

Soil and Nutrient Network



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Helping farmers improve soil and nutrient management

Revisiting our Soil Nutrient Network host farmers

The Soil Nutrient Network was established in 2016 through a range of host farms across Scotland. The hosts farm would be part of a "Nutrient Network" of farms demonstrating the benefits of soil analysis, nutrient budgeting and the principles of soil management for enhancing productivity, reducing pollution and enhancing biodiversity. A series of on farm meetings were held at each farm over the two year period where external speakers and local farmers could get together to discuss how we address our soil management practices.

In 2021 we revisited 4 of the Soil Nutrient Network farmers to discuss the impact being part of the project has had on their soil management, productivity and business. We have highlighted some of the key messages the host farmers took from the Soil Nutrient Network through a series of videos and case studies.

Host Farm — Bielgrange

Father and son Angus and Niall Jeffrey farm 288 ha (711 acres) arable and 246 ha (608 acres) of grassland over two farming units in East Lothian. Bielgrange lies between the village of East Linton and Stenton with a further farm in the Lammermuir Hills. Angus and Niall run 400 suckler cows and followers in combination with their arable units. The Jeffrey family were awarded the AgriScot 2018 Scotch Beef Farmer of the year award.

The crop rotation at Bielgrange includes winter barley, winter oilseed rape, and winter wheat. Crop establishment for oilseed rape and 1st wheats is by minimum tillage with conventional ploughing for winter barley and successive wheat crops.

Niall saw participation in the Soil Nutrient Network farms as an opportunity to learn more about managing his soils.

Lessons learnt at Bielgrange

The meetings held at Bielgrange covered a wide variety of topics which were relevant to Niall and the local farmers involved in the group. Key speakers were introduced to talk about GPS soil sampling, using the Visual Examination of Soil Structure guide to assess soils for compaction and soil health parameters such as worm numbers, the importance of organic matter and availability and supply of essential plant nutrients livestock manures and locally available distillery waste and mushroom compost. Upon reflection of Niall's participation in the project he found the key lessons learnt were:

- An increased utilisation of organic manures—reducing his purchased fertiliser bill
- Reduced use of Nitrogen fertiliser
- The importance of building relationships between supplier, farmer and contractors in getting the most from the use of organic manures.

Niall found that being part of the Soil Nutrient Network group accelerated his progress on farm in managing his soils and nutrient. This was through the accessibility to advice and information from industry specialists and local farmers.

For more information on the Soil and Nutrient Network see www.fas.scot. For dates of SNN events, find us on Facebook or follow us on Twitter



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Organic Manures and Soil Organic Matter Levels

Audrey Litterick, Earthcare Technical, was one of the speakers welcomed to Bielgrange. Audrey's presentations focused on the importance of organic matter in soil and the benefits of bulky organic fertilisers e.g. dungs, slurries, digestates, biosolids, and composts. Audrey stressed the importance of soil organic matter (SOM), citing that "We now know that soil organic matter is vitally important if we are to have healthy, functional soils", explaining that soils with a higher SOM are more resilient, primarily because they tend to have better soil structure.

SOM can be increased through:

- incorporating more bulky organic manures
- growing green manures or cover crops which are then incorporated into the soil
- undertake min-till or no-till management to prevent soil damage and/or by reducing losses by minimising intensive cultivations and choosing not to grow crops where cultivations or harvest are likely to result in soil damage.

Application methods and timings can also impact the nutrient value available to your crops; this was demonstrated by looking briefly at a recent piece of research undertaken to look at ammonia losses from the use of broad spreading; trailing shoe and shallow injection applications. As the Scottish Government are reviewing the Clean Air Strategy for Scotland, it is anticipated that farmers will face a greater focus on reducing their ammonia emissions – carefully considering liquid organic fertiliser applications will be one way that the emissions can be reduced. The benefit of such reductions of ammonia will mean an increased availability of Nitrogen for use by the crop.

AUDREY'S TAKE HOME MESSAGES ARE:

- Little and often applications of manures and wastes are the best way to maintain a healthy soil
- Slurries are high in water and available nutrients; more like a fertiliser
- FYM provides slow release nitrogen and greater organic matter and soil conditioning benefits
- Green and other fibre wastes are higher in organic and good soil conditioners
- Test a representative sample, whether it is soils or manures
- Analysis needs to include dry matter, organic matter, total nitrogen *and* available nitrogen, major and trace nutrients

Conclusion

Niall had already undertaken changes on farm such as the use of minimum tillage for establishing cereal crops however he found the Soil Nutrient Network a valuable experience which has accelerated his progress to improved soil and nutrient management. The Soil Nutrient Network has given Niall the information and confidence to make changes on farm which will ensure his business is more sustainable, profitable and best placed to meet the challenges Scottish farmers will face in the effort to reach Net Zero. By adopting these measures at Bielgrange Niall has also had a positive impact on filtering his findings to the wider agricultural community.

Thanks to Niall for taking the time to reflect over his participation as a Soil Nutrient host farmer



Useful Information

- Visit our webpage www.fas.scot for more information about the Soil & Nutrient Network and soil health and management.