

# **New Insights on Wireworm Biology**

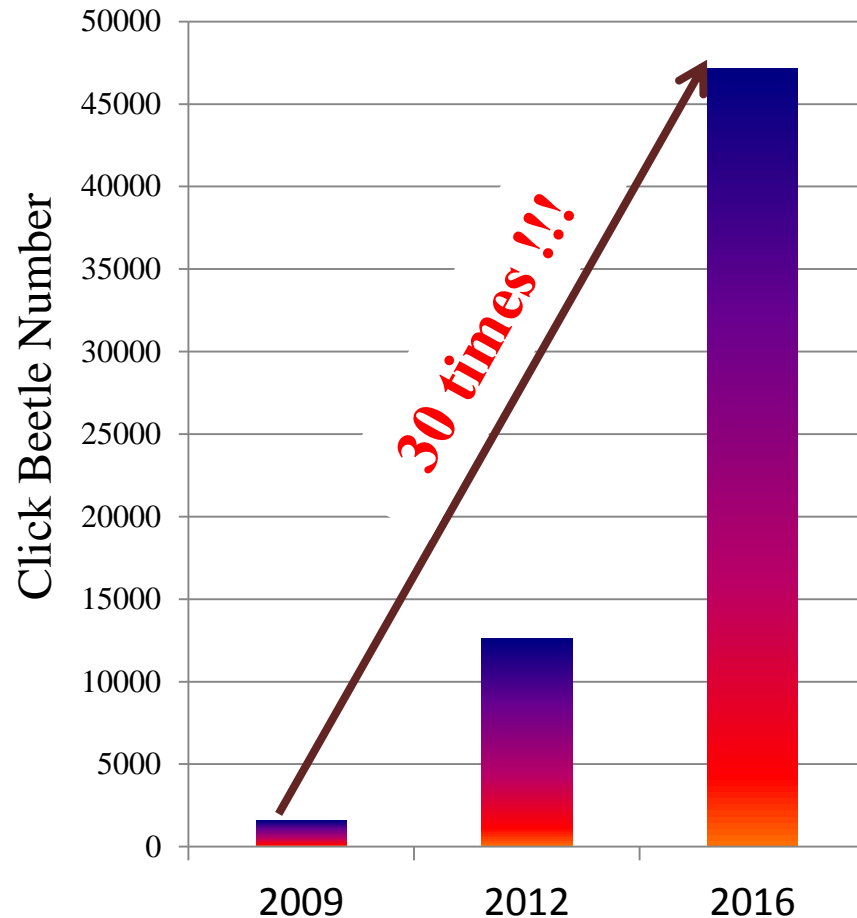
**Dr. Suqi Liu**

**Department of Agriculture and Fisheries, PEI**

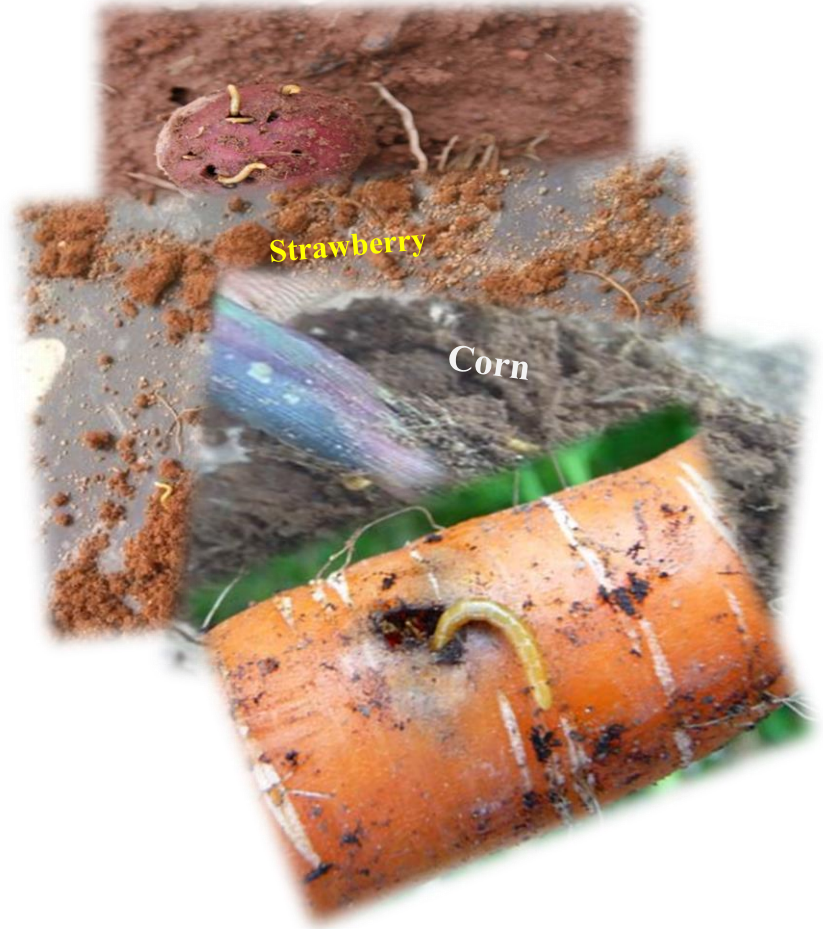
**Dr. Christine Noronha**

**Agriculture and Agri-Food Canada, PEI**

# Background



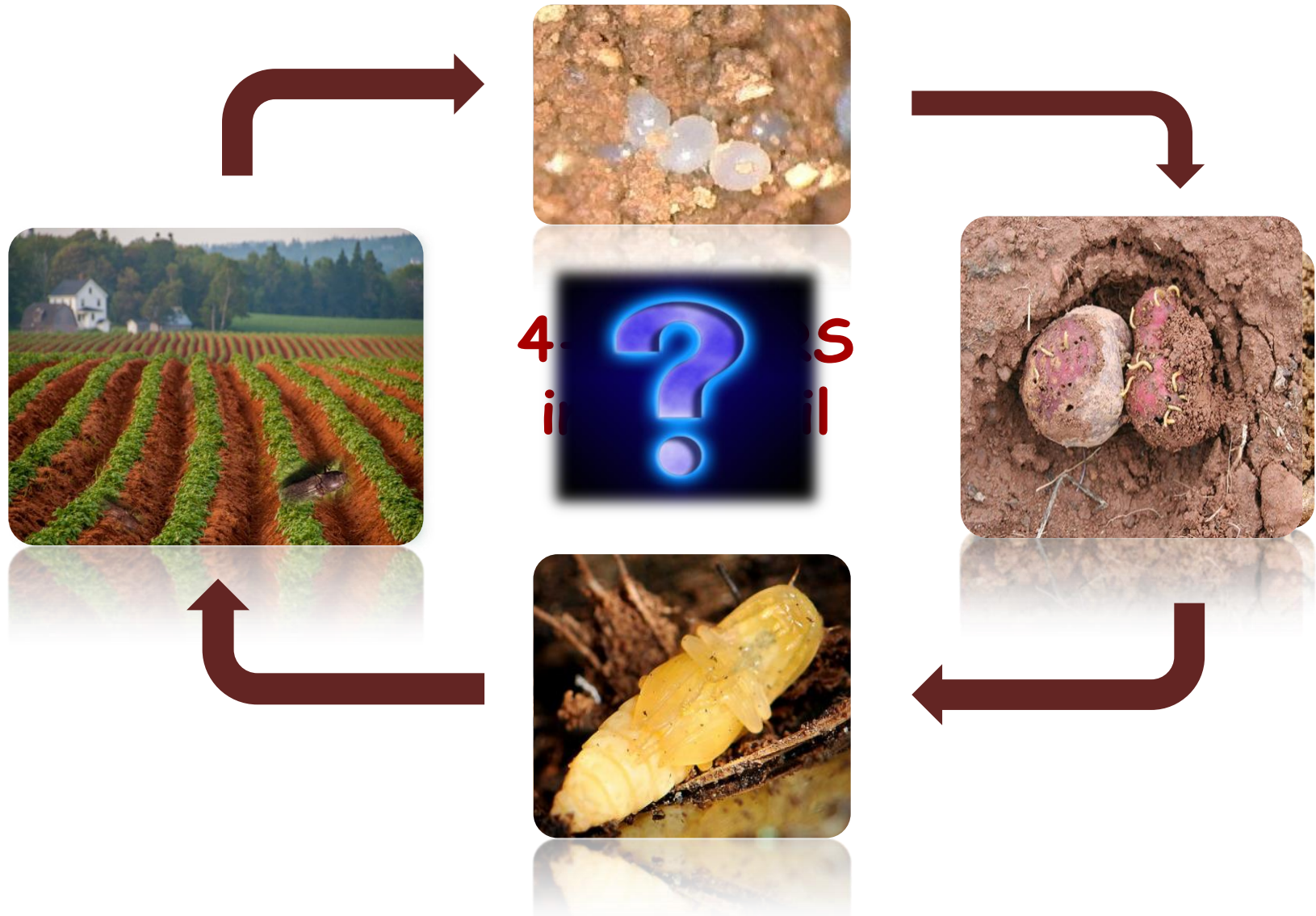
Survey of Click Beetles Across PEI



Many others.....

# Background

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# Biology of Click Beetles

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**Click Beetle  
Collection**



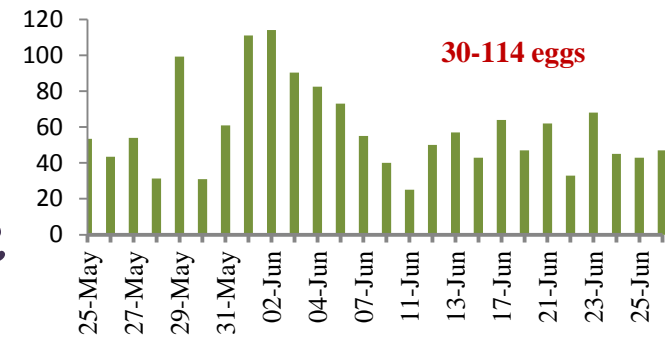
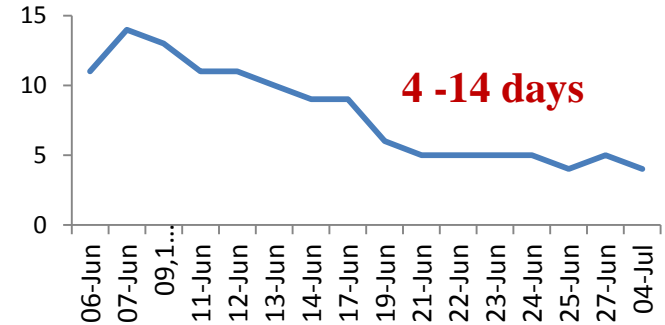
**Mating  
Observation**



**Egg Laying  
Inspection**

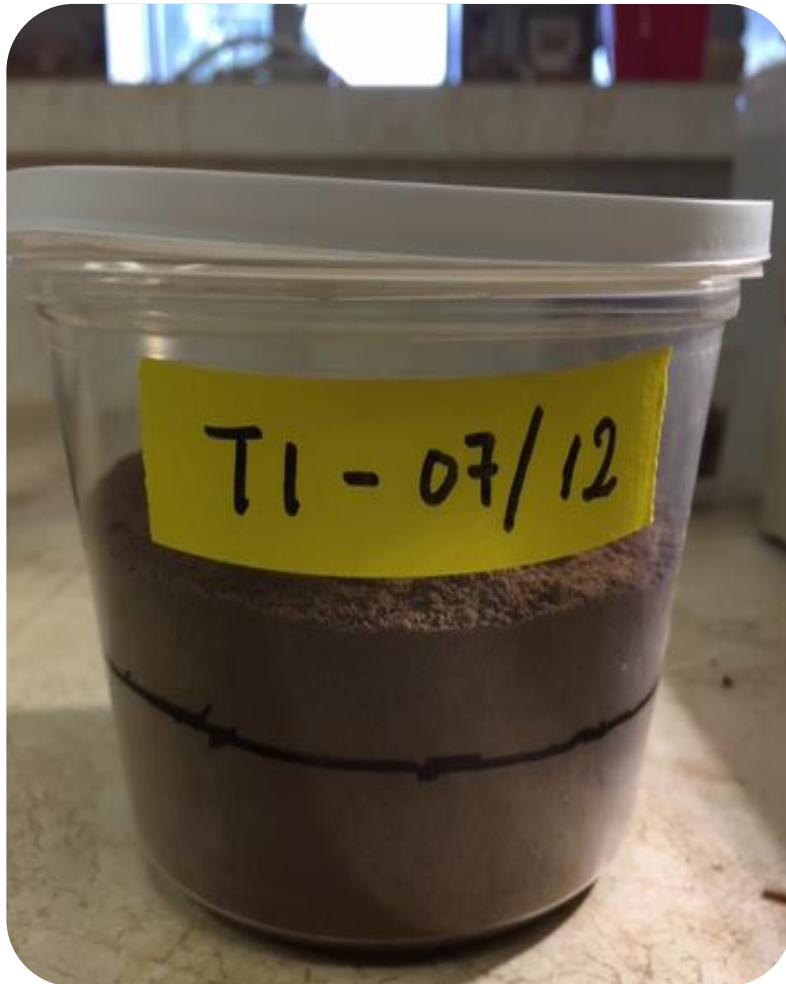
# Biology of Click Beetles

- Beetles mating earlier need more time to produce eggs.
- Average egg number produced by one female beetle was **59** after the first mating.
- Both male and female beetles conduct **multiple** mating.



# Biology of Click Beetles

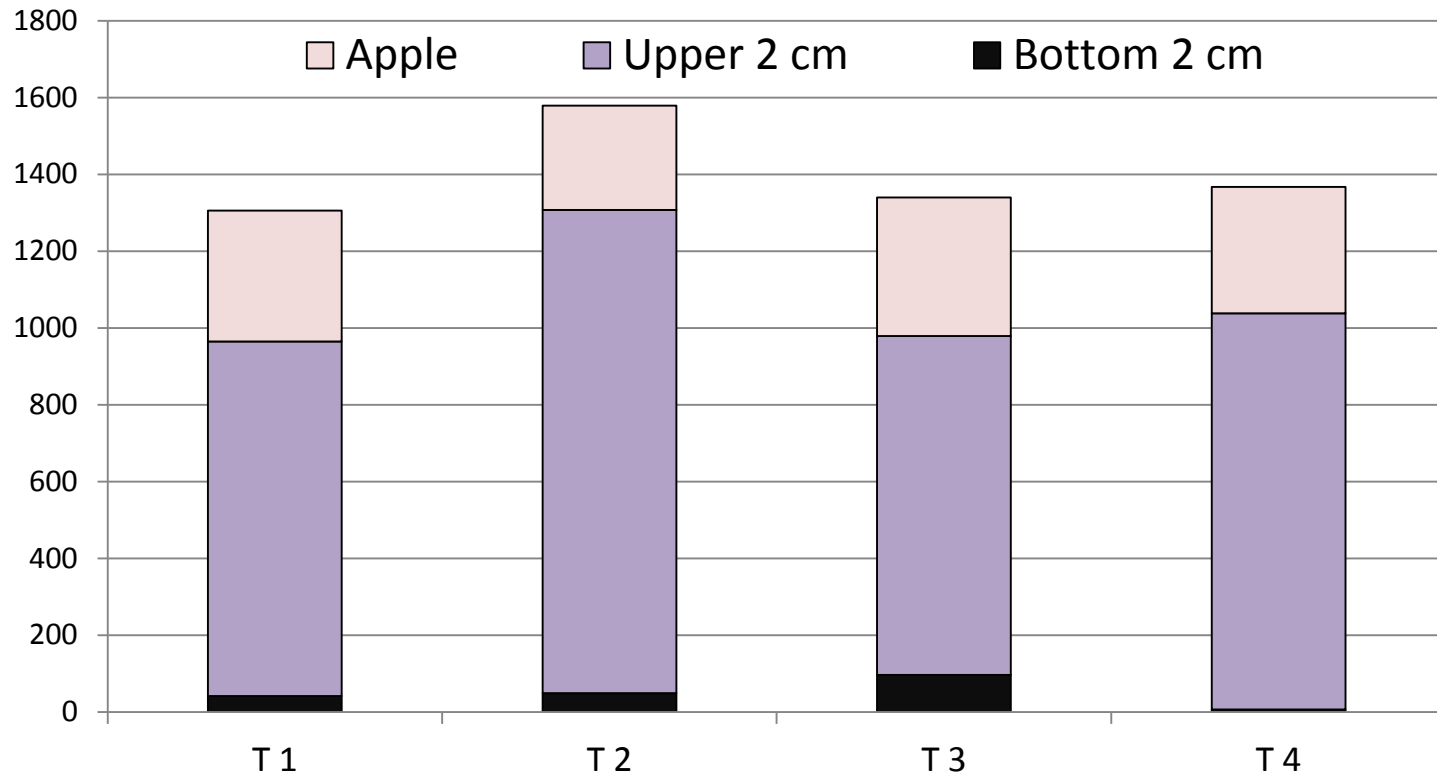
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- Four cm of sifted field soil in each container;
- 20 Females, and 30 males in each cup;
- Fresh apple pieces served as food

# Biology of Click Beetles

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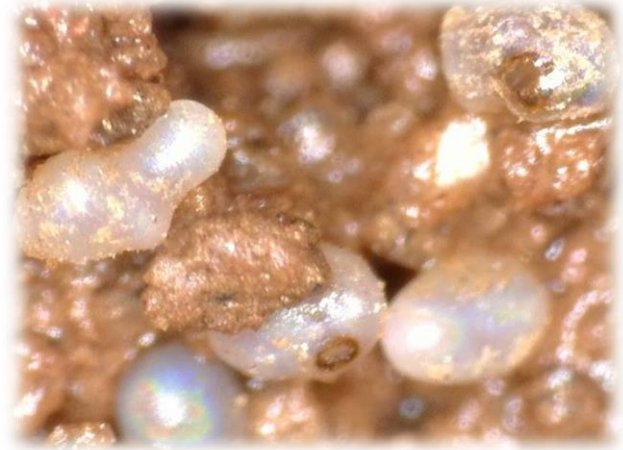


More than 95% of the eggs produced were laid in the upper 2 cm of the soil

# Biology of Wireworms

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- More than 90% eggs were produced before **end of June** and 90% hatch rate was recorded.
- A large number of neonate larvae hatched before **mid July**.





# Biology of Wireworms

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**Neonate  
Wireworm**



**Neonate  
wireworm  
eating an egg**



**Neonate  
wireworms  
fighting and  
feeding**

# Biology of Wireworms

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- Travel distance: 6", 8", 12", and 18"
- Five replications for each distance
- Five neonate wireworms per replication
- Carrot served as food sources

# Biology of Wireworms

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**Travel distance (inch)**



# Biology of Wireworms

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Neonate

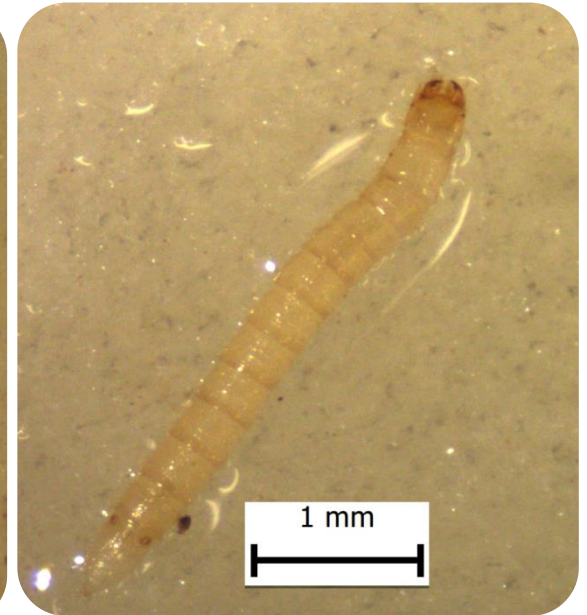


1.5 mm

Hatched in 100 days



12.06 mm



3.8 mm

**Average body size after first  
year development ~ 8.4 mm**



# Biology of Wireworms



~ 4 YEARS!!!



May

June

July

Beetle emerging peak



Egg production peak



Egg hatching peak



**Beetle  
Emergence**

**Beetle  
Emergence  
peak**

**Egg  
Production  
Peak**

**Neonate  
Wireworm  
Peak**

**Damage Continue  
for 4 more  
years .....**

**Early May**

**Early  
June**

**End of  
June-Early  
July**

**Mid  
July**



**Planting**



**Growth stage 1  
Sprout Development**



**Growth stage 2  
Vegetation Growth**



**Growth stage 3  
Potato Initiation**



**Growth stage 4  
Potato Building**



**Growth stage 5  
Maturation**

**Mid  
to late  
May**

**Early  
to mid  
June**

**End of  
June**

**Mid  
July**

**Early  
Sept.**

**Late  
Sept.**

# Thank you

**Suqi Liu**

**(902) 370-1383**

**suqi.liu@canada.ca**

**sxliu@gov.pe.ca**

**Christine Noronha**

**(902) 370-1374**

**christine.noronha**

**@agr.gc.ca**