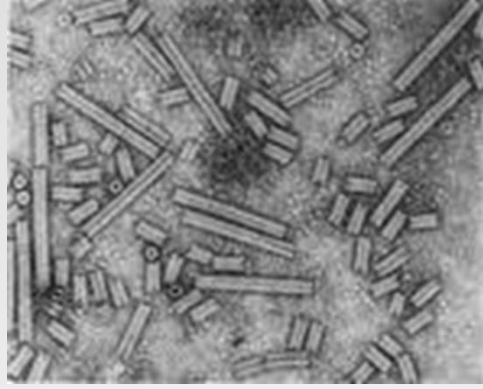


Updates on emerging potato pathogens



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Learning for life

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UWEX/WPVGA Grower Ed Conference

February 5, 2013 – 1:50-2:10PM

Holiday Inn, Stevens Point, WI



- PCN can affect solanaceous crops and weeds
- Wilting, stunting, reduced yield and tuber size

Potato Cyst Nematode Symptoms

There are multiple "Potato Cyst Nematodes"

Most noteworthy:

Pale Cyst Nematode

Globodera pallida

Golden Nematode

Globodera rostochiensis

Unknown Species

Globodera ?

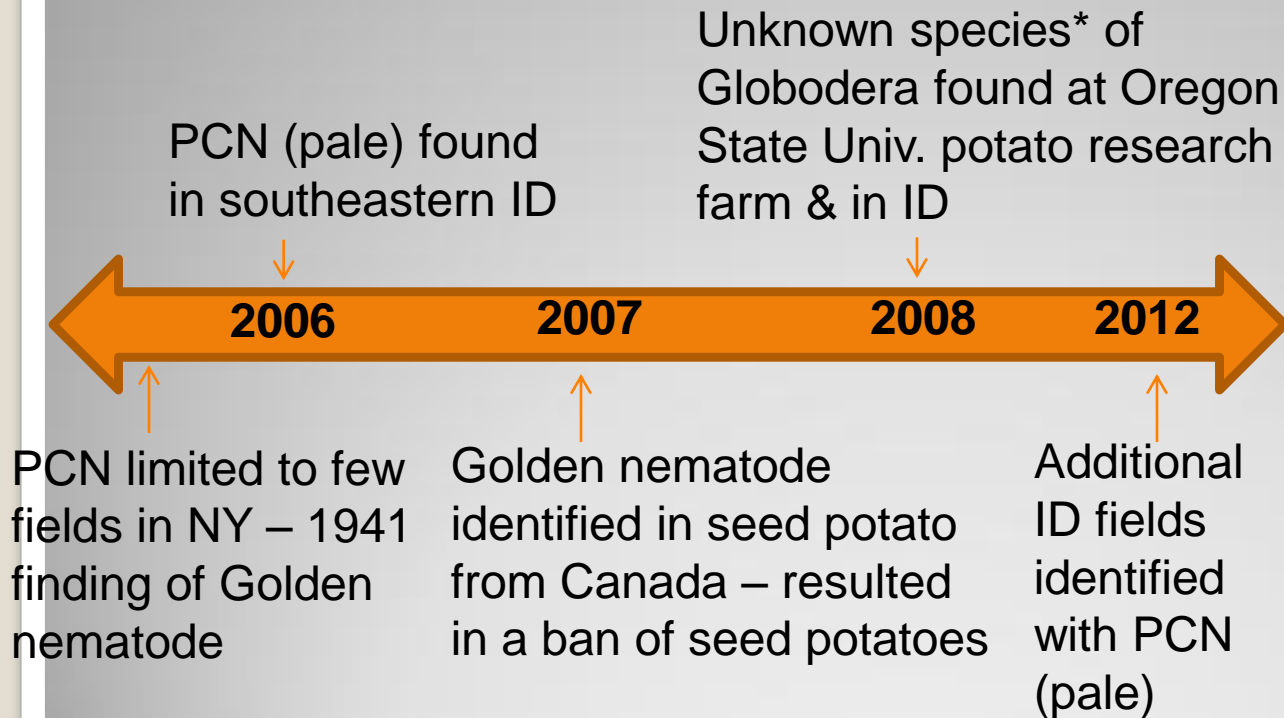
Pathogen spread with moving soil

For more information on PCN, please visit Dr. Ann MacGuidwin's poster out in the corridor. Info also in proceedings.



Potato Cyst Nematode Signs

Timeline of findings



Impacts

Discovery of PCN in any state will likely result in import bans by other countries and immediate quarantine of the field.

Heavy restrictions will be enforced on movement of material out of infested fields.

Potato Cyst Nematode

Timeline of findings and impacts

Infested fields may face restrictions for decades because cysts are resistant to fumigation.

The recently identified unknown *Globodera* species has similarities to both *pallida* and *rostochiensis*

The species is not yet known to be a pathogen, but it can replicate on potato – research is ongoing to ascertain pathogenicity

Known to be present in OR and ID, but distribution could be wider

If determined to be a pathogenic nematode by USDA APHIS, this PCN could pose regulatory consequences

Control measures the same as pathogenic *Globodera* spp.: Sanitation of equipment, restrict movement of soil and seed-associated soil from infested fields, crop rotation, soil fumigation

What do we know about the unknown *Globodera* species?

In 2012, a national research group led by Dr. Roy Navarre, along with industry submitted a proposal to the Specialty Crops Research Initiative to further develop methods for control and enhance extension/outreach efforts for *Globodera*

Proposal Title: Developing Methods to Eradicate Globodera Species, a Quarantine Pest, from the United States

Thanks to WPVGA and DATCP for involvement & support

NOT FUNDED in 2012

Research efforts - update

Corky Ringspot Symptoms



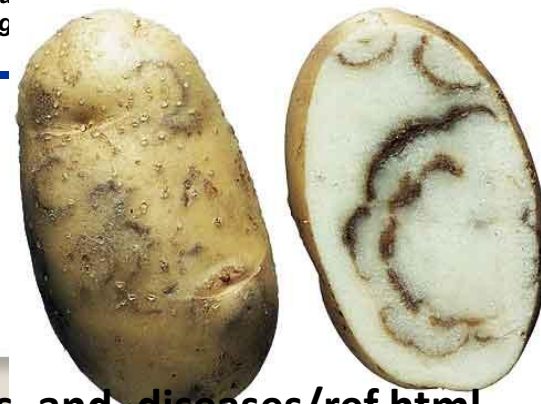
Hudelson & Charkowski

Tubers with corky ringspot may have target-like rings on their surfaces.



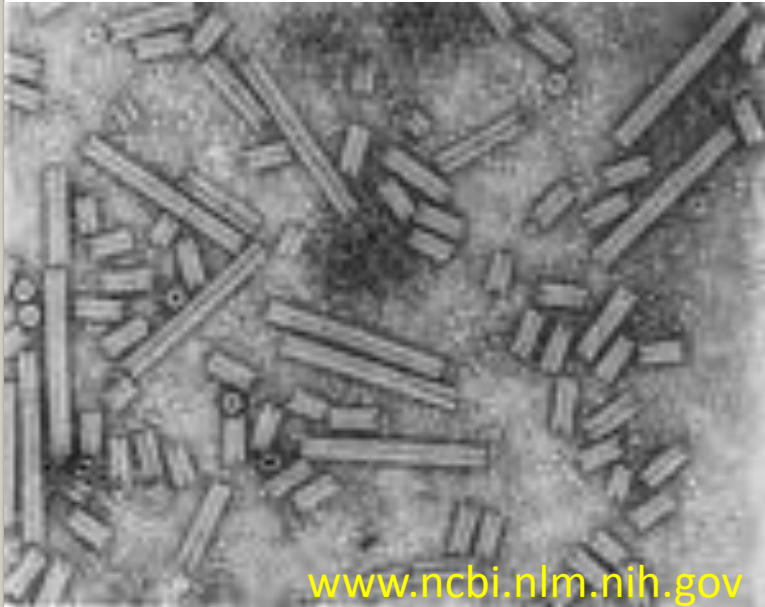
Hudelson & Charkowski

Internal necrosis of tubers, often in fleck or arc patterns, is a characteristic of corky ring



Corky Ringspot

The Dynamic Duo – both essential for disease



Tobacco Rattle Virus
causes symptoms on
potato

Stubby Root Nematodes
(not new to WI)



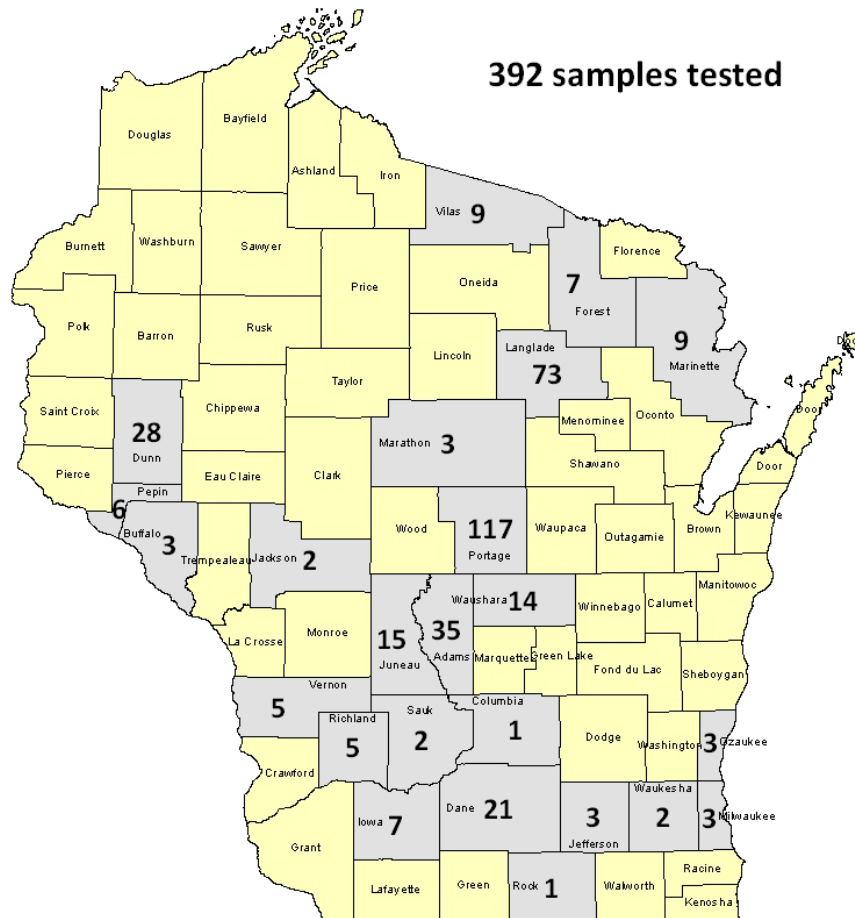
Nematodes alone do not
cause symptoms – only
nematodes vectoring
virus are problematic

Corky Ringspot



WI DATCP Pest Survey 2009-2010 Corky ringspot of potato

392 samples tested



n = Number of fields sampled

county of origin could not be determined for 18 samples

Wisconsin Department of Agriculture, Trade and Consumer Protection



First WI detection in 2007 in
Buffalo County

Tuber samples from 5 farms in
2010 were positive for TRV
(just 1.5% of samples screened)
No foliar or tuber symptoms

WI DATCP survey concluded in
2010

TRV not widespread in WI as of
last survey in 2010

Isolated field reports of CRS in WI

Current Control

Rotations often ineffective because of broad host range of TRV and stubby root nematodes

Preplant soil fumigation to control the nematode vector

Due to nematode movement in the soil profile, fumigation is not always effective – nematodes may be deeper

Nematicides may also provide control (in furrow & in season trts available)



Coordinated National Ag Project – was submitted in response to call from AFRI

WA (research lead), OR, ID, ND, WI (extension lead), MI, ME, FL

Survey of SRNs & TRV

-characterization

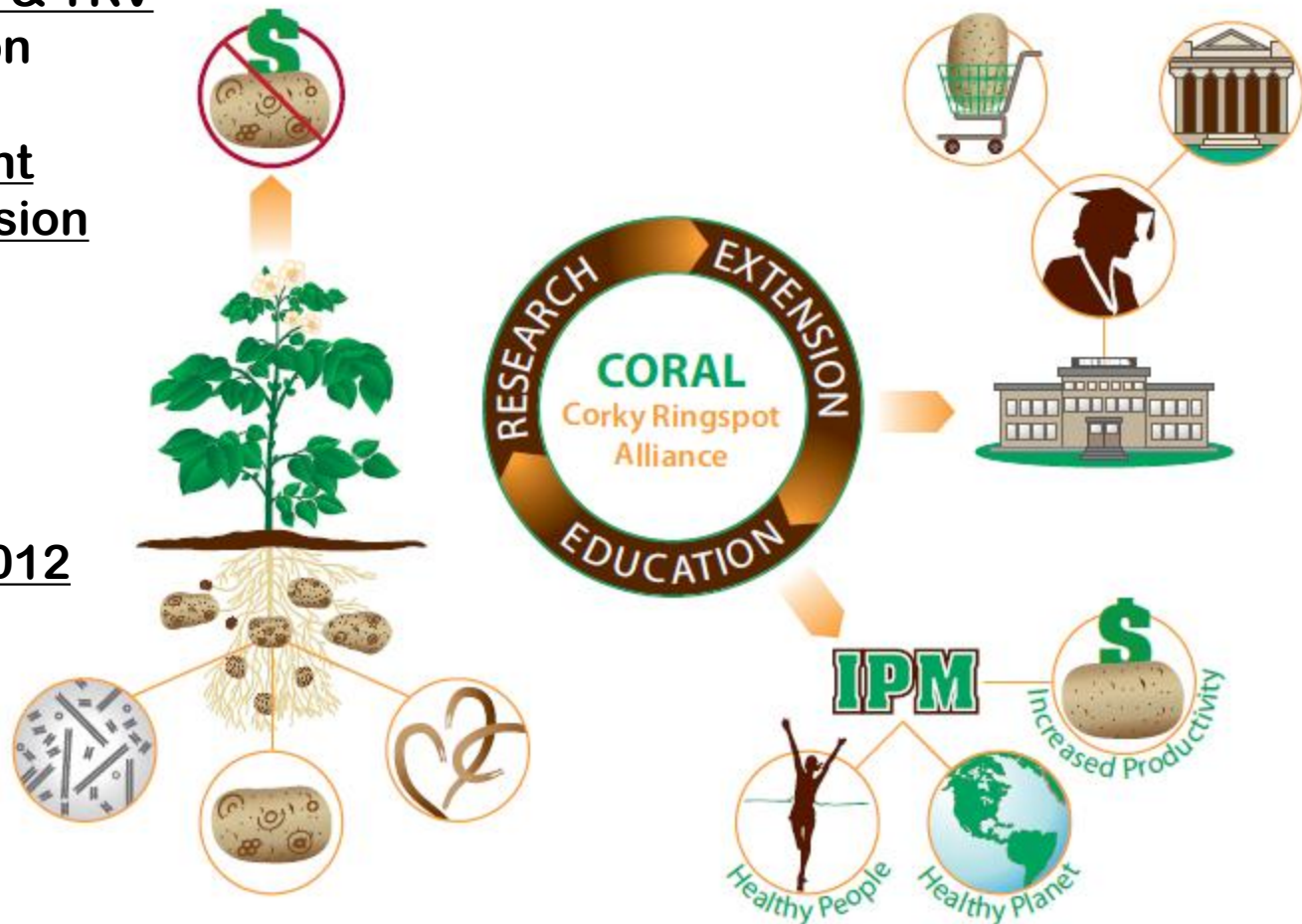
-distribution

IPM development

Outreach/extension

2013-2018

Not funded in 2012



Potato Mop Top Virus

Vectored by powdery scab pathogen (*Spongospora subterranea*) – first detected in WI in 2003

In 2011– states reporting PMTV included: Canada, ID, ND, OR, WA, ME

Currently, no PMTV detection in WI

Powdery scab is sporadic in some fields in WI – some 2009 reports, few in 2010, none in 2011-12

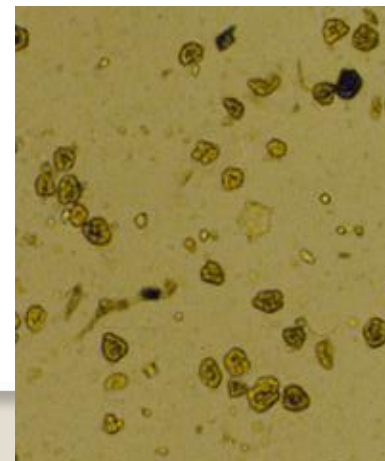
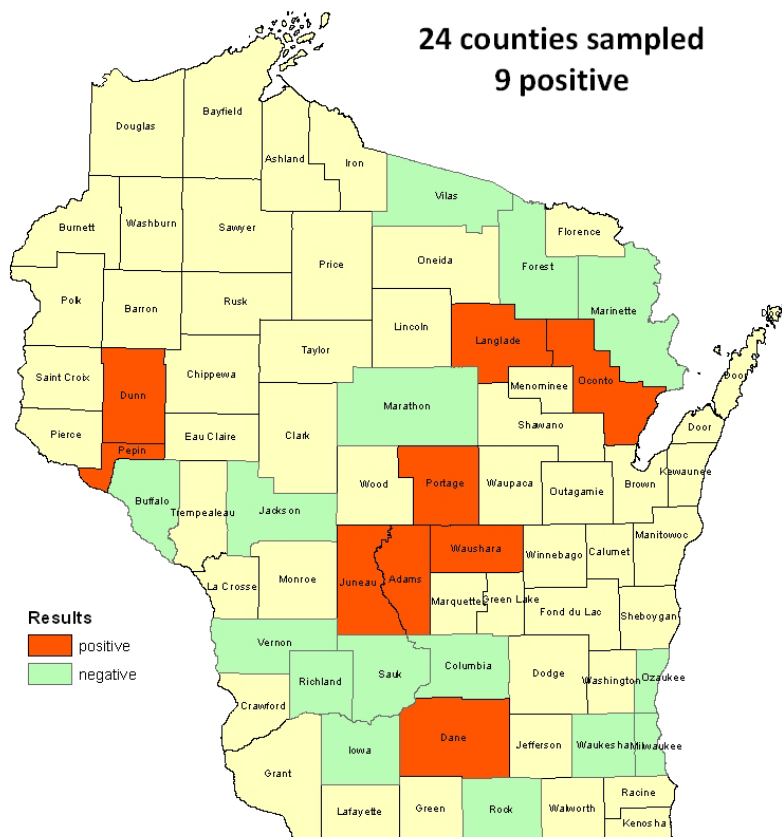
Potato Mop Top Virus Symptoms

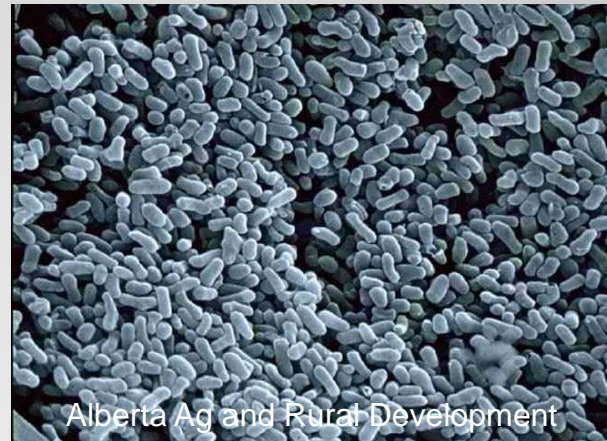
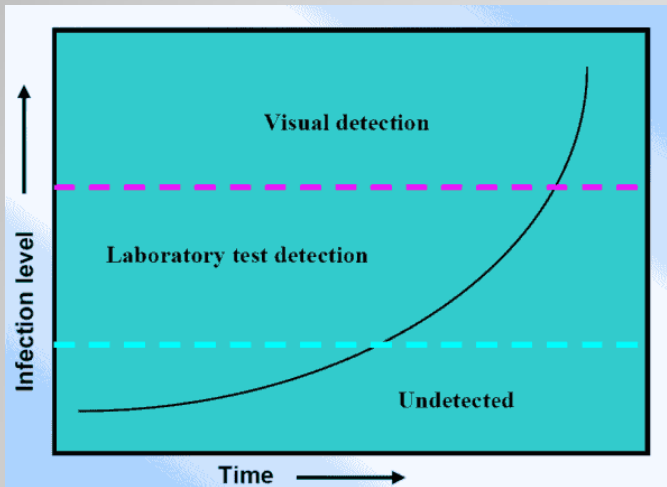
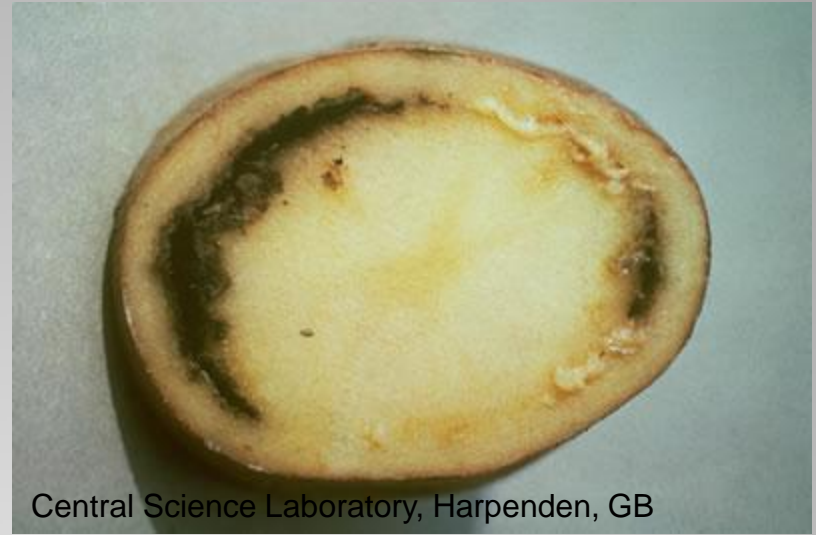




WI DATCP Pest Survey 2010 Powdery scab detections

24 counties sampled
9 positive





Bacterial Ring Rot (*Clavibacter michiganensis* subsp. *sepedonicus*.)

Bacterial Ring Rot

BRR is are in our region, but not gone. Recent flare-up in ID in 2012.

Spread and persistence: bacterium spreads to healthy tubers when a contaminated potato deposits inoculum on seed cuttings and handling equipment. It can remain viable in dried bacterial slime and in dried potato sap on equipment and storage surfaces for many years if not properly disinfected.

Management: Prevention remain vigilant in sanitation practices including clean up of trucks, leftover potatoes, and buy seed from reputable sources
In field control delay harvest until later in season so as to 'rot out' infected tubers to reduce inoculum in grading/sorting process

Further Information

University of Wisconsin Vegetable Disease
Website (newsletter access)

<http://www.plantpath.wisc.edu/wivegdis/>



Newsletters provide: information on late blight,
other diseases, and overall vegetable production
provided from mid-March-October