FIELD LAB: LEATHERJACKET CONTROL

Field lab report: November 2017

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, and minimising damage to grass and crops. You can read reports on our findings and about the leatherjacket life cycle on Soil Association Scotland's website under Field Labs.

Meeting at Drumcarro Farm, Fife

This Field Lab meeting was kindly hosted by Hugh Gillan at Drumcarro farm in Fife - an organic farm with Lleyn pedigree sheep in rotation with clover, wheat and oats. We were joined by Dr Andy Evans from SRUC who offered valuable advice on leatherjacket lifecycles and control methods.

Hugh Gillan's experiments in tackling leatherjackets on the farm began about 4 years ago when he discovered he had a serious problem with an average of 2.5 million leatherjackets per hectare. He believes it's more of problem for mixed farms and the longer they are in grass, the worse it gets. After learning about the lifecycle he began trying different management techniques. From his experience, the earlier ploughed, and the finer and firmer the seedbed, the less of a problem leatherjackets are. He also practices rolling after the grubs have hatched.

Cultural control methods – Hugh's top tips!

Cranefly (the adult stage of the leatherjacket) like to lay their eggs in long grass from mid-July to August (then will hatch about a month later), so Hugh's advice is "to graze it hard until early August. Then Flail-top hard to disturb crane fly larvae eggs. Pass with Opico comb harrow again to disturb eggs. Plough mid-August. Follow ploughing with cultivator - a Bomford Dynadrive is ideal for creating a fine tilth. This will disturb eggs further and germinate weed seeds. Repeat every two weeks. Drill grain in late September (with an extra 10% seed). Follow with two Cambridge roll passes in different directions as soon as possible after drilling. With organic wheat prices rising and 2.5 plus tonnes per acre possible, attention to detail is essential. Ensure regular checks on progress using downpipes and saline solution to monitor possible infestation. Research is on-going regarding possible efficacy of treatments such as Garlic spray." Andy Evans suggested that every time you plough you can kill up to ½ the young leatherjackets just by passing through. Leatherjackets come up near the soil surface at night and Hugh thinks that ploughing in the evening is the most successful method for killing young grubs.

Month	Date	Method
AUGUST	1st 14th 30th	Graze hard Flail Topper Opico comb Harrow Plough (5 wks before drilling)
SEPTEMBER	1st 14th 30th	Dyna Drive cultivator Dyna Drive for a 2nd time Drill
OCTOBER		Roll Roll for a 2nd time
NOVEMBER		Use garlic spray in any high risk areas

There was some discussion about cultivation methods and extra rolling perhaps leading to over compaction in heavier soils, so these methods may not be appropriate for optimum soil texture and structure in all cases. There will be a trade-off between cultivations (costs and soil impact), and leatherjacket control. Farmers must consider this when deciding how much leatherjacket control to do. 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 and ground beetle predators, so having good soil biology will also help.

Testing for Leatherjackets

1. Knock a minimum of five 4" plastic down pipes into the ground diagonally across field, about 8" deep.
2. Mix 2-4kg of salt into a bucket of water until it stops dissolving and you can see the salt crystals.
3. Pour saline solution into down pipes to saturate the ground until liquid is no longer draining and leave for at least an hour.
4. Dead leatherjackets will float to the surface. They look longer and thinner than when alive. The number of grubs in each pipe gives you an average of the number of millions per Ha (i.e. 2 grubs in pipe = 2 million on average per Ha). A density of over 1 million grubs per Ha in a grassland field is likely to markedly reduce the subsequent growth of grass.

Biological Controls

There are some formulated biological control agents on the market that control a range of crop pests, and may have some effect against leatherjackets. As part of this Field Lab we have been trialling Rigel-G garlic spray (which is not currently certified organic) but is not as toxic as Dursban. From the data gathered so far, Rigel-G spray, when used in late Autumn, has shown some success in reducing leatherjacket numbers (see previous Field Lab Reports). We have a new farm in Kinross that is taking part in further trials this Autumn.

Hugh is trying a different brand – Omex garlic concentrate (2.5 L diluted with 500 L water per Ha) at a cost of about £25 per acre, focusing on identified problem areas. We will continue to monitor the success and financial viability of the garlic sprays available and SRUC will also be starting research trials next year. Andy Evans pointed out that serious leatherjacket problems seem to come in 5-6 year cycles, then predators move in and reduce numbers significantly. Also, in a harsh winter the numbers will be knocked by 50% naturally.

Contact

If you have any questions about this Field Lab, or have any ideas about other topics that you think we should look at, then get in touch with Clem at csandison@soilassociation.org

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