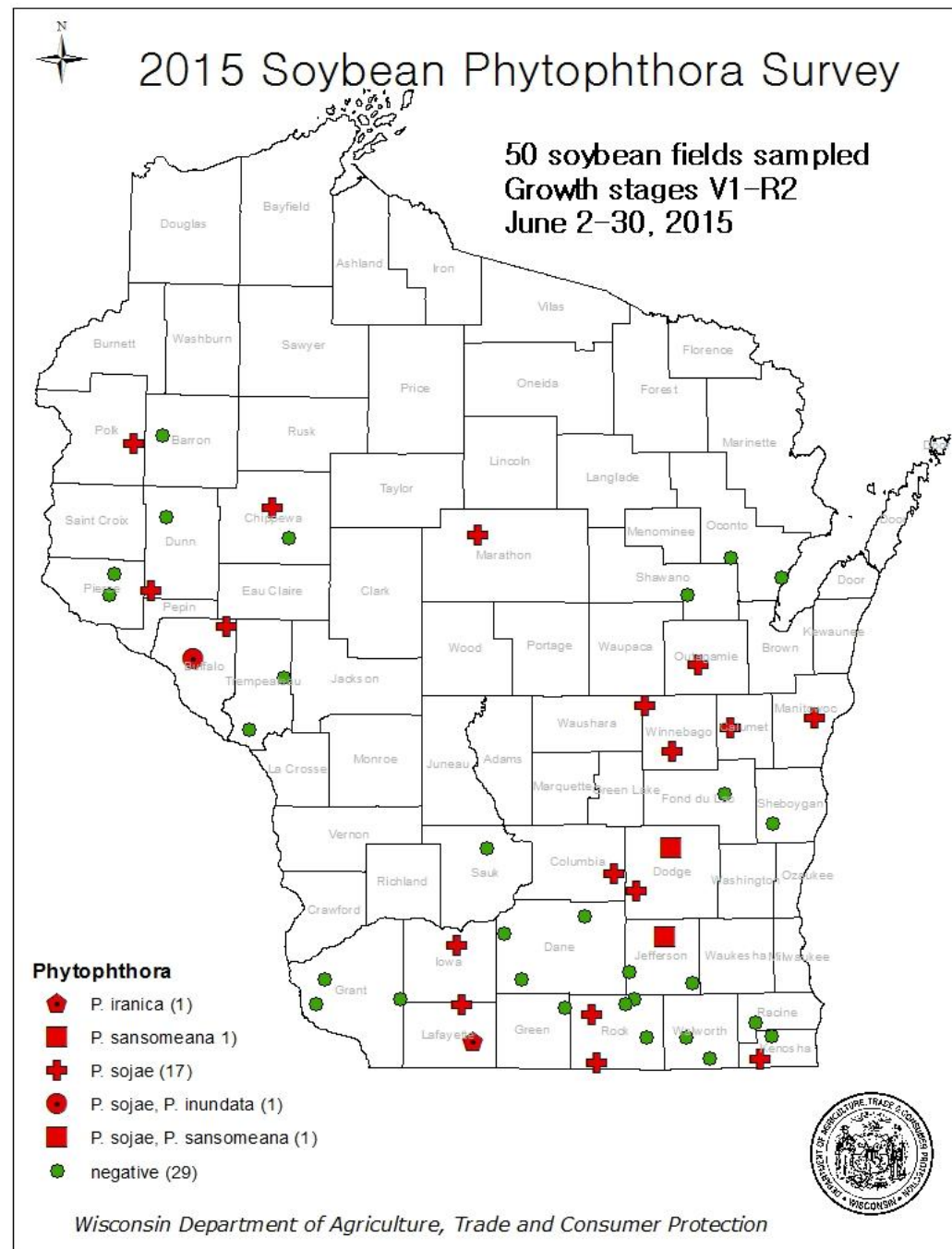
- ▶ **New Phytophthora spp. on Soybeans**
 - ▶ **Soybean Viruses**
 - ▶ **Corn Diseases**
 - ▶ **Looking Ahead**
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NEW PHYTOPHTHORA SPP. ON SOYBEANS



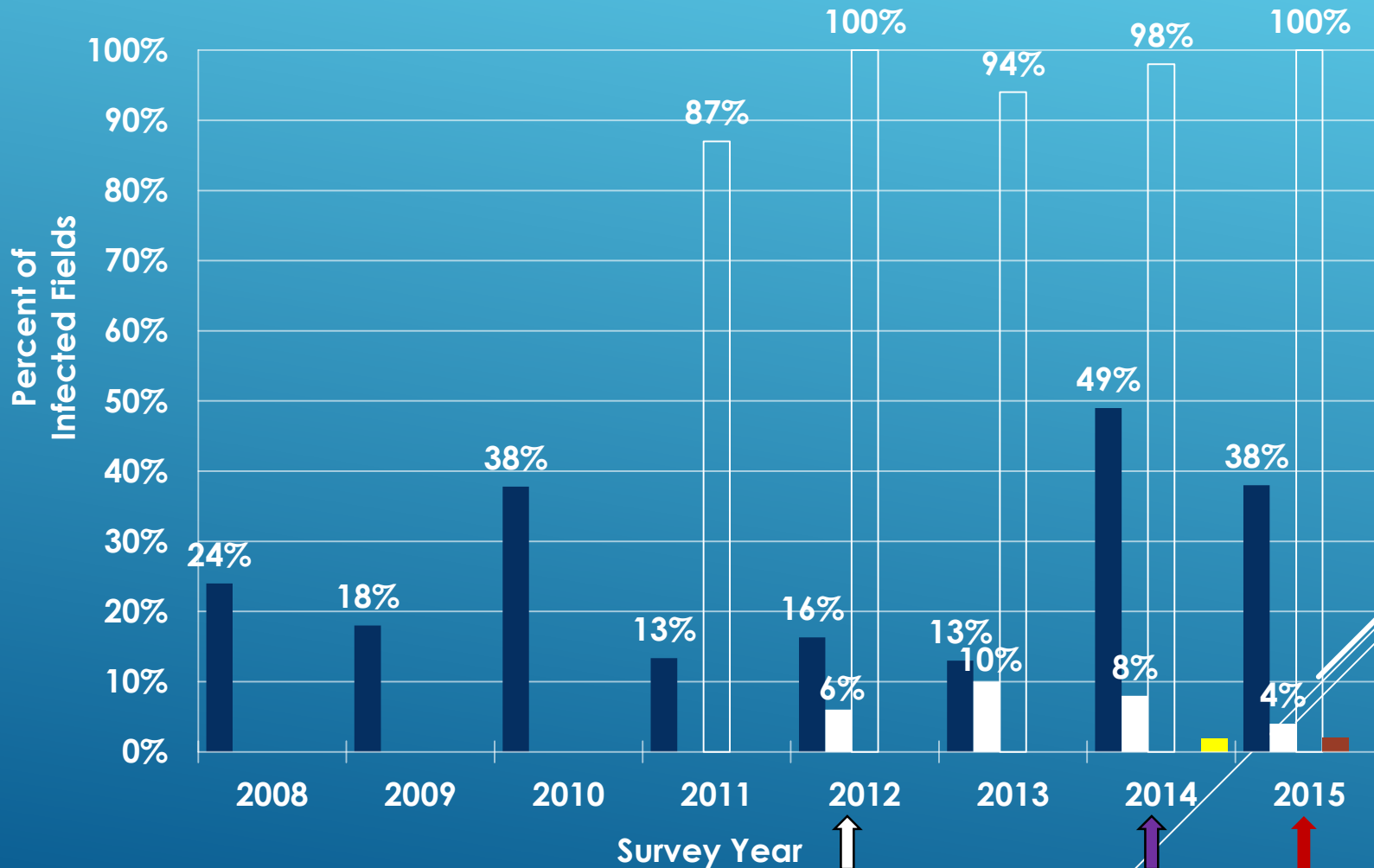
Phytophthora sansomeana and *Pythium* infecting fine and tap roots of soybean seedlings.

- *P. sojae* can affect any soybean life stage
- Seed rot
- Pre- and post-emergence damping off, (stem lesions)
- Rotting lateral and tap roots



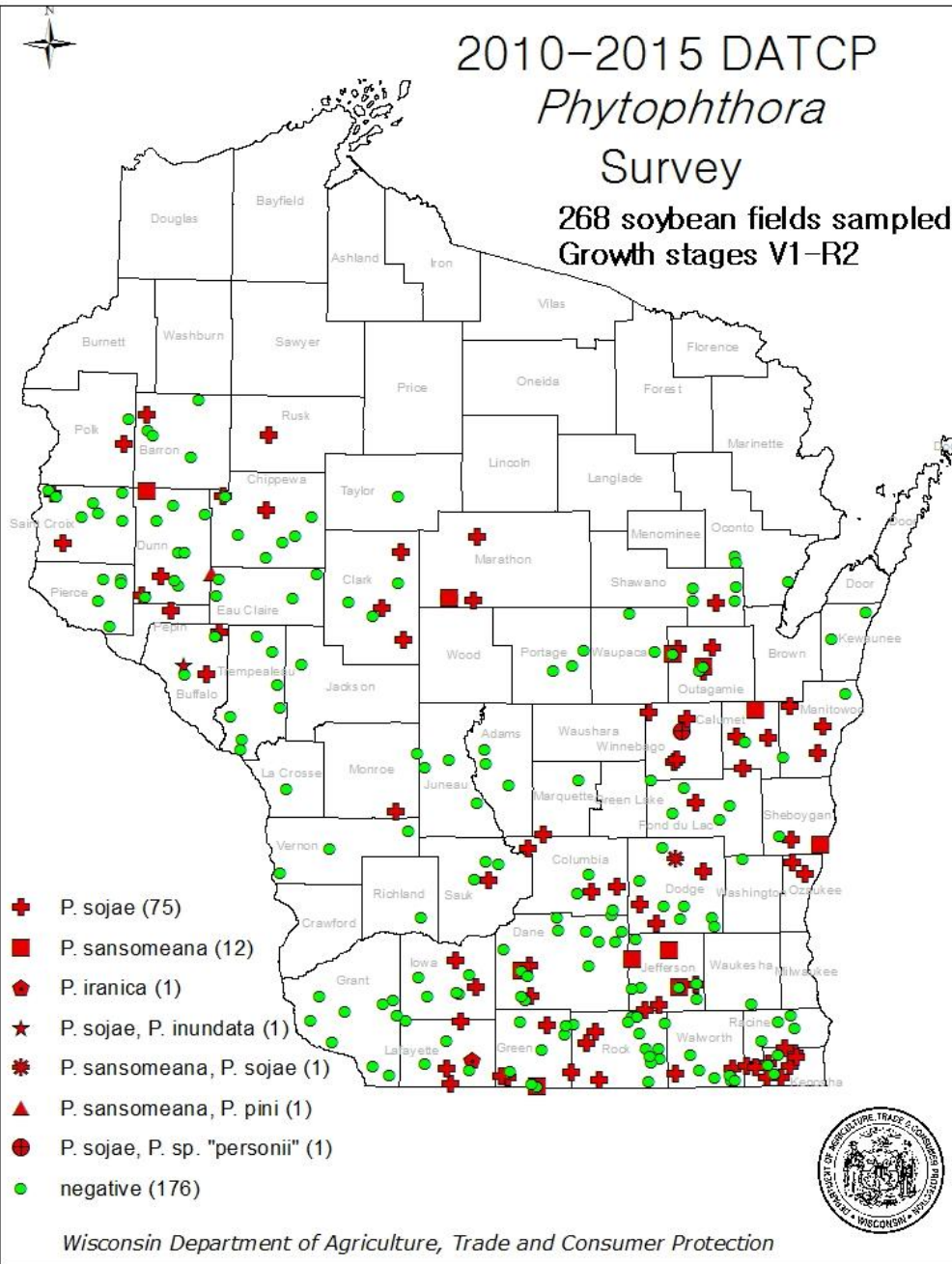
2008-2015 Soybean Root Rot Survey

- *Phytophthora sojae*
- *Pythium* spp.
- *P. sp. 'personii', P. pini*
- *Phytophthora sansomeana*
- *P. inundata, P. iranica*



2010–2015 DATCP *Phytophthora* Survey

268 soybean fields sampled
Growth stages V1–R2



- *P. sojae*
- *P. sansomeana* first detection in 2012.
- *P. pini* in 2014
- *P. sp. 'personii'* in 2014
- *P. inundata* in 2015
- *P. iranica* in 2015

HOSTS OF *PHYTOPHTHORA SANSOMEANA*

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



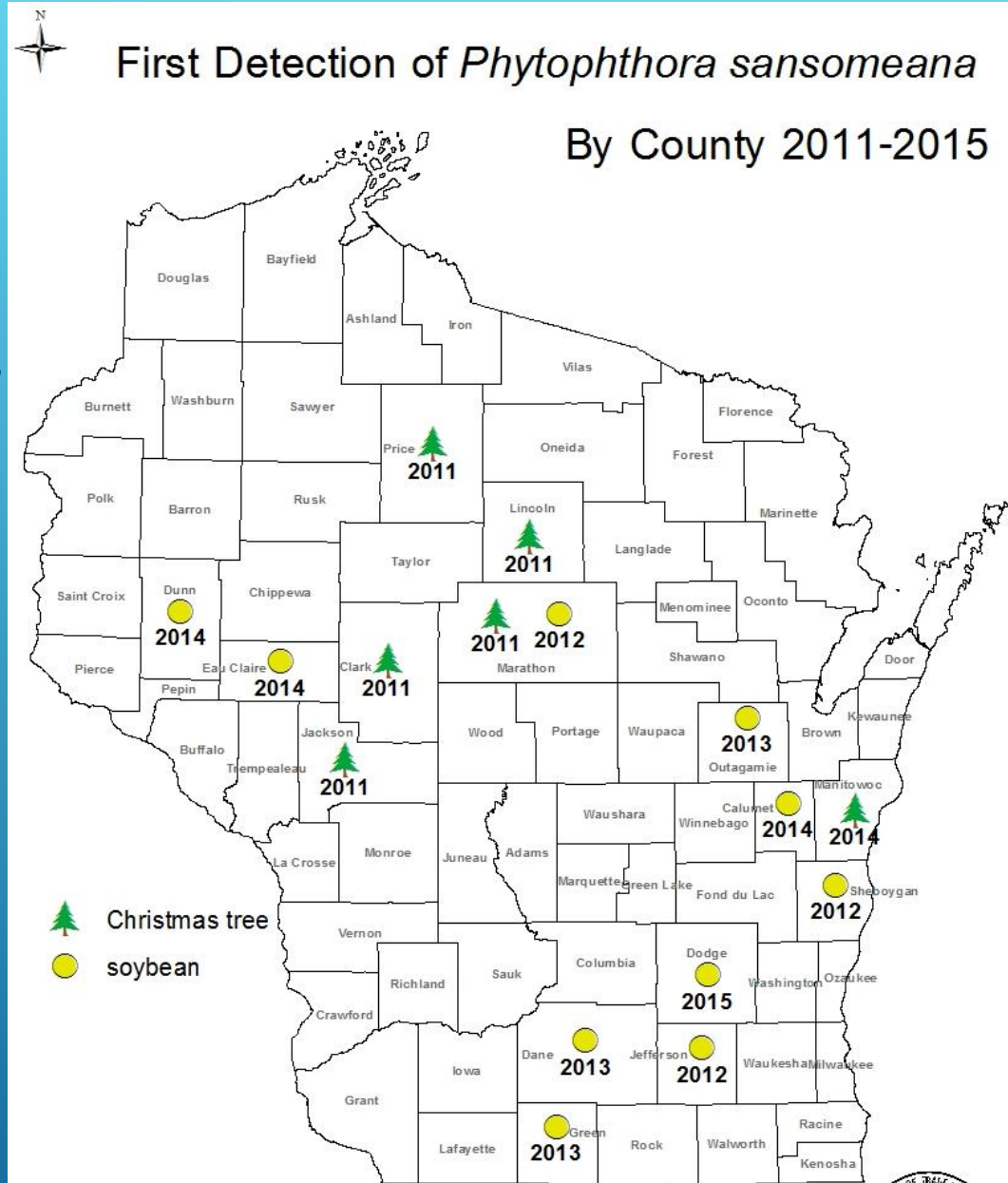
Fraser fir with *Phytophthora* root rot

WISCONSIN COUNTIES WITH PHYTOPHTHORA SANSOMEANA

On soybeans / Christmas trees

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

Total 15 counties

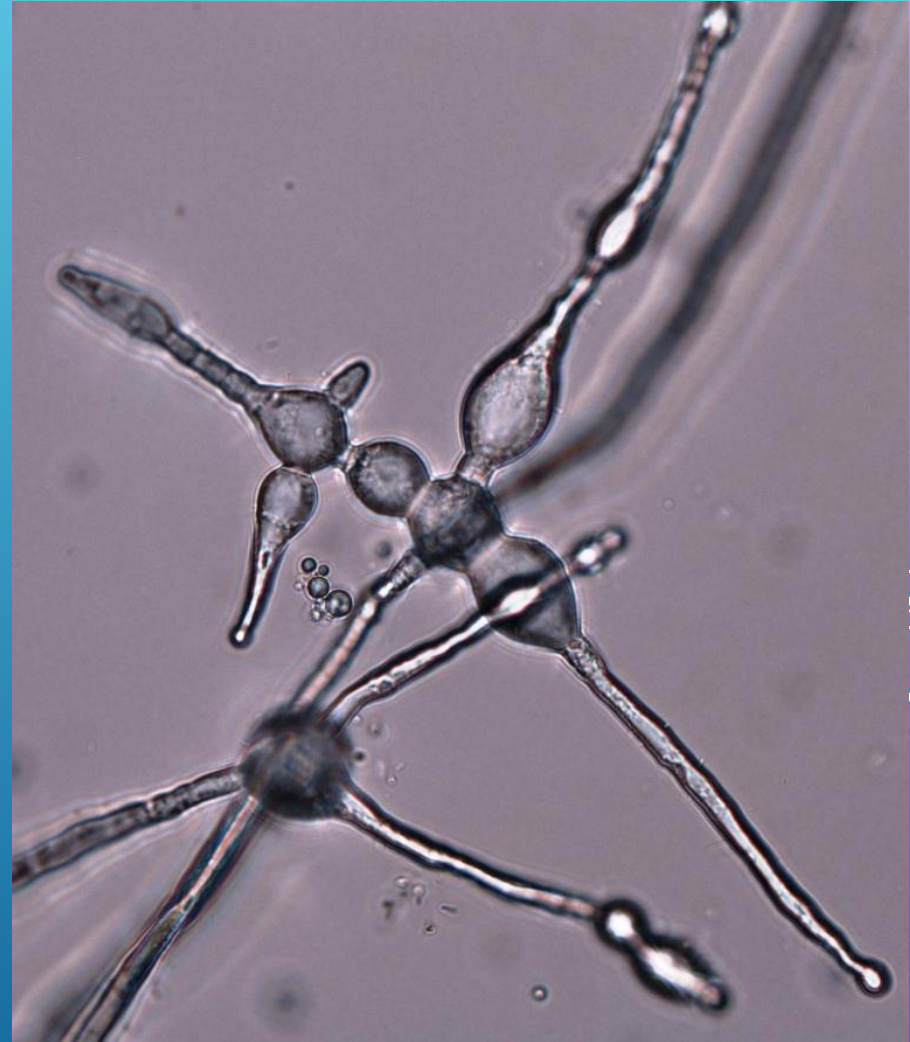


DATCP Christmas Tree Program and Plant Industry Bureau Laboratory, in cooperation with Wisconsin Christmas Tree Growers



NEW PHYTOPHTHORA SPP. ON SOYBEANS

- ▶ *P. inundata*
- ▶ Root and collar rots of hardwood trees and shrubs (horse chestnut, olive, willow and grape).
- ▶ Found in soybean roots in Buffalo Co. in 2015 in fields also infected with *P. sojae*.
- ▶ Wet or flooded soils in Europe and South America.



P. inundata culture under 400X magnification

NEW PHYTOPHTHORA SPP. ON SOYBEANS

- ▶ *P. iranica*
 - ▶ The known hosts of are: eggplant, potato, tomato and sugar beet.
 - ▶ Found on soybean roots in Lafayette Co. in 2015.
 - ▶ First described in Iran in 1971.
(2013 Report on myrtle in Italy is a new species *P. italica*)
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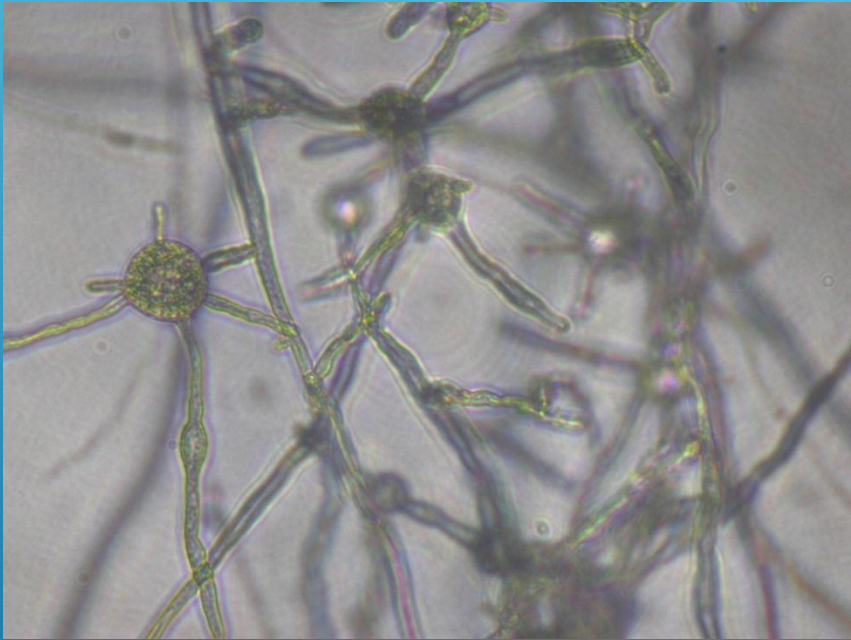
NEW PHYTOPHTHORA SPP. ON SOYBEANS



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 field also infected with *P. sansomeana* in Eau Claire Co in 2014.

NEW PHYTOPHTHORA SPP. ON SOYBEANS

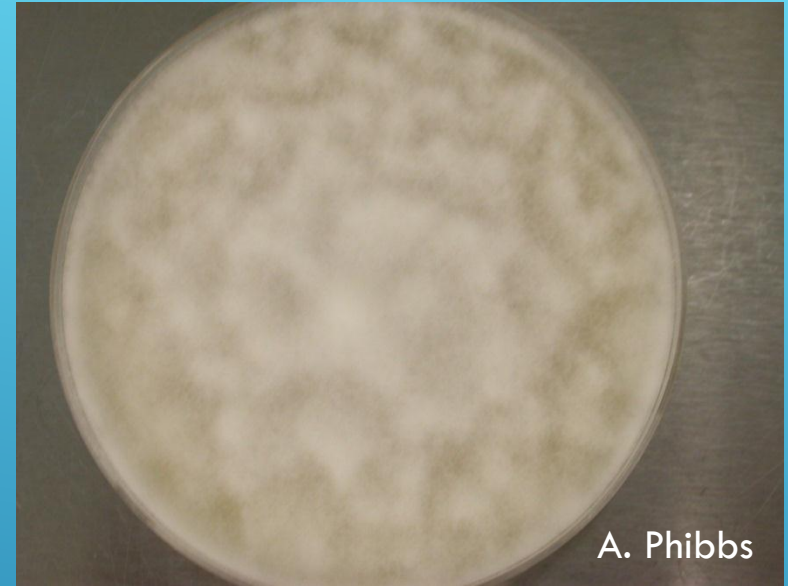


Culture of *P. sp. "personii"*,
400X magnification

- ▶ *Phytophthora sp. 'personii'*
- ▶ Hosts unknown
- ▶ Found in Australia in aquatic, riparian or wetland soils, horticultural crops.
- ▶ 2 reports in U.S.
- ▶ Found in **2014 in Winnebago Co** in a field also infected with *P. sojae*.


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.

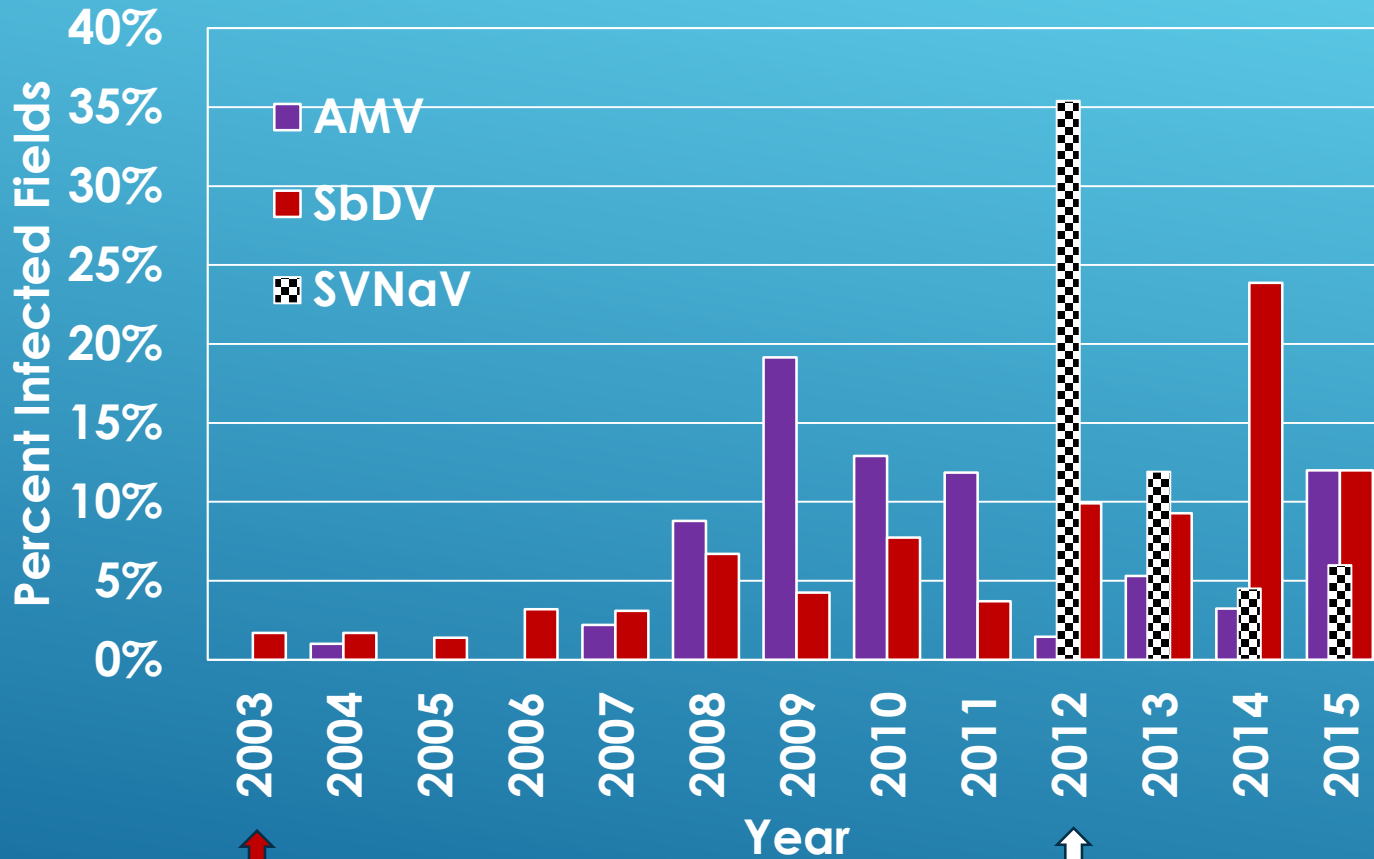


Phytophthora sansomeana
culture on rye agar.

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SOYBEAN VIRUS SURVEY

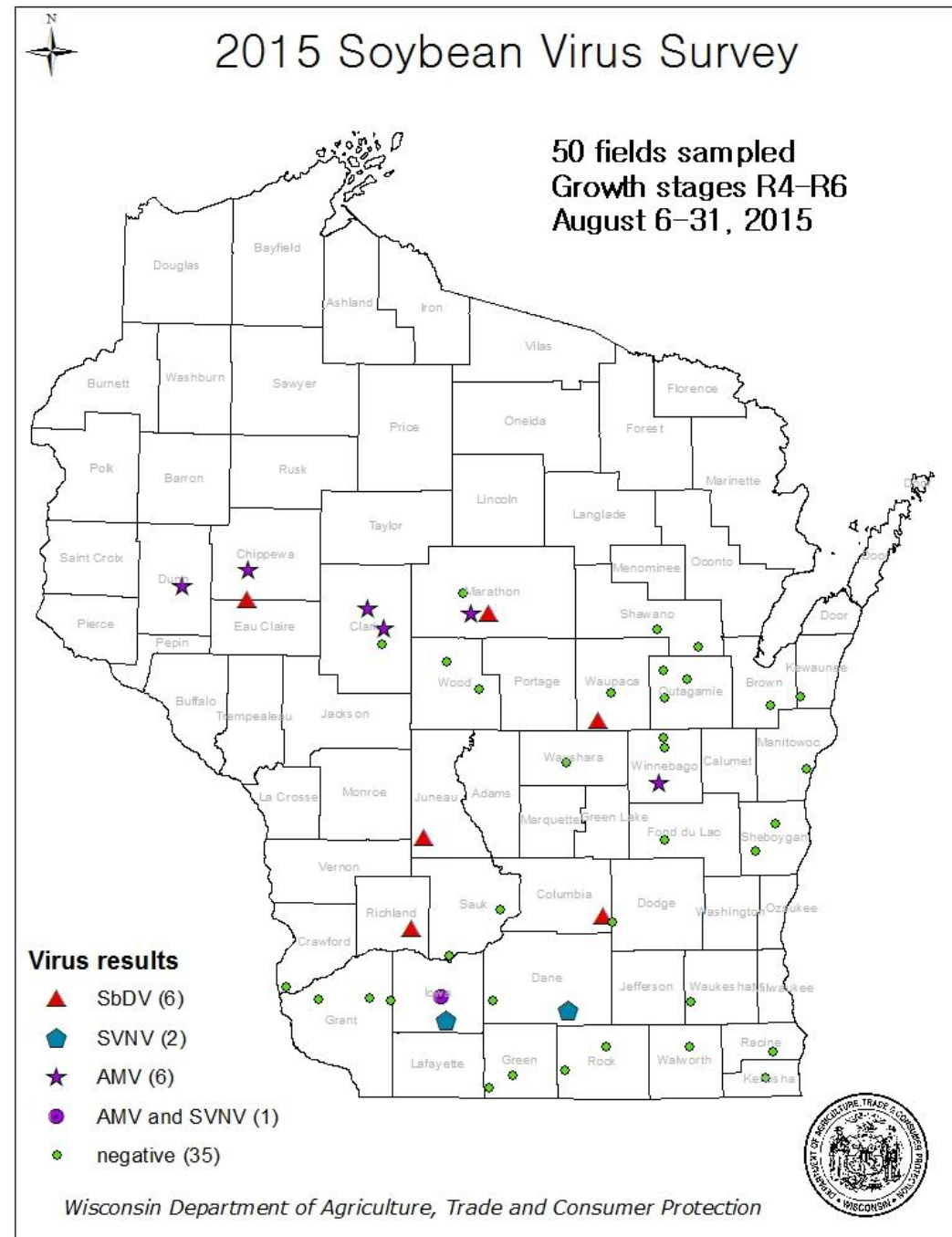


SbDV
first detection

SVNV
first detection

SOYBEAN VIRUSES

- ▶ Survey from Aug 6-31, 2015.
- ▶ Total fields tested: 50
- ▶ Alfalfa mosaic virus (AMV)
6 (12%) positive fields.
- ▶ Soybean dwarf virus (SbDV)
6 (12%) positive fields.
- ▶ Soybean vein necrosis virus (SVNV)
3 (6%) positive fields.



SOYBEAN VEIN NECROSIS VIRUS

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



SOYBEAN DWARF VIRUS

- ▶ **SbDV** was first detected on Wisconsin soybeans in 2003.
- ▶ 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 **soybean aphids** in US.

SOYBEAN DISEASES

- ▶ Asian soybean rust (*Phakopsora pachyrhizi*) has NOT been detected in Wisconsin as of 2015.
- ▶ Found in central Illinois in Nov 2015.
- ▶ 10 states (AR, AL, GA, FL, IL, LA, MS, SC, TN, TX).
- ▶ IPM PIPE <http://sbr.ipmpipe.org/cgi-bin/sbr/public.cgi>



Look-alike Septoria
brown spot disease


DATCP

SOYBEAN DISEASES

- ▶ **Frogeye leaf spot (*Cercospora sojina*).**
- ▶ **In Wisconsin since 2000.**
- ▶ **Infected 68% of fields in 2010.**
- ▶ **Not detected during surveys in 2013, 2014 and 2015.**



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CORN DISEASES

- In 2015, 53 fields in 6 counties were inspected.
39 fields were sampled for lab testing.
- No Stewart's Wilt, since 2010.
- Goss's wilt 38.5%, up from 8.6% in 2014.
found in Adams, Dane, Eau Claire and Rock Cos.
- Goss's wilt has been more frequent since 2010.



Goss's wilt, *Clavibacter michiganensis nebraskensis*

CORN DISEASES

- No Maize Chlorotic Mottle Virus (MCMV)
- No High Plains Virus (HPV)
- Few Sugarcane Mosaic Virus (SCMV) 7.6%
syn. Maize Dwarf Mosaic Virus (MDMV)



Sugarcane mosaic virus

CORN DISEASES

- **Gray leaf spot (18%)**
- **Northern corn leaf blight (59%)**
- **Very! Common rust**
- **No Southern rust**



Common rust, *Puccinia sorghi*



Gray leaf spot,
Cercospora zeae-maydis

SEED FIELD INSPECTIONS AND CERTIFICATION

For Information, please contact Ellen Natzke at (608) 224-4576

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

Corn
Beans
Onions
Pepper
Tomato
Soybeans

Many more

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CORN DISEASES

- Tar spot (*Phyllachora maydis*) found in IL and IN Sept 2015.
- No tar spot was found in Wisconsin.



Photo courtesy of Purdue University, IN

DATCP Plant Industry Laboratory

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