

FIELD LAB: LEATHERJACKET CONTROL

Field lab report 1

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*

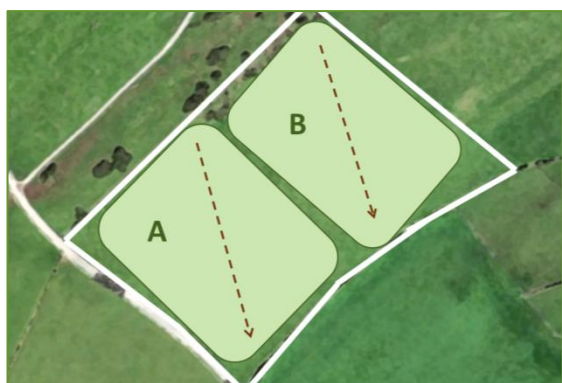
How do you know if you have a leatherjacket problem?

The best way of finding out if there is likely to be a leatherjacket problem in a field is by sampling it. If the results show a very small population of leatherjackets, then there is no need to worry about it. If there is a large population, then you can try and do something about it.

In the past, (non-organic) farmers have waited until spring to look for crop damage caused by leatherjackets. If there was, then the crop was sprayed with Dursban. As this is now banned, and the alternatives are far less toxic, any treatment should be targeted when leatherjackets are at their most vulnerable – in late autumn, soon after hatching. At this stage there will be very little crop damage, so sampling is required to identify if there is a problem.

Leatherjacket sampling

We went out to the field in early November and took 25 soil cores from each half of the field ('A' and 'B'). Each half was about 3.2 ha in size. The cores were then taken to a lab where they were heated and any leatherjackets dropped out of the cores, and were counted. Leatherjacket infestation on a per hectare basis could then be calculated. We then went out again in February and resampled the same areas to see if our treatment (a plant extract spray) had made any difference.



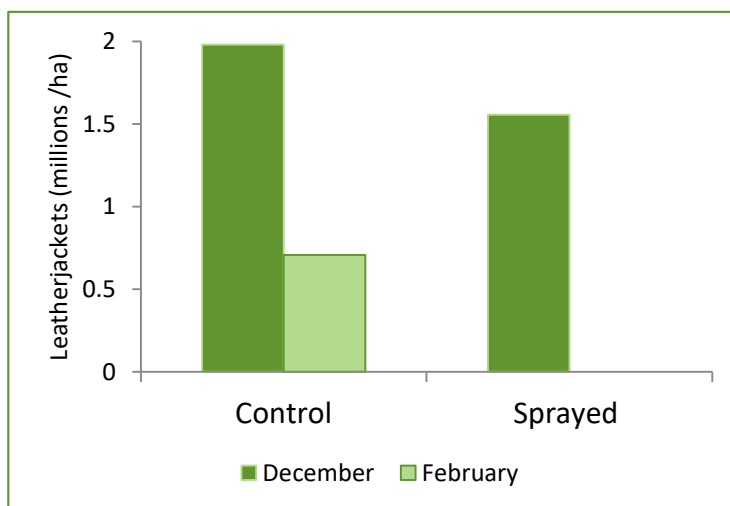
Spray treatment

One half of the field was sprayed with a plant extract spray at the recommended rate in late November. This is the time of year when leatherjackets are at the first instar stage: the earliest stage of larval development, immediately after hatching. The [leatherjacket lifecycle field lab note](#) provides more detail about the whole of the leatherjacket's lifecycle.

Results

The control (unsprayed) area had almost 2 million leatherjackets per hectare when the field was first sampled in November 2016. When the field was sampled again in February 2017 this number had decreased to around 0.7 million leatherjackets per hectare: a large decrease.

The sprayed area had around 1.6 million leatherjackets per hectare when it was first sampled, which then reduced to zero (this result corresponds to a range of 0 - <141,482 /ha) when the field was resampled. This indicates a very large decrease.



What does this mean?

It looks as if the spray was successful in controlling leatherjackets. Some of the factors that might have influenced this result include weather conditions at spraying, soil temperature, and size of leatherjacket larvae. Spraying in frosty conditions might not have been as effective, as the plant extract spray might not have broken down and released the compounds toxic to leatherjackets. Spraying earlier could increase the chance of success, but there is a risk that the leatherjackets would not all be hatched at this time. Spraying later might have resulted in the leatherjackets being too large for the compounds in the spray to have any effect.

The unsprayed area also had a large decrease in leatherjacket numbers. This may have been due to soil saturation, disease, or predation. When Dursban was available for leatherjacket control there were population size thresholds for its use. The threshold for spraying grass was 1 million per hectare, and the threshold for spraying cereals was 0.3 - 0.5 million per hectare. The population at the time of the second sampling fell between these thresholds, with a figure of 0.7 million per hectare.

Next steps

This trial indicated that the spray was effective on this particular location, in this particular crop, at this particular time of year. We would like to explore this further, and would like other people to try out this and other ways of controlling leatherjackets.

If you want to be part of it or if you want more details about the field lab then get in touch with 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.

