



2017
CROP DISEASE
Surveys

DATCP Plant Industry Bureau Laboratory
Anette.Phibbs@Wisconsin.gov

2017 CROP DISEASE SURVEYS

Pest Survey Team and
Plant Industry Laboratory
survey for
new diseases & pests

and conduct field
inspections to support
export certification.



Thank you Pest Survey Team:
Adrian Barta, Sam Christianson, Brittanie McGuire,
John Domino, Nick Clemens, Krista Hamilton, Tracy Schilder.

2017 CROP DISEASE SURVEYS

OVERVIEW

- Emerging corn diseases
- Common corn diseases
- Phytophthora on soybeans
- Pythium on soybeans
- Cereal cyst nematodes



https://datcp.wi.gov/Pages/Programs_Services/PlantIndustryLab.aspx

EMERGING DISEASES OF CORN

Xanthomonas bacterial blight of corn

Xanthomonas vasicola pv. *vasculorum*.

- Not found in Wisconsin yet!
Based on surveys of 105 fields in 2016 and 125 fields in 2017.
- It was first reported in the Republic of South Africa in 1949.
- USDA confirmed first detections in US in 2016:
CO, IL, IA, KS, MN, NE, OK, SD, TX .
- Not a regulated disease. No significance for trade.

EMERGING DISEASES OF CORN

Xanthomonas bacterial blight of corn

Xanthomonas vasicola pv. *vasculorum*.

- Symptoms may be confused with fungal gray leaf spot.
- Fungicide are not effective because Xanthomonas blight is a bacterial disease.



Gray leaf spot (*Cercospora zea-maydis*)

EMERGING DISEASES OF CORN

Tar spot of corn

Phyllachora maydis

- First found in Wisconsin in 2016 (Green and Iowa Co.) again in 2017 according to UW reports.
- First reported in US in 2015 (IL and IN)
- Confirmed by USDA Mycologist.
- Disease of minor importance in Wisconsin.



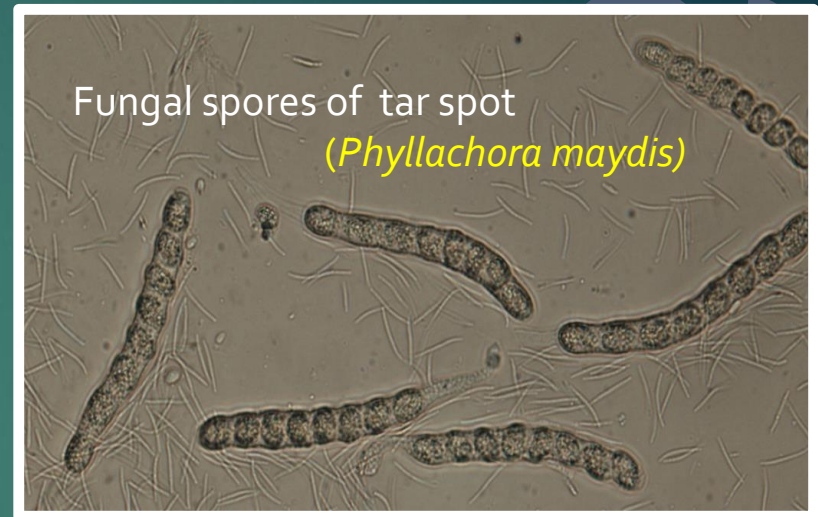
Tar spot symptoms on corn leaf

EMERGING DISEASES OF CORN

Tar spot of corn

Phyllachora maydis

- Tar spot infects only corn.
- Not seed borne.
- Spreads with fresh or dried corn leaves and husks.
- Tar spot occurs at high elevations in Mexico, Central and South America.
- Crop losses occur there when tar spot infections are colonized by second fungus *Monographella maydis* which is not found in WI.



BACTERIAL BLIGHTS OF CORN

- No **Stewart's wilt** since 2010.
- **Goss's wilt** was found in 3 counties (Dane, Eau Claire, Fond du Lac).
 - **2017: 11.5%** of inspection samples (6/52).
 - **2016: 14%** of inspection samples (11/78).
 - **2015: 38.5%** of inspection samples (15/39).

FUNGAL DISEASES OF CORN

Most frequently detected corn diseases

- Common rust (*Puccinia sorghi*)
- Gray leaf spot (*Cercospora zea-maydis*)
- Northern corn leaf blight (*Setosphaeria turcica*)
- Northern corn leaf spot (*Cochliobolus carbonum*)
- Anthracnose (*Colletotrichum graminicola*)

Incidental finds

- Septoria leaf blotch (*Septoria sp.*)
- Phyllosticta leaf spot (*Phyllosticta sp.*)
- Phaeosphaeria leaf spot (*Phaeosphaeria sp.*)
- Smut (*Ustilago maydis*)



Northern corn leaf spot
(*Cochliobolus carbonum*)

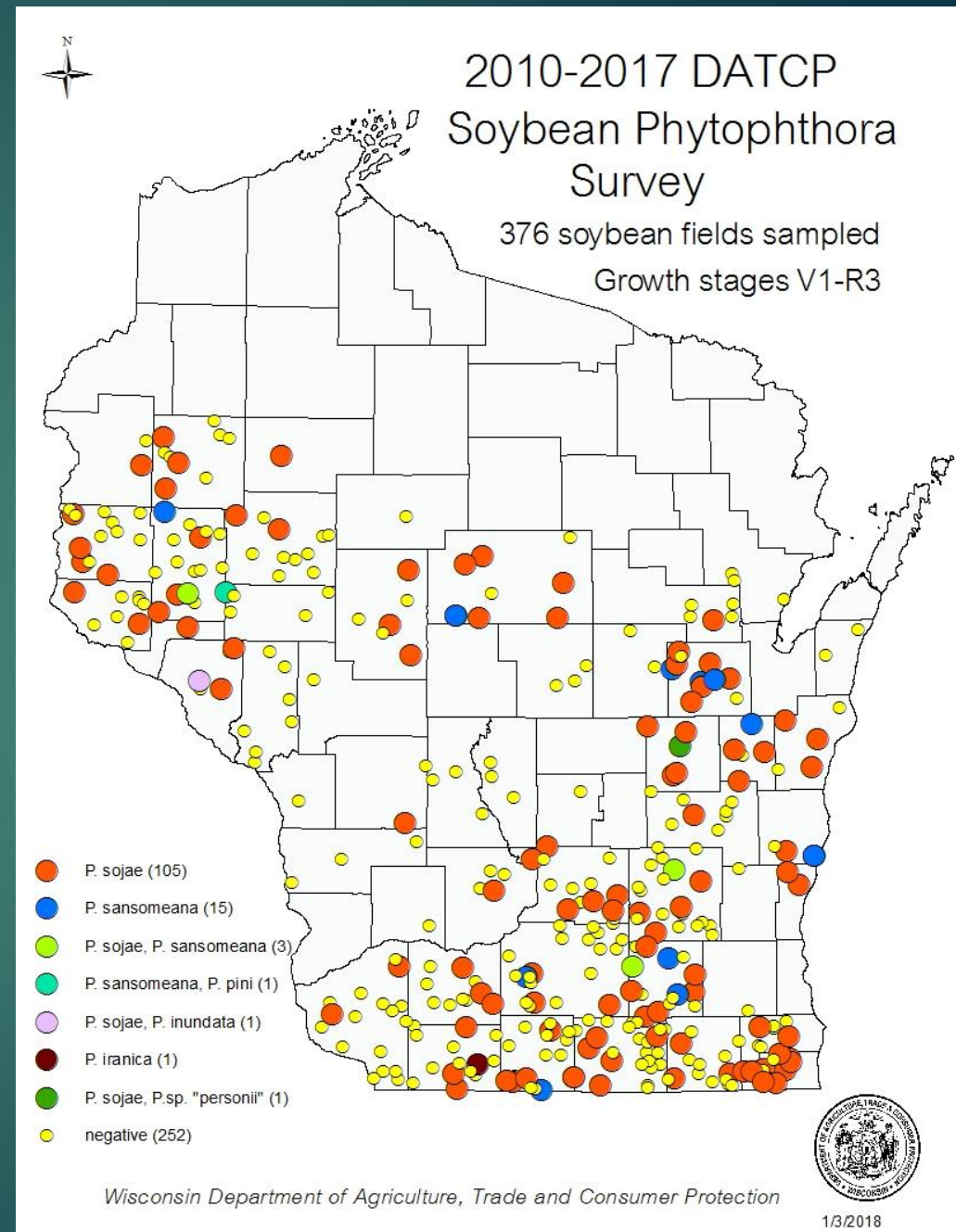
VIRUSES OF CORN

- No Maize Chlorotic Mottle Virus (MCMV)
- No High Plains Virus (HPV)
- No Wheat Streak Mosaic virus (WSMV)
- Few Sugarcane Mosaic Virus (SCMV)
syn. Maize Dwarf Mosaic Virus (MDMV)
in inoculated test plots.



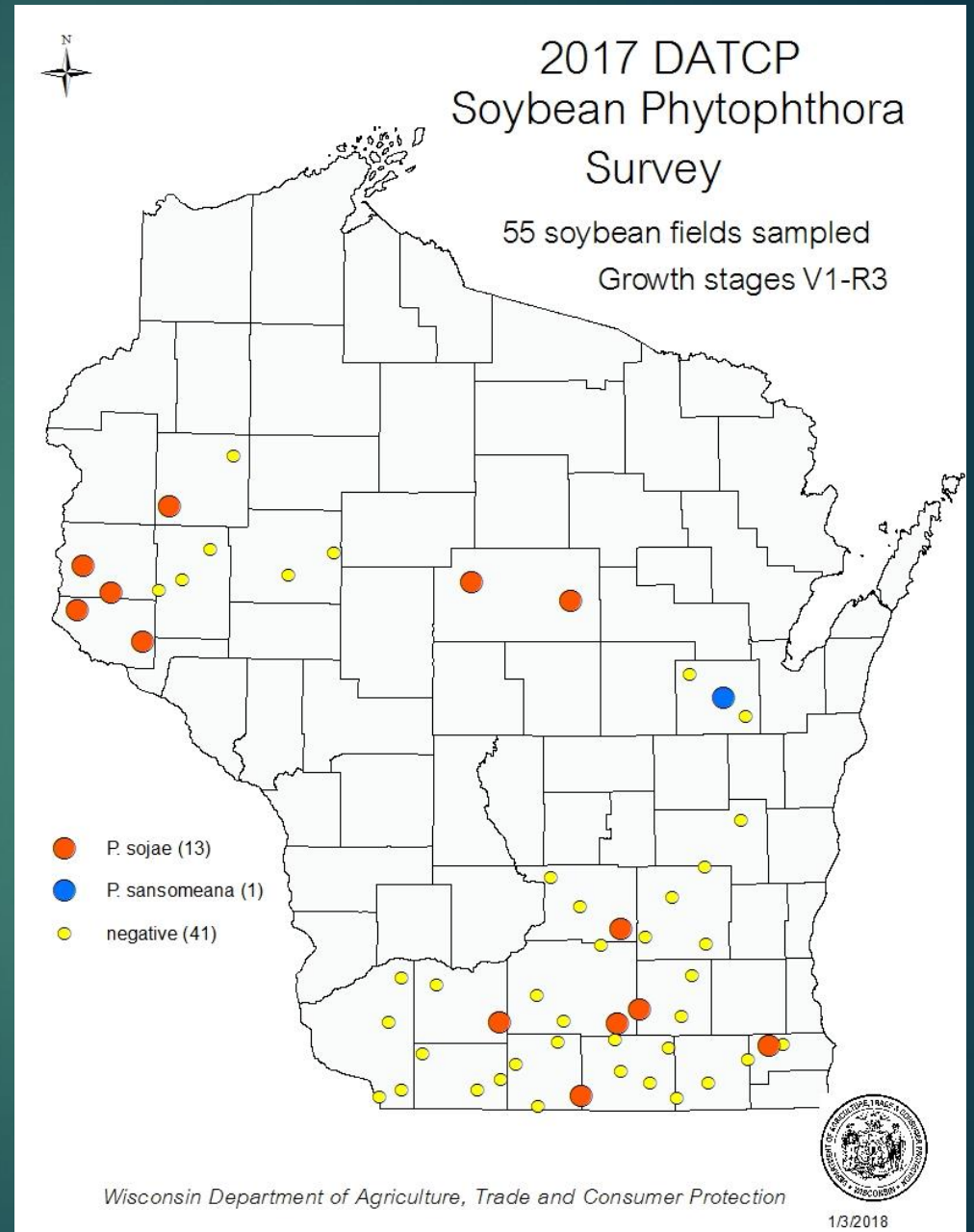
PHYTOPHTHORA ON SOYBEAN

- Annual surveys identified 6 different Phytophthora species on soybeans in WI.
- *P. sojae* affects only soybean.
- *P. sansomeana* (2012) affects both soy and corn.
- *P. pini*, *P. sp. personii* (2014)
- *P. inundata*, *P. iranica* (2015) effect on soybeans unknown.



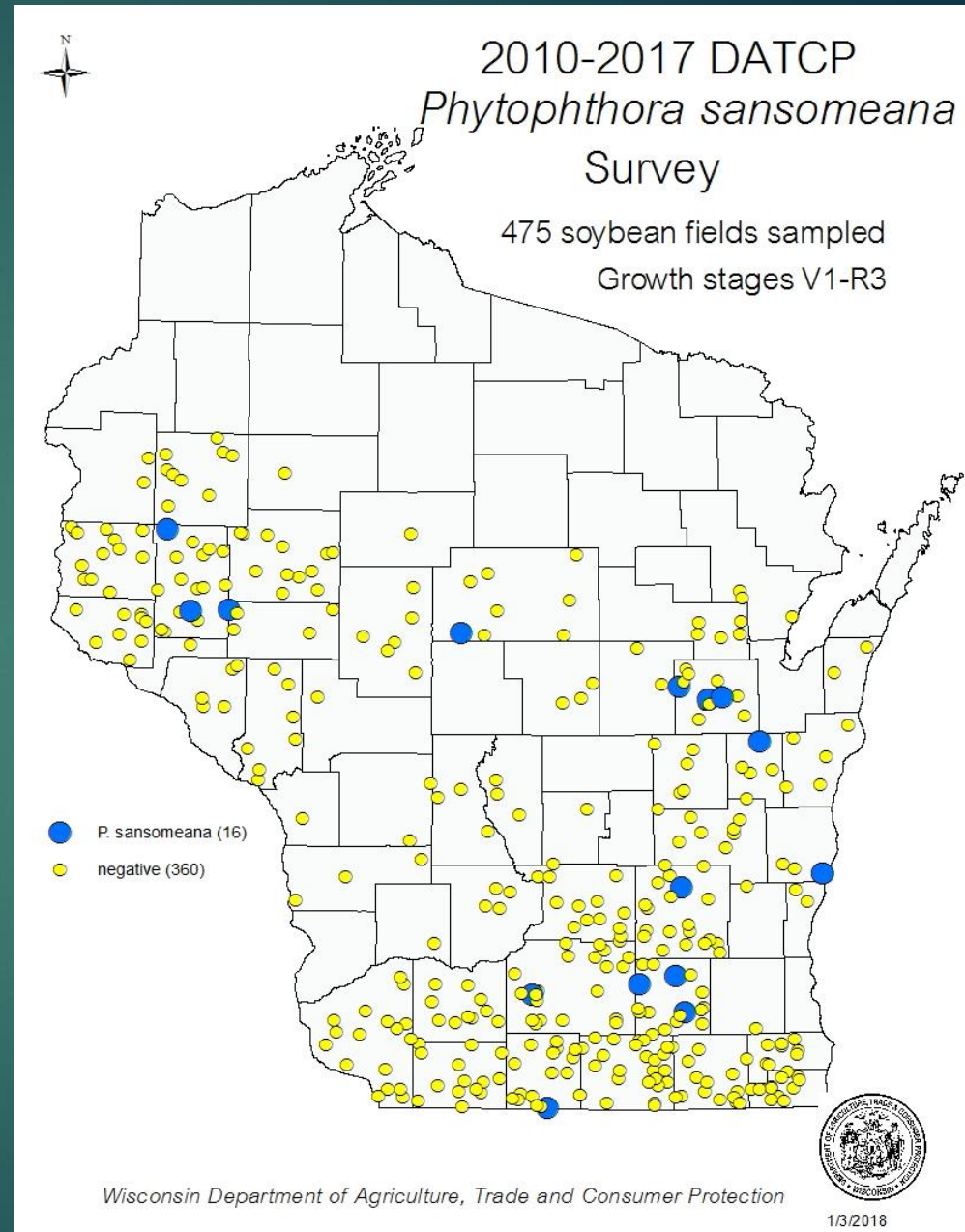
PHYTOPHTHORA ON SOYBEAN

- In 2017, 55 fields surveyed
24% positive for *P. sojae* (13/55).
- 38% positive for *P. sojae* in 2016
(20/53).
- Over 10 years of annual survey
13% to 49% fields infested.
- *P. sansomeana* was found again
in Outagamie Co. in 2017.



PHYTOPHTHORA ON SOYBEAN

- *P. sansomeana* present on soybean in 10 WI counties.
- *P. sansomeana* also found on Balsam and Fraser fir in Christmas tree fields in: Clark, Jackson, Lincoln, Manitowoc, Marathon, Price Co.
- *P. sansomeana* present in 15 WI counties.



PYTHIUM AND OTHER OOMYCETES ON SOYBEAN

- 2011 - 2017 Surveyed total of 277 fields
- Pythium was present in 96-100% of fields
- 16 Pythium species
- 1 Pythiogeton
- 1 Phytopythium
- 6 Phytophthora



Root rot affected soybean roots

PYTHIUM ON SOYBEAN

Pythium species identified

P. acanthicum

P. aphanidermatum

P. arrhenomanes (corn) 7%

P. attrantheridium * 8%

P. conidiophorum

P. heterothallicum (wheat) 6%

P. inflatum *

P. intermedium

P. irregulare 5%

P. kumningense

P. recalcitrans * (corn) 9%

P. sulcatum

P. sylvaticum 26%

P. torulosum

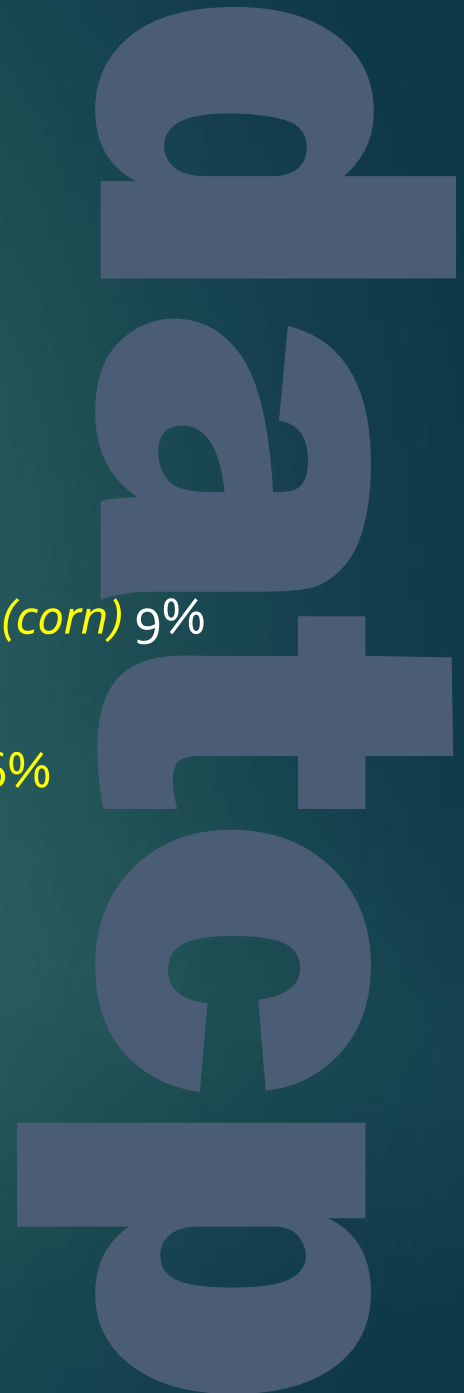
P. ultimum

P. violae (carrot)

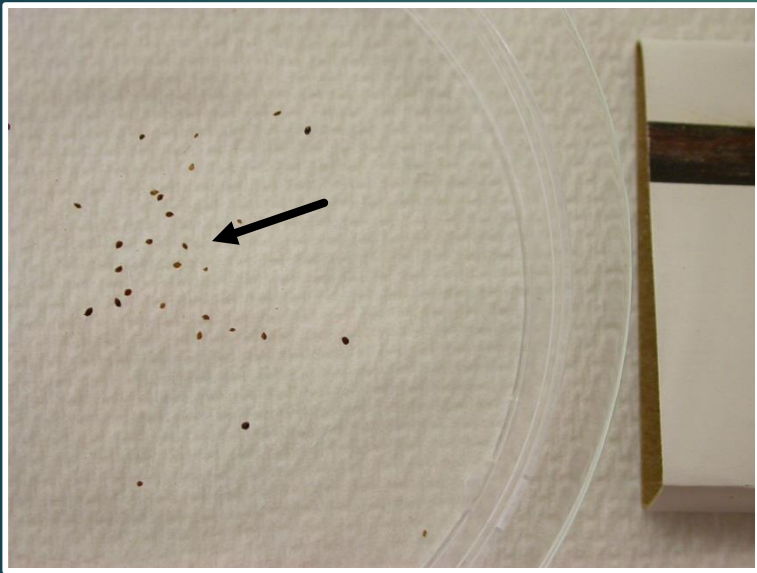
Pathogenic on soybean

Recent first reports

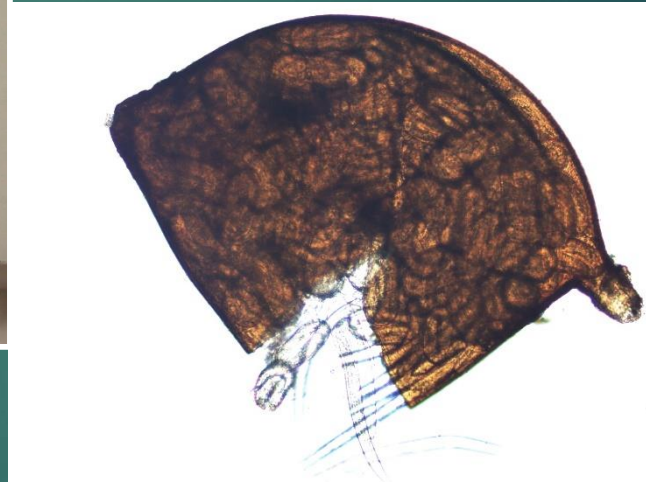
% infested / total surveyed fields



CYST NEMATODES



Cyst nematodes



Cyst nematodes under
100x magnification



Juvenile hatching from egg.

CEREAL CYST NEMATODES

- Exotic cereal cyst nematode
Heterodera filipjevi
- Mediterranean cereal cyst nematode
Heterodera latipons
- Mexican corn cyst nematode
Punctodera chalconensis
- (European) Cereal cyst nematode
Heterodera avenae

Survey of field soils 2015-2016

Number of fields by crop			
Year	Wheat	Oat	Corn
2015	91	9	98
2016	89	3	22



CEREAL CYST NEMATODE SURVEY

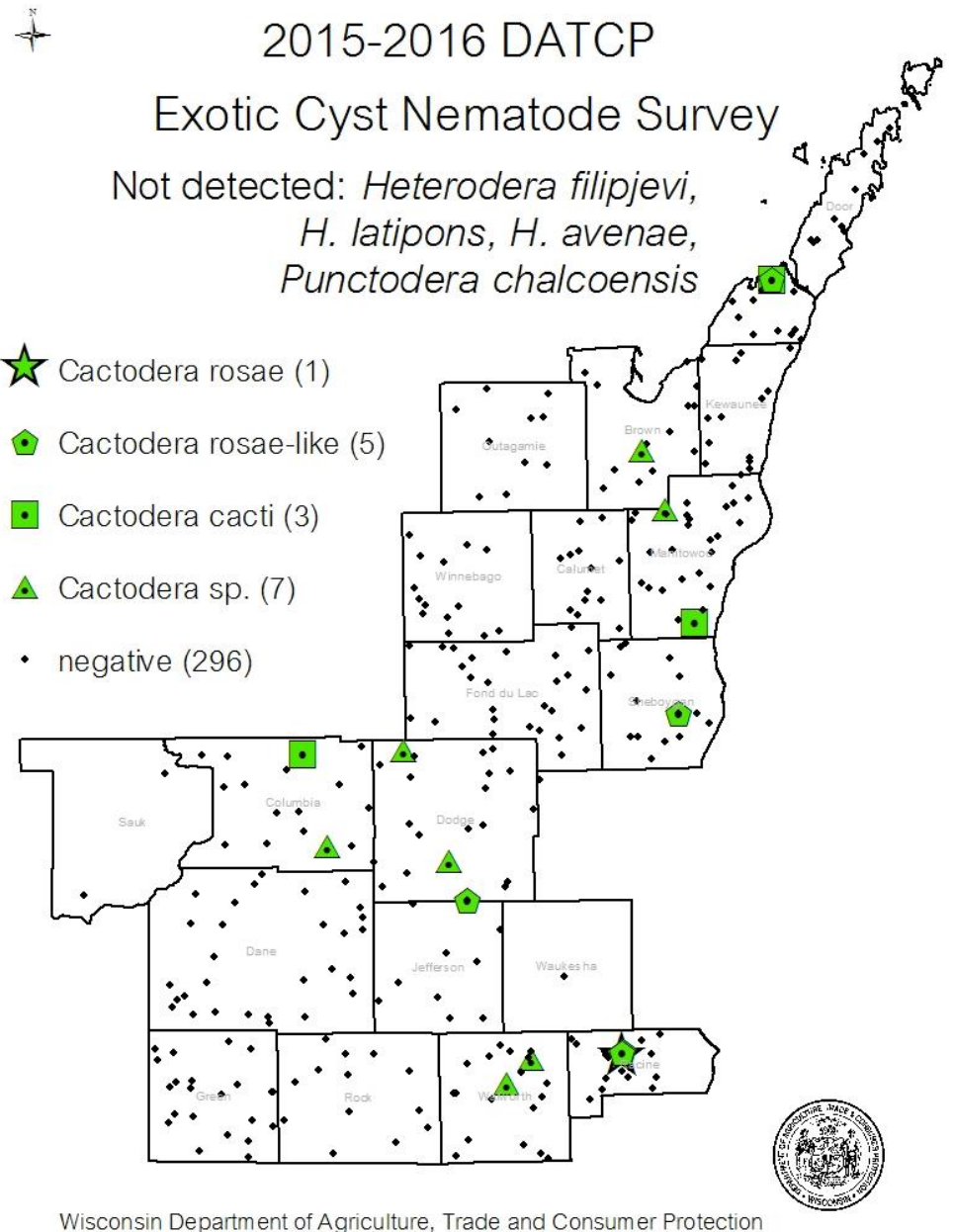
Cyst nematode species detected		2015		2016	
		No. of Infested Fields	Percent of samples	No. of Infested Fields	Percent of samples
Soybean cyst (SCN)	<i>Heterodera glycines</i>	29	15%	22	19%
SCN-like and Clover cyst	<i>Heterodera</i> spp. Incl. <i>H. trifolii</i>	14	7%	7	6%
Cactus cyst-like	<i>Cactodera</i> spp.	12	6%	4	4%
Cereal cyst	<i>Heterodera avenae</i>	0	0%	0	0%
Exotic Cereal cyst	<i>Heterodera filipjevi</i>	0	0%	0	0%
Mediterranean Cereal cyst	<i>Heterodera latipons</i>	0	0%	0	0%
Mexican Corn cyst	<i>Punctodera chalcoensis</i>	0	0%	0	0%
	Total Samples with Nematodes	55/198	28%	29/114	25%

CEREAL CYST NEMATODE SURVEY

Cactodera rosae was found in a Racine Co. corn field in 2015.

Cactodera rosae-like cysts were found in Dodge and Racine Co. wheat fields and in Door and Sheboygan Co. corn fields in 2016.

Other *Cactodera sp.* found feed on non-host crops (weeds).



CEREAL CYST NEMATODES

- First official documentation of *C. rosae* in WI and U.S.
- ID confirmed by USDA Nematologist.
- *Cactodera rosae* reported on barley roots in Mexico.
- Detected in corn and wheat fields in Wisconsin.
- There is no indication at this point that this nematode is a problem for cereal or corn production in WI.
- No regulatory significance.

PLANT INDUSTRY LABORATORY

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THANKYOU!

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