

Soil and Nutrient Network

Helping farmers improve soil and nutrient management



Key findings from Ednie

- Take a second look at soil structure across the farm - put measures in place to rectify any issues.
- Check and correct soil pH to optimise growth conditions.
- Aim to make best use of slurry and manures on the farm and bought in fertilisers.
- Put a nutrient management plan in place.

Case study - Ednie Farm, NE Scotland

Farmed by Elaine Booth and Peter Robertson, Ednie Farm has been in Elaine's family for 4 generations.

Ednie is a low ground mixed unit covering around 471 ha. As well as growing OSR, wheat and barley, Ednie runs a suckler herd with up to 190 cows and their followers, and has a considerable amount of grassland.

Being in an NVZ means Elaine and Peter have to pay particular attention to N

application rates and timings.

Ednie has a heavy clay soil type, which poses agronomic challenges for Elaine and Peter, particularly at times when there is a lot of wet weather.

Along with looking at ways to improve the structure of their soil, Elaine and Peter are also early adopters of GPS precision soil sampling, using it to identify soil pH as well as phosphate and potash levels.

Soil and Nutrient Network—how can it benefit your farm?

Along with Ednie, six other farms across Scotland are taking part in the **Soil and Nutrient Network (SNN)**.

Working with SAC Consulting, the aim of the network is to demonstrate practical steps on the host farms that all farmers can benefit from to improve farm soils, maximise nutrient efficiency and save money.

Improving soil and nutrient management could also help to reduce diffuse pollution risks and cut the farm carbon footprint.

The first meeting at Ednie

demonstrated how you can identify problems in soil structure and importantly, what actions you can consider to rectify them. How to maximise nutrient use from FYM, and effective use of GPS precision sampling to address pH levels, as well as phosphate and potash levels were also covered.

Some of the findings from the first meeting at Ednie are overleaf. There is more information on the Soil and Nutrient Network, highlighting what other farmers have done at

www.farmingandwaterscotland.org

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Reviewing soil structure at Ednie

Two open pits showed the soil profile: one pit was dug where a subsoiler had been used.

The topsoil was in good condition at both pits. There was little difference between the two soil profiles; both showed a compressed subsoil, rather than soil compaction with a pan.

A sward lifter could be a better way of improving soil structure in this situation rather than subsoiling; other farmers said they had used a sward lifter with good results.

Either checking functionality or

installing new drainage was suggested as the most effective way of improving soil structure in target fields; new drainage is expensive. A deep rooting cover crop was also suggested as a way of opening up the soil.

It's important to look at the soil profile by digging a pit. Identify the issues and then implement effective soil remediation.

Elaine and Peter will use a sward lifter over the year. We will review how this has worked at the next meeting.

Use of organic manures

FYM from the suckler cows at Ednie is used as a fertiliser. Compost has also been considered as a nutrient source.

FYM and compost are both good sources of P and K, and compost can have a liming effect.

Nutrient value (based on 2013 fertiliser prices) was around £5.50/t for compost and £7.60/t for FYM. Some farmers at the meeting were using compost at a cost higher than its value.

Nutrient content of organic manures can be variable; it's worth getting

them analysed. Account for haulage and spreading costs, as these can be higher for organic manures and will vary from farm to farm.

Targeted use of organic manures can make more efficient use of bagged fertiliser - potentially saving you money. Nutrient content should be budgeted to meet crop need. This can be done using PLANET Scotland.

Elaine and Peter will monitor the use of FYM on target fields and assess the benefit and savings on fertiliser costs.

Precision farming

GPS sampling has been used at Ednie for over 10 years. During this period the soil pH within fields has become less variable.

Historically the recommendation for Scottish soils has been to lime to a pH of 6.2, to compensate for variation within the field.

Increasing soil sampling rate to 4 samples/ha, from 1/ha, improves accuracy sufficiently to target a lower pH of 6.1 or 6.0, therefore, requires less lime. The cost saving in lime will pay for the additional analysis. Liming to a grid

map rather than an interpolated map is more effective. Liming little and often is recommended; sample arable fields every 4 years as a rule of thumb.

Higher sampling rates for pH with precision liming produces a more even crop. Know your soil type and what's going to be grown in it before deciding on your liming strategy.

Elaine and Peter are evaluating the value of an increased sampling rate.

Soil organic matter

Soil organic matter (SOM) plays an important role in soil structure and ultimately crop yield.

One of the most effective ways to increase SOM is to grow large crops with big root systems, i.e. high yielding oilseed rape, and then to use minimum tillage on the following crop.

Minimum tillage can preserve the parts of the soil important for soil structure, but may not be suitable for all sites, due to the agronomy challenges it presents.

Soil erosion destroys soil structure; it's very important that this is avoided. A medium-long term grass ley will also help to build up soil structure and could reduce erosion risks.



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