

FIELD LAB: LEATHERJACKET CONTROL

Field lab note: lifecycle

This field lab started in 2016 in Wigtownshire to find out the best way to control leatherjackets without the use of Dursban. The field lab is currently focusing on:

- Alternative sprays based on plant extracts
- Considering the leatherjacket's lifecycle as part of a control strategy
- Minimising damage to grass and crops

Leatherjackets can be a very damaging crop and grass pest that is very difficult to control. Understanding the life cycle of the leatherjacket can help you understand how to manage them.

What is a leatherjacket?

A 'leatherjacket' is a large grey grub that is the larva of a large type of cranefly (*Tipulidae spp.*). Craneflies are better known by many as Daddy longlegs. Leatherjackets are an agricultural pest because they eat and damage emerging crops in the grass family (including grass and cereals) in spring. Grass and spring sown cereals are particularly at risk from leatherjacket damage, and leatherjacket infestations can lead to expensive crop failures.



A leatherjacket, or *Tipulid* juvenile

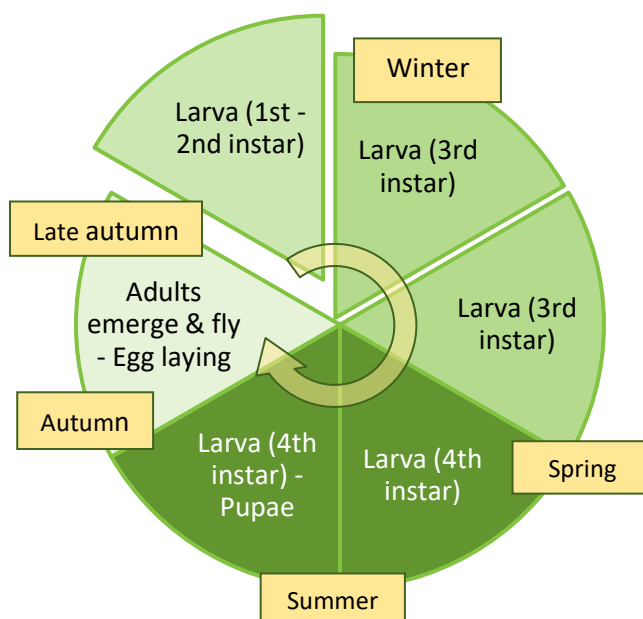


A cranefly, Daddy longleg, or *Tipulid* adult

There are a few parts to the leatherjacket's life cycle: emergence of adults from pupae; flight; egg laying; larvae hatch and growth (in four different stages – known as instars); and then larvae pupating (turning into adults).

Tipulids spend most of their time as leatherjackets, and hardly any time as adults. The leatherjackets cause most damage when they are biggest (at the 4th instar stage).

The adult craneflies emerge in late summer/autumn, and lay their eggs in grass a few weeks after. The leatherjacket larvae then hatch a few weeks later. The larvae feed on roots and underground stems during the day and plants above the ground at night. They gradually get bigger, causing most damage in late spring, when they are at their biggest stage (the 4th instar).



Chemical control

Until March 2016 non-organic farmers could use a product called Dursban to control leatherjackets. Dursban contains an organophosphate chemical that is effective at killing leatherjackets at all stages of their lifecycle, no matter how big they are. Now that Dursban has been banned, there is no chemical on the market for leatherjackets, so alternatives are being looked at by the whole industry.

Control through management

As craneflies prefer to lay their eggs in tussocky grass, one way of preventing leatherjackets is to prevent egg-lay: by not having grass available in the fields at risk from leatherjacket damage. Another is to increase the chances of birds eating the leatherjackets.

- Reseeding grass?
 - Cultivate in early spring, then sow in mid-summer
 - Sow a forage brassica in the back end before reseeding next spring
- Permanent grass?
 - Tight grazing in late summer should reduce the amount of tussocky grass (where craneflies prefer to lay their eggs)
- Breaking up grass to sow an arable crop?
 - Grow a non-cereal crop – such as oilseed rape – after grass
 - Sow a green manure (that doesn't contain any grasses or cereals) in summer
 - Expose larvae to risk of desiccation and predation by birds, by cultivating as early as possible, and then sowing a winter crop a bit later (but not too late)

Biological control

Birds will eat craneflies and leatherjackets, particularly starlings and rooks, so having good populations of birds will help. Leatherjackets are also prone to viral and parasitic diseases.

There are some formulated biological control agents on the market that control a range of crop pests, and may have some effect against leatherjackets. They are not used widely for cereal and grass crops, so we will have a look at these. Do they work? Is it worth the cost?

These control agents will not be nearly as toxic as Dursban, so we will have to think about when the best time would be to apply them, and having a bit of knowledge about the lifecycle will help with this.



Next steps

We are going to run a field lab exploring this. Want to get involved?

If you are interested in this, or have any ideas about other topics that you think we should look at, then get in touch with David at dmichie@soilassociation.org.

Funding for this activity is made available through the SRDP Knowledge Transfer and Innovation Fund (which is jointly funded by the Scottish Government and the European Union), with partner funding from Quality Meat Scotland, Forestry Commission Scotland, Innovative Farmers and The Prince of Wales's Charitable Foundation.

