

Wireworms

Introduction

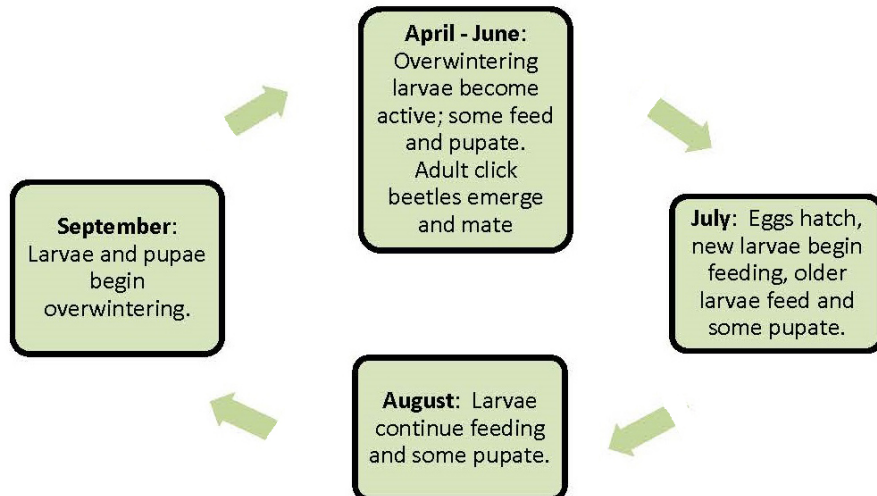
Wireworms are the larvae of click beetles (Family Elateridae). Wireworms are of growing concern in Nova Scotia as increased levels of damage have been observed in many horticultural crops.

Identification

Wireworm larvae are orange to brown in colour, shiny, slender and hard bodied. The larvae reach a size of 1-4 cm (0.4-1.6 inches) in length (Image 3). As the adult click beetle, they are brown or black in colour, with six legs and there is a pair of pincer-like protrusions on the head.

Three species of wireworms are found in Nova Scotia: *Agriotes lineatus* (Image 1), *A. obscurus* (Image 2) and *A. sputator*.

Lifecycle



Damage

Wireworms are generalist feeders and will eat seeds (Image 4) of many cereal crops, young plants, roots and tubers of carrots, potatoes, turnips, sweet potato and other root crops. The insect will tunnel into roots and tubers (Image 5) causing holes that reduce the quality of the crop. Wireworm damage has traditionally been most



1. Adult *Agriotes lineatus* Click Beetle (left clicking on images 1 - 5 will enlarge them)

"Wireworms have become increasingly difficult to manage ... populations have shifted to the more aggressive European species *A. sputator*."



2. Adult *Agriotes obscurus* Click Beetle



3. Click beetle larvae (wireworm)

severe in fields that were recently converted from sod or pasture, however in recent years, wireworms have been found in fields under frequent cultivation, despite crop rotations.



5. Click beetle larvae (wireworm) eating a seed.



5. Click beetle larvae (wireworm) damaging seedling

Monitoring

If growers are planting into a field with a history of wireworm damage, it is advised to monitor the field for wireworm populations.

A simple spring sampling technique is to wait until the soil warms up to 10°C, dig several holes throughout the field and place a sliced carrot or freshly cut potato 10 cm deep. Cover the hole with soil, mark the spot (spray flags are useful) and 3-5 days later, dig up the bait and examine. If one

or two wireworms are found per sample, then it can be concluded that wireworms are well established in the field and treatment is necessary.

To assist in planning crop rotations, baiting to monitor for wireworms can also be done in the early fall while the soil is still above 10°C. This is done using similar methods as in spring sampling, and it is best to wait until after mid-September to bury the carrot or potato.

If wireworm populations have reached high levels, it is advisable to avoid crops with susceptibility to wireworm damage.

Best Management Techniques

Wireworms have become increasingly difficult to manage in the last 10-15 years. Populations have shifted to the more aggressive European species (*A. sputator*) and many chemicals that previously controlled wireworm in the rotation have been phased out (ie. Lindane). There are a few registered products with wireworm on the label; Phorate (Thimet), Bifenthrin (Capture), and Clothianidan (Titan) – these are for use only on crops listed on their respective labels. As wireworm are commonly found in grass fields, it is good practice to plant a green manure or fallow the land before establishing your horticultural crop. If a grass is planted, plough it under by late August and set the field to fallow.

It is good practice to avoid rotations that include grasses (previously in grass or pasture). Research done in Prince Edward Island suggests that including buckwheat or brown mustard in your crop rotation may help reduce wireworm populations. For more information on this strategy please see: <http://www.agr.gc.ca/eng/?id=1299083302970> or contact Rachael Cheverie (contact information below).

For more information, contact:

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Photo Credits:

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