

FIELD LAB: CULTIVATING SOIL HEALTH

Field lab report: November 2016

Discussions at November 2016 meeting

The cultivating soil health field lab started in 2016, at Newmiln farm, Perthshire, courtesy of Hugh Grierson Organic. It is investigating if reduced tillage methods can:

- **Improve soil health** (to improve the resilience of the cropping enterprises)
- **Reduce production costs** (to investigate if savings can be made by reducing tillage)
- **Improve the farm's carbon footprint** (by reducing the number of cultivations)

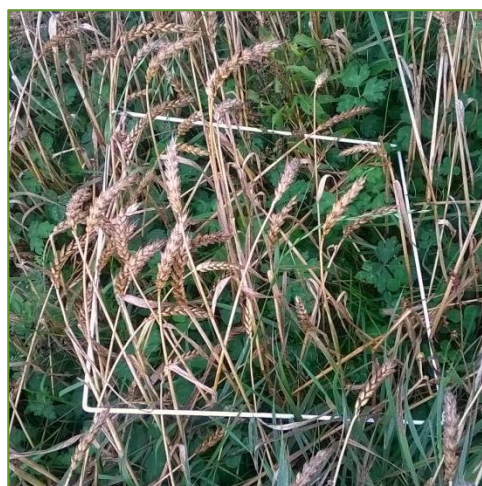
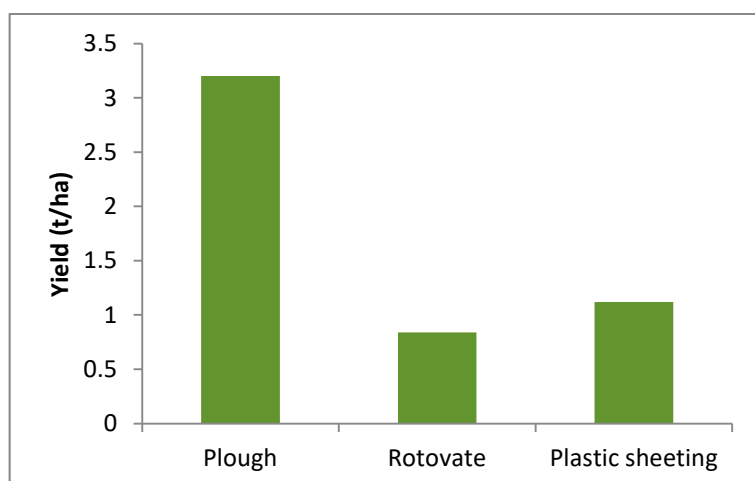
A description on the way this field lab was set up, as well as results from soil testing are available on the Soil Association Scotland website, on the field lab pages.

The field lab group heard a talk from Professor Bryan Griffiths about soil ecology. The group also went out to visit the trial site to discuss what had happened, and what should happen next season as the trial continues.

Discussions about the trial in 2016

- **Ploughed plot:** the main finding for 2016 was that this plot had the best yield (figure 1), despite having the poorest soil quality (in terms of soil biology and nutrients). It was decided that seedbed preparation and weed reduction were very important factors, and that the plough was best for both of these.
- **Rotovated plot:** weed control was an issue here, where ryegrass and clover were not controlled and so competed with the cereal, reducing yield.
- **Plastic sheeting plot:** yield was also poorer here, despite having better quality soil (in terms of biology and nutrients). It was decided that this was probably due to this plot having a poorer seedbed, as the soil under the plastic was wet and firm, and so smeared at sowing. It was probably also due to the wider row spacings of the Claydon seed drill, which allowed some weed competition in this organic crop. This may provide some potential for inter-row hoeing.

Figure 1: 2016 plot yields



Trial setup for 2017

There will be a few changes in the trial in 2017. Spring oats will be grown instead of spring wheat, and a Moore Unidrill will be used in preference to a Claydon, as it has a narrower between-row spacing. Worm numbers will be assessed regularly in all plots as the crop grows, in order to see how quickly worm populations recover after cultivating. There will also be a few changes in the way the plots are set up:

- **Ploughed plot:** this will continue with the same treatment in the same plot.
- **Rotovated plot:** this will not be continued. It is expected that there will be an increasing weed problem. This plot will be sheeted instead: with half under black plastic, and half under a weed control fabric (figure 3).
- **Plastic sheeting plot:** this plot will be split in the same way as the rotovated plot (figure 3). The weed control fabric should allow air into the soil, and so will hopefully result in less smearing at sowing, and the preparation of a better seedbed. It was also decided that the (plastic and fabric) sheeted plots would be surface cultivated with a light harrow prior to sowing, in order to also improve the seedbed.

Figure 2: 2016 trial setup



Figure 3: 2017 trial setup



Next steps

This field lab trial will be repeated in 2017, with some of the changes described above. The cost of cultivations and sheeting will be calculated. This will help with thinking about the financial feasibility of using sheeting for weed control in organic arable farming. We can also think about soil resilience by measuring earthworm numbers as the season progresses: do numbers recover rapidly, or has the population been damaged by cultivations? There will be another field lab meeting to discuss next year's results when we get them.

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