

Field lab update 1: Cultivating soil health



Reduced tillage at Newmiln: background and baseline results

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)

Trial setup

The field being used has just come out of a 3 year grass ley, and will be sown out to Paragon spring wheat. It was split into four areas at the start of 2016. These areas have been:

1. Ploughed (as normal), cultivated, then sown with a 3 m Claydon drill
2. Rotovated, then sown with a 3 m Claydon drill
3. Sheeted with black plastic and then sown with a 3 m Claydon drill
4. Left as a grass ley and not sown



The wheat was sown at a rate of 237 kg/ha on the 22nd April. Soils from each of the four areas will be sampled and tested throughout the duration of the field lab for soil nutrients and soil organisms.

Soil sampling and analysis

In spring 2016 the areas were sampled and tested for:

- A 'routine' analysis (soil pH, and the nutrients P, K, and Mg)
- Earthworm counts (number and diversity)
- Nematode numbers
- Potentially mineralisable nitrogen (PMN)
- Organic matter (by loss on ignition)



Results so far

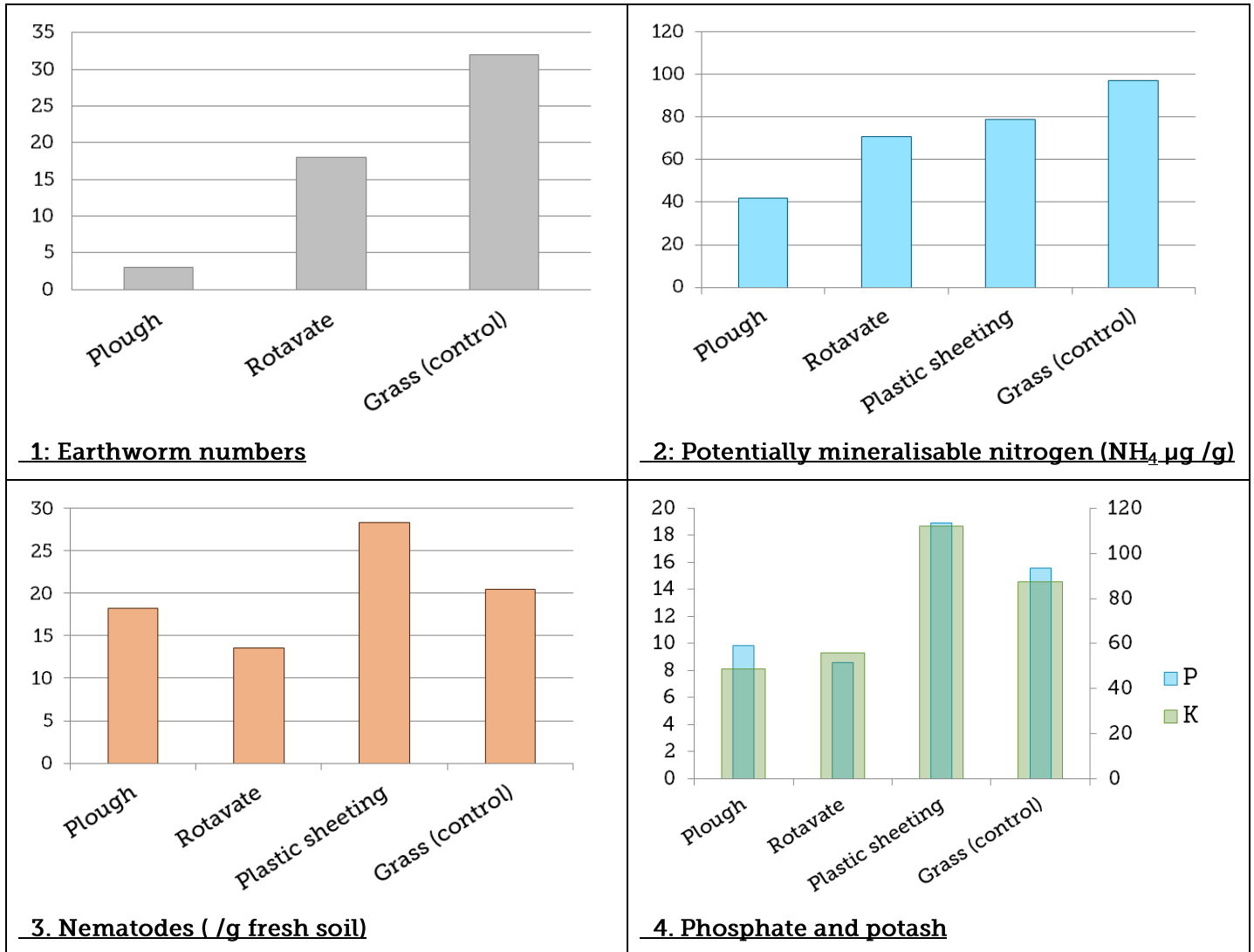
These results were intended for use as a baseline for comparison with future results: the same areas will be tested for the same things later on. However they are already telling us an interesting story about what may be happening with soil health. The results themselves should be treated with caution as they as 'indicative' (because of the scale and nature of the trial).

Unsurprisingly ploughing is not good for earthworms, and leaving the area in grass is. Sheeting the grass and letting it die off was good for nematodes, and for increasing the (potential) amount of

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nitrogen for the next crop. Both of these things are indicators for soil biological health. Both the P and K status in the uncultivated areas were higher than in the cultivated plots. This was unexpected, and could be due to natural variation in the field, rather than the cultivations. The soil organic matter content and pH of each area was about the same.



Next steps

We will hold an on-farm meeting in July to have a look at the growing crop in this trial, and to start thinking about what to do for the following year. We would like interested farmers to come along to this, so that we can get as many ideas as possible.

Thanks to Hugh Grierson, Newmiln Farm, Perthshire, and Professor Bryan Griffiths, Crop and Soils Systems, SRUC.

