Biology of Wireworms, Baiting and Insecticide BMPs

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We are not alone….

Wireworm populations and damages are on the rise globally.
(Ritter and Richter Jan 2013)
Understand the issue…
why do we have an increasing wireworm problem?

- Multiple species involved
- Ample non-farmed grassy breeding grounds
- Small field size
- Old chemistries wearing off
- Lindane no longer available
- Cereal crops commonly used
- Reduction in foliar insecticide sprays
- Neonicotinoids will not kill neonates or resident wireworms
Spring 2014...

Strawberry

Potato

Corn
Biology of wireworms…

- Varies between species
- Work happening on PEI to better understand A. sputator lifecycle
- Environmental conditions impact yearly lifecycle
- More than one species in many fields
Species found in fields in PEI

- *Agriotes sputator*
- *Agriotes obscurus*
- *Agriotes lineatus*
- *Hypnoidus abbreviatus*
- *Ctenicera pulchra*
- *Dalopius sp*

European species

Native species
Details vary between species!!!!!
The click beetle stage:

• Typically emerge in spring after overwintering.

• Females lay eggs during this time.

• In PEI, click beetles start emerging in early May, peaking early June, then declines until July.

• Click beetles enter fields directly by walking or flying.
Larval stage - wireworms:

Resident wireworms:
- Those in soil at time of planting.
- Typically feed in spring and fall.

Neonate wireworms:
- Those formed from eggs laid that spring and summer.
Monitoring wireworms...
Scouting Fields for Wireworm

- Scout your fields year prior to cropping
- Use bait balls or carrots to attract wireworms
- Install 15 to 20 baits per acre
- Place bait balls 4 to 6” deep when soil is approx. 10 °C
- Flag or mark each bait ball location

Figure 1. Example of randomly placed bait traps
Two Methods for Monitoring Wireworms

1. - Wireworms can be attracted to bait stations. Whole carrots buried 4” (8-9 cm) deep at 10 -20 marked sites throughout the field and retrieved 3 – 5 days can give a relative measure of the pressure in a field from wireworm.
Two Methods for Monitoring Wireworms

2. – Another bait system uses several ounces of course whole wheat flour or rolled oats or a mixture of untreated corn and wheat seeds placed in a fine, mesh buried 6-12” (15 -30 cm) deep.
Bait traps work best when...

- Wireworms are actively feeding
- No surrounding CO2 sources such as weeds, grass or green manure
  - Zero competition within 1 m of bait
Pheromone traps for click beetles

- To determine if click beetles are present and what species (males only)
- Place approximately 30 m into the field if you want to know if click beetles are emerging from field
- Ideally compare results to a known “hot spot”
- Lures for three different species
Insecticide Update...
Phorate (Thimet)

- Current transition strategy for phase out of 15G in 2015
  - First re-evaluation decision 2004; revised 3 times to date
  - Last date of sale by AMVAC/Engage Dec. 31, 2014
  - Last date of sale by retailers/distributors May 1, 2015
  - Last date of use by growers Aug. 1, 2015
- PMRA sent a delegation to PEI in summer of 2014
- AMVAC submitted a new submission to PMRA with new data on October 31st, 2014.
Capture (Bifenthrin) on PEI in 2014

- Product did not arrive on PEI until around June 1st
- Limited amount of product used on PEI in 2014.
- We had followed up with growers who used Thimet and Capture in same field.
- Dug plots in some of the split fields.
Phorate (Thimet) - BMPs

- Distribute the granules evenly. Ensures wireworm contact before reaching the tuber.

- Do not harvest potatoes for 90 days after planting time.

- This product is HIGHLY TOXIC TO BIRDS, small mammals, fish and aquatic invertebrates.

- Cover granules that may be exposed on the ends of the treated rows, turns and field loading areas.

- All workers involved in handling or application of Thimet are required by law to wear protective equipment as described on the label.
Capture (Bifenthrin) - BMPs

- In-furrow spray or T-band spray. Use 10 gallons water per acre (38 L/acre).

- Ensure the spray covers a wide band in the furrow to protect the mother and daughter tubers. Capture must be sprayed in the area where daughter tubers will form.
Capture (Bifenthrin) - BMPs

• Capture is registered as an in-furrow spray only.

• Since Capture is an emulsifiable concentrate formulation, please ensure pump seals and parts are compatible. Materials such as viton should be used.

• To increase control, a neonicotinoid insecticide can be used in-furrow or as a seed-piece treatment.
Why can we not use Fipronil in Canada?

- No registrant has ever submitted it for registration in Canada.
- Fipronil is highly toxic to fish and aquatic invertebrates.
- Fipronil is also used as the active ingredient in flea control products for pets.
Contact Information

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