

# Preliminary Results of the 2012/2013 Manitoba Soybean Cyst Nematode Survey



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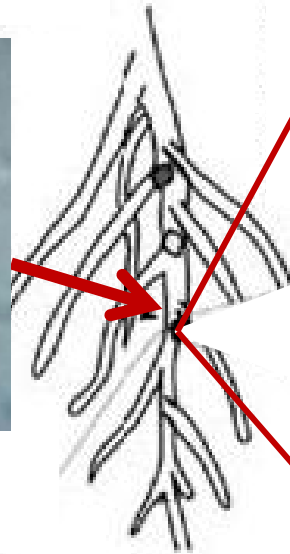


**Dennis Lange**  
**MAFRD**

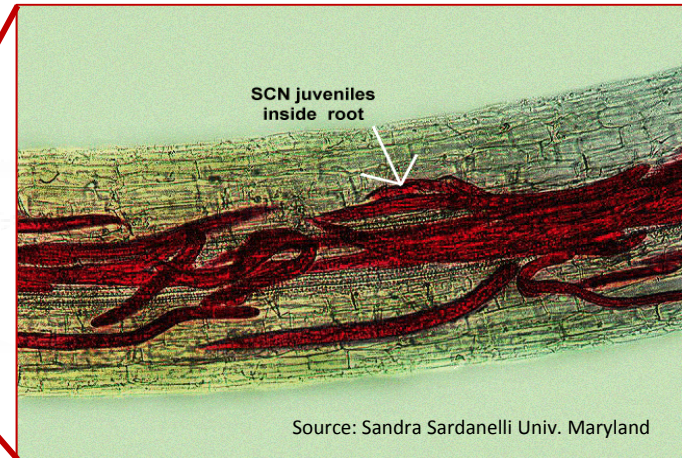
CPS Manitoba Meeting Nov. 20, 2013

# Life Cycle of a SCN (*Heterodera glycines*) Female

Soil



Root





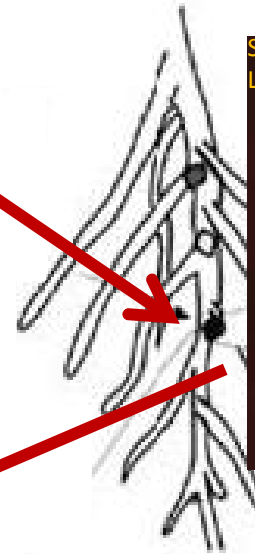


Source: Albert Tenuta OMAFRA

# Female Becomes Cyst Eventually Rupturing and Releasing Eggs



Soil

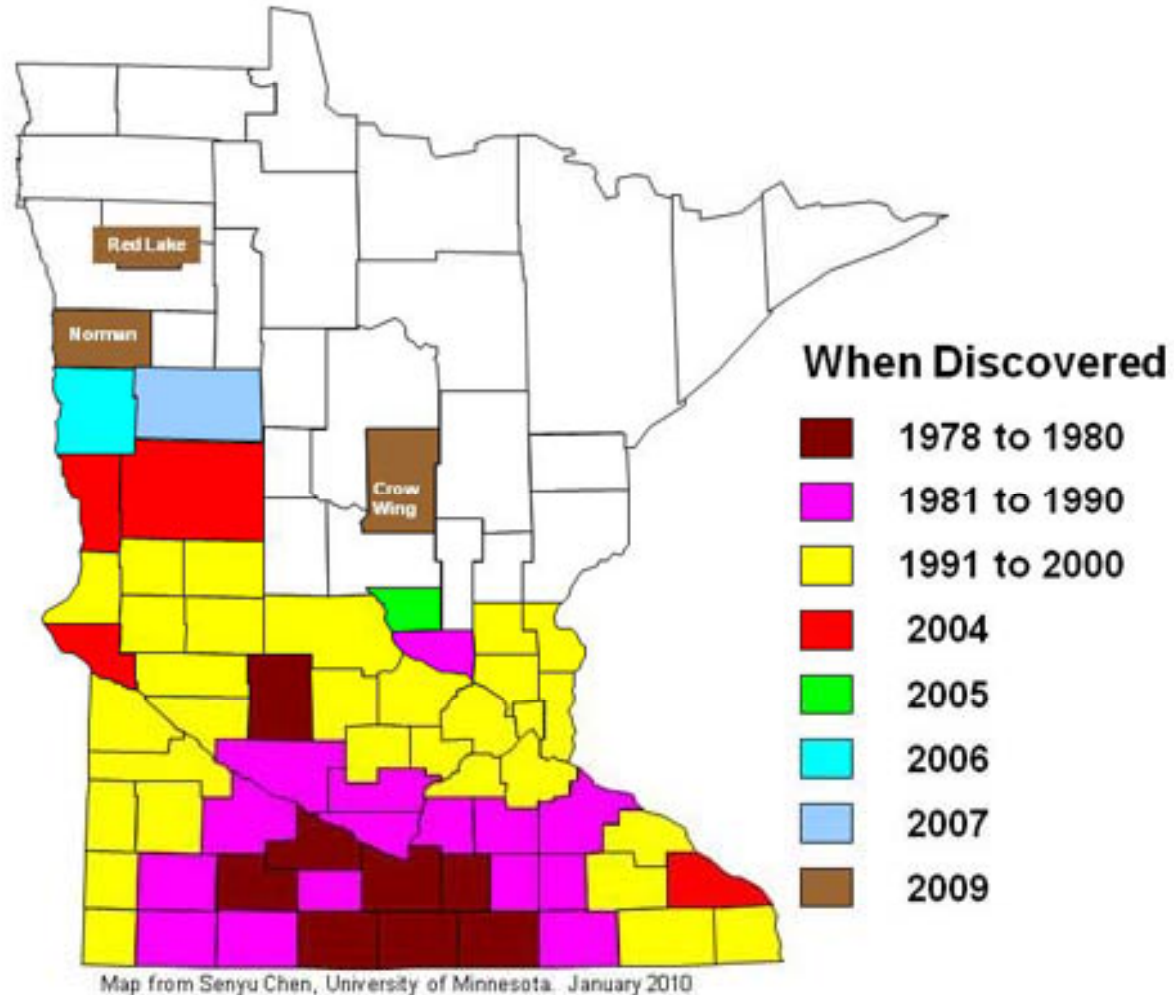


Source: Edward McGawley,  
Louisiana State University



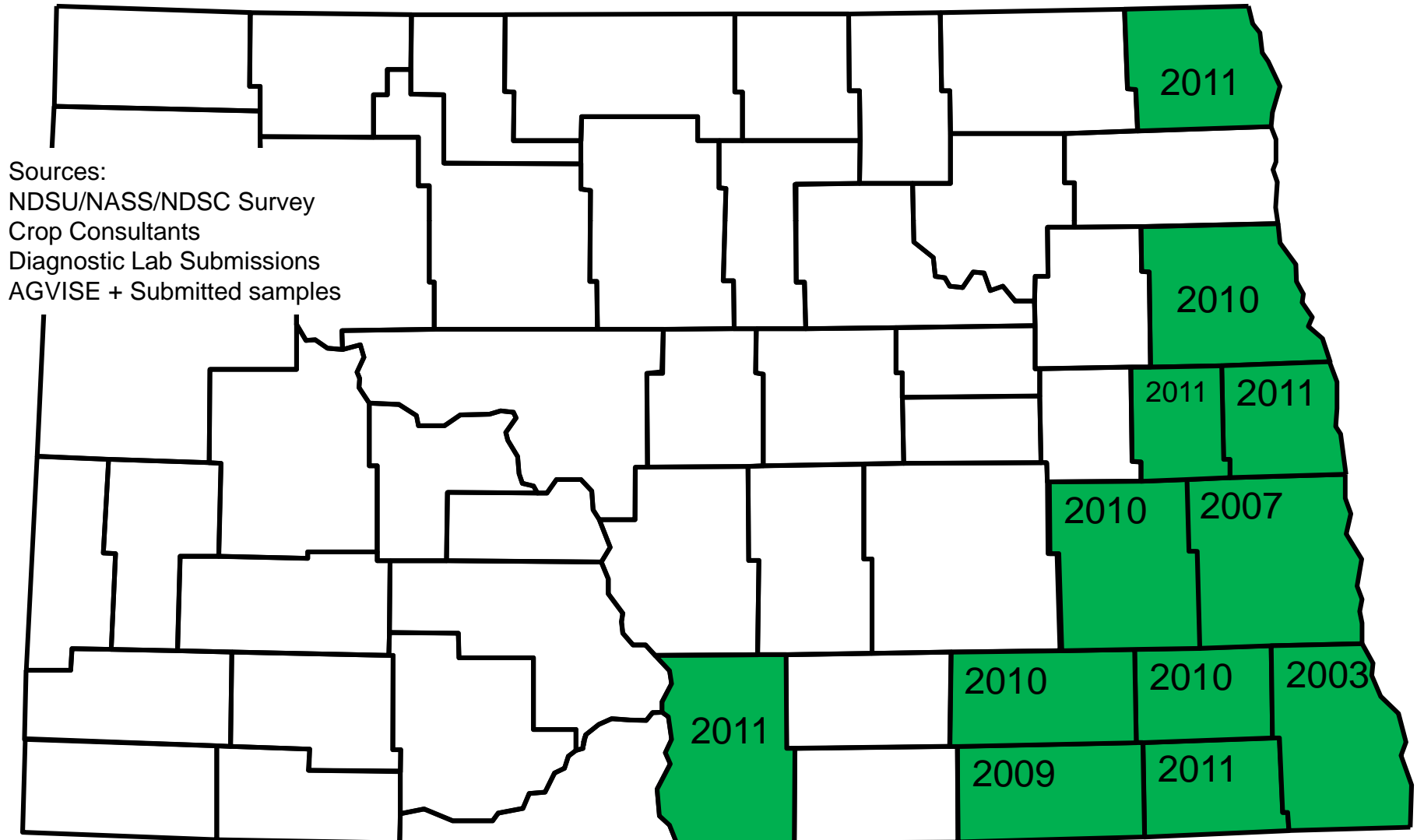
Eggs released in soil,  
develop into juveniles

# SCN in Minnesota (2009)



Minnesota counties infested with soybean cyst nematode

# SCN in North Dakota (2011)





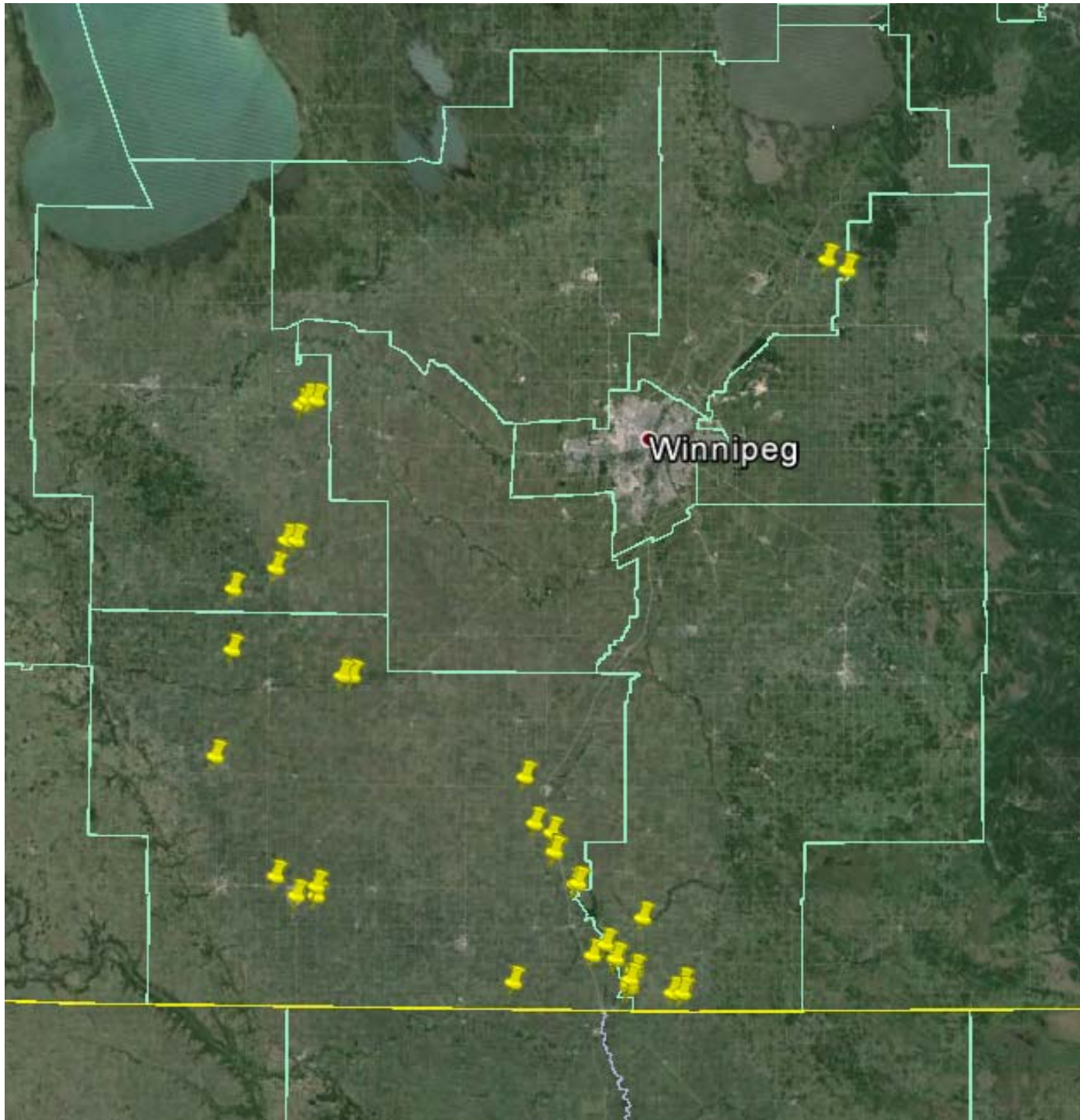
# Soil Processing



# SCN Survey of Manitoba (2012/2013)

- 48 soybean fields sampled
- > 3000 soil samples
- 282 composite samples for processing
- Priority fields based on
  - Proximity to water courses from U.S. that flood
  - Number of soybean years
  - History of dry beans
  - Sampled prone areas of fields

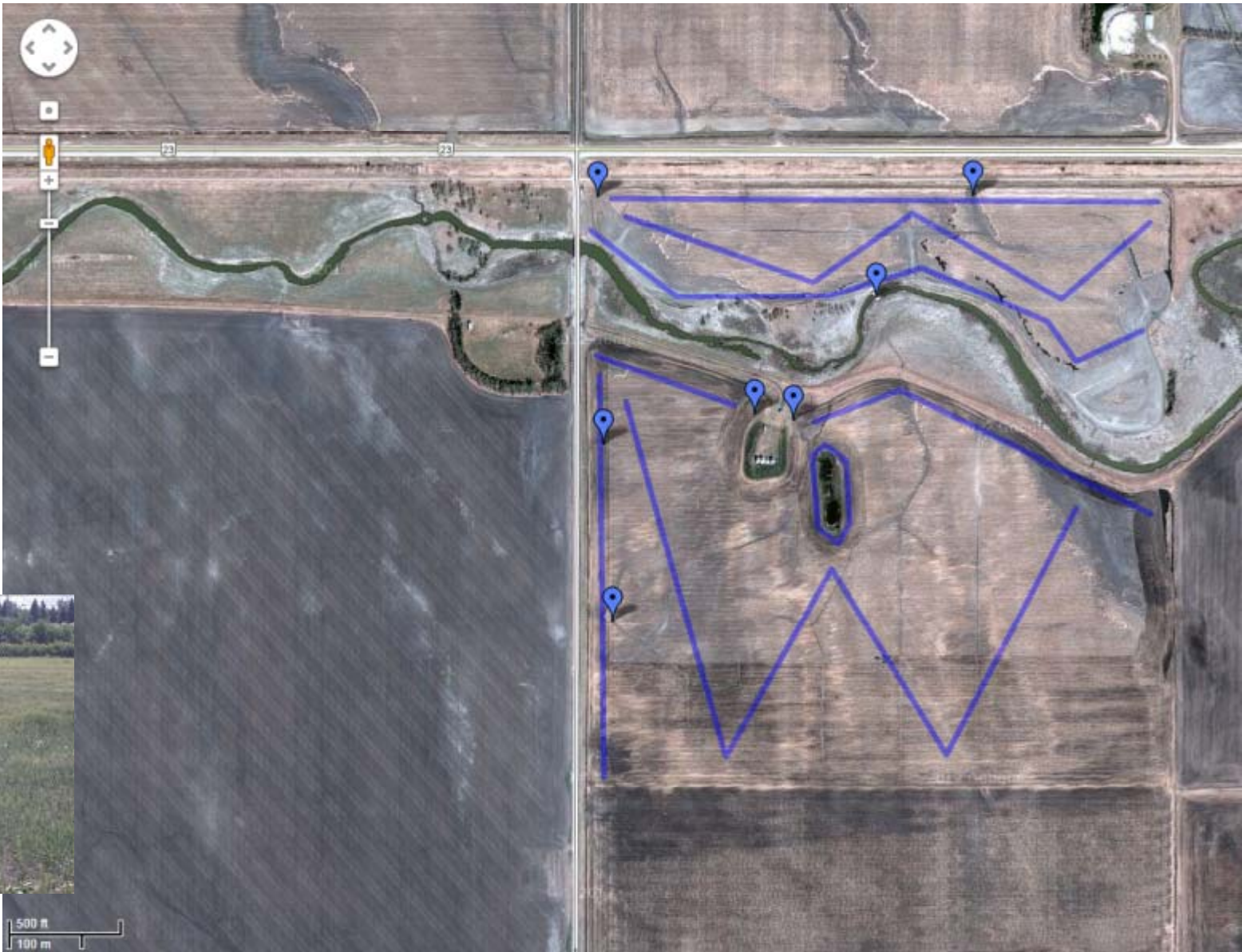




35 fields sampled  
Oct/Nov 2012

13 fields sampled  
July/Aug 2013

# Collection Areas for Two Fields



# Results

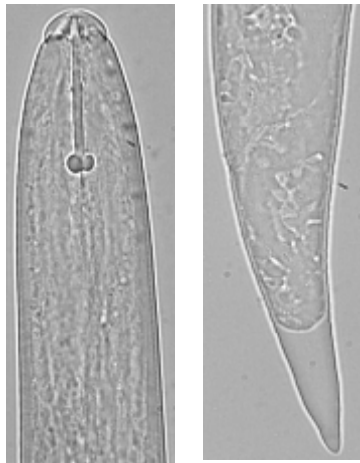
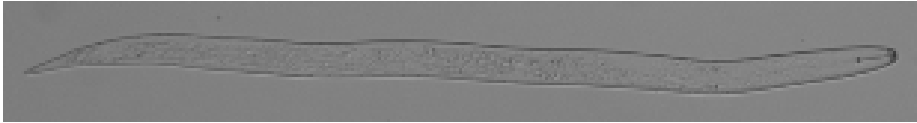
- 37 composite samples from 22 fields had cysts
- Total of 60 cysts recovered
- 26 cysts were not damaged
- 23 cysts had circumfenestrate vulval cone structures – *Cactodera*, *Punctodera*, *Betulodera*
- 3 cysts were bifenestrate – *Heterodera*



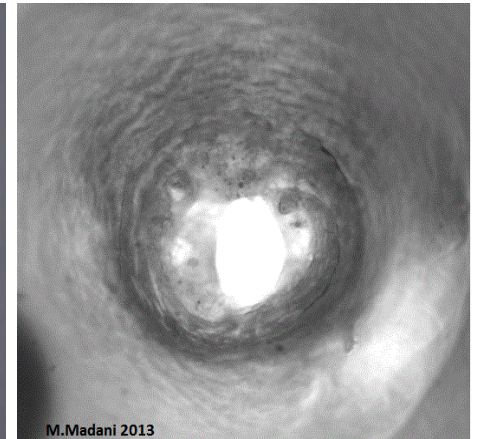
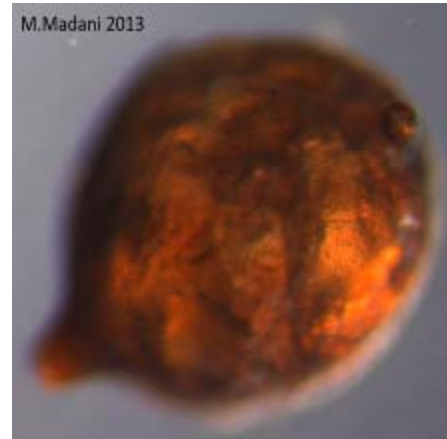
# Results

- 15 circumfenestrate cysts had eggs or juveniles
- 1 bifenestrate cyst had eggs and juveniles
- ITS sequencing, species-specific PCR
- Circumfenestrate cysts ITS matched *Cactodera*
- Bifenestrate cyst ambiguous – *Heterodera* by morphology, SCN by 2/3 primer sets, *Cactodera* by ITS sequencing

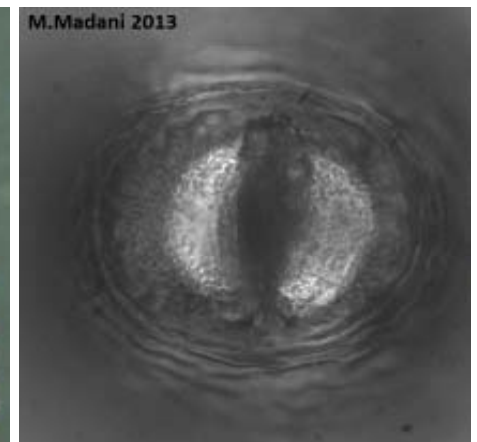
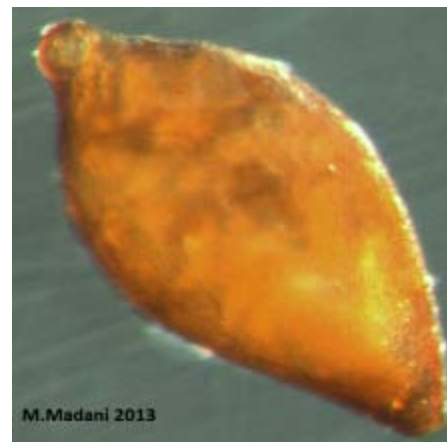
# Juveniles and Cysts



**Circumfenestrate**



**Bifenestrate**



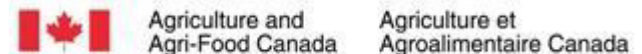
# Conclusions

- Soybean fields primarily along Red River were sampled
- SCN not confirmed in the fields
- *Cactodera* present in extremely low abundance in about half of fields samples
- *Cactodera* poses no known pest threat
- Resampled 6 fields Oct 2013 to obtain more undamaged bifenestrane and circumfenestrane cysts
- Propose to conduct a survey on light soils in Winkler-Portage area



# Acknowledgements

- Soybean farmers
- William Shaw, Brad Sparling, Patrick Finnsson, Megan Westphal for sampling
- Funders: MPGA, MRAC-Agriculture and Agri-Food Canada (CAAP program)
- Canada Research Chair Program in Applied Soil Ecology



# Three Things Are Forever

- Diamonds
- Taxes
- SCN

