

# 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 — Balnallen Farm

Balnallen farm in Moray is farmed by the Milne family. The Milne's land extends to approximately 160 ha of arable and 160 ha of grassland. The Milne's run a herd of about 170 cows which are a mix of cross breeds and are put to a selection of bulls (Aberdeen Angus, Limousin, Saler and Shorthorn). Female replacements are retained, with remaining calves sold as stores at 12 months old or finished at 18 to 22 months old.

Barley is the predominant crop in the arable enterprise with the Milnes utilising the digestate and distillery sludge from local distilleries to supply nutrients and reduce their use of inorganic fertiliser. The Milnes also have a significant quantity of slurry and FYM from their own beef enterprise which is used for crop production.

### Lessons learnt at Balnallen Farm

Balnallen has been maximising their use of inorganic manures and bi-products over the last few years and as part of the Soil Nutrient Network they have undertaken additional sampling and soil assessments to monitor the impact of using different manures.

The key findings were:

- Not all digestate and manures are the same so doing your own product sampling is essential to accurately match nutrient applications with nutrient offtakes.
- Soil sampling is required to monitor the impact the manures are having on soil nutrient status - this may need to be carried out more frequently than every 3-5 years.
- Be mindful of the impact of applying distillery bi-products to land which will be grazed by animals and consult your vet for further advice
- Building additional storage at Balnallen has enabled the Milne's to make better use of inorganic manures, storing the product when availability from the distillery is plentiful and then applying to land when plant uptake of nutrients is greatest.

For more information on the Soil and Nutrient Network see [www.fas.scot](http://www.fas.scot). For dates of SNN events, find us on Facebook or follow us on Twitter



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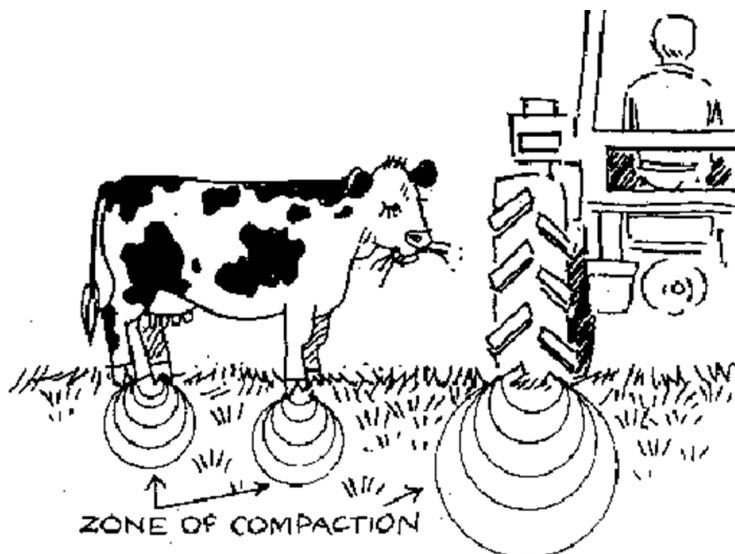
# Moray Soil and Nutrient Network

## Soil Structure and Health

Soil compaction has a significant impact on soil health, crop yield, plant rooting depth and nutrient uptake, risk of runoff and soil erosion, drainage and nitrous oxide emissions.

Compaction can be caused by various factors such as:

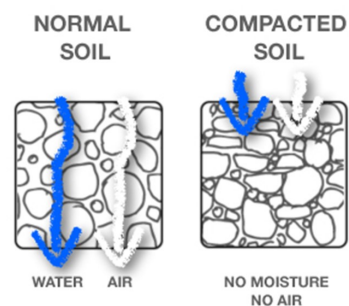
- Livestock poaching during wet conditions
- Machinery working in wet conditions
- Over cultivation
- Over grazing
- Heavy machinery



The application of organic manures often requires more passes across a field with heavier machinery and equipment than the application of inorganic fertiliser. However there are many benefits to the use of organic manures so being mindful of the damage which can be caused from compaction should be factored into plans for using inorganic manures.

There some measures which can be taken, firstly to identify the type and extent of compaction and then to remedy the compaction and prevent further damage in the future:

- Dig a soil pit to assess soil health and identify where the compaction layer using the VESS guide
- Identify the best method of remedy such as sub soiling or sward lifting for deep compaction or aerating for surface compactions
- Avoid travelling with machinery on soils which are wet
- Use multiple gateways to avoid travelling on the same areas repeatedly
- Consider tyre pressures and use of flotation tyres
- Use soil sampling to monitor nutrient balances in soils which can help with soil structure
- Monitor high risk areas regularly and assess the effectiveness of any actions you take to remedy compaction.



### Conclusion

The Moray SNN meetings covered some very interesting topics but the overall message was that without measurement through manure sampling, soil sampling and soil structure assessments we cannot monitor the positive and negative impacts of the use of organic manures and machinery on our soils.

Thanks to James Milne for reflecting over his time as a Soil Nutrient host farmer.

### Useful Information

- Visit our webpage [www.fas.scot](http://www.fas.scot) for more information about the Soil & Nutrient Network and soil health and management.
- Visit [A guide to the Visual Evaluation of Soil Structure \(VESS\) | Information helping farmers in Scotland | Farm Advisory Service \(fas.scot\)](#) for more information on using the VESS guide.