

# Ardoch of Gallery

## Profiting from improved efficiency; soils & nutrients

Ardoch of Gallery  
Climate Change Focus Farm

Notes from the Discussion  
Group Meeting on 27th  
January 2016 at  
Balmakewan Farm Shop and  
Tea Room.

*This was the third meeting of the Ardoch of Gallery focus farm discussion group, considering practical and profitable ideas to improve the farm business.*

## Ardoch of Gallery update

### What's been happening since the last meeting?

Focus Farmer Willie Officer updated the group on some of the key activities since the group last met:

- Tattie harvest was finally completed on the 5th November; between home crops and contracting approximately 430 acres was lifted. In general, overall potato ground is down in area but up in yield.
- General white potato crops are trading at £130/t and Maris pipers at £170/t.
- Salad potato crops were good trade, all that were less than 45mm are away for packing.
- Last of the oilseed rape crop was going away on the day of the meeting (took the cash and carry options to lock in on price for the next few years).
- Winter crops are looking well, all things considering. Winter wheat is looking a bit sodden and sorry for itself.
- Final light leaf spot sprays were done last week on the oilseed rape crops.
- Spring barley area will remain the same this year as it was last year; managed to sign a contract with Diageo for malting.
- Bulbs are looking well, new shed and ventilation system teamed together with a few management changes has improved yields and quality.
- The business has also put a lorry on the road for haulage which has been hauling potatoes for McCain's every day since it started mid December.



# Soil structure and organic matter

## Can you boost soil performance to increase yields?

With 2015 average soil temperatures around 2.5°C lower than 2014, SRUCs Potato Specialist Stuart Wale explained how this contributed to late potato crop emergence (some taking up to 7 weeks to emerge). Other things affected emergence too, for example crops being unintentionally sown a bit deeper. However, yields were still good and quality was above average - Stuart believes the good yields and quality, despite the season it was, were down to well prepared seed beds. Stuart stressed the importance of checking the soil at working depth, for “plasticity” before starting to work it.

In soils with low organic matter, the ground has to be worked harder to produce good crops. In Scotland, most tatties are grown in fields with soils less than 4% organic matter. There are ways to lift organic matter in soils, including applying compost in rotations; Stuart highlighted the compost trials that were going on at JHI at Balruddery.

### Soil organic matter

For a quick calculation to work out soil organic carbon, divide the percentage loss of ignition (LoI) by 1.72.

The average percentage LoI in most soils is 6.23. Values can range from 0.4% up to 60% (taken from SAC soil analyses for tattie fields over the past 20 years).



Putting cover crops into the ground before the field goes into tatties is another option. The idea is to recover nitrogen which would otherwise be lost from the soil over winter. Typically 15-18 kg N/ha is recovered by cover crops and 15-50 kg N/ha is taken up by the subsequent tattie crop (from English data; lower figures generally occur in Scotland). On top of recovering nitrogen from the soil, cover crops also work as an addition to the soil organic matter and help prevent run off from fields over the winter. Picking which species to use is sometimes more difficult for Scotland (needs to be winter hardy) – oil radish and winter rye were just two options suggested by Stuart. Optimum sowing dates is mid to late August in Scotland. Early and uniform crop establishment is essential for a successful crop.

Destruction of the cover crop depends on the size – if it's a large crop then pulverising and ploughing are needed but a small crop can simply be ploughed in. Need to be careful crops don't become to “woody and stemmy” or the benefits to the following crop are lost. The main financial benefit from cover crops is in the lift to soil organic matter and nitrogen levels, benefitting future crops.

# Better fertiliser use

## Making efficient use of inputs

Along with nutrient planning and good application techniques, use of yield maps, GPS and N sensors can all contribute towards optimal nutrient application and crop yield.

Elaine Nicoll from Yara highlighted developments in N sensors - they measure, calculate and apply the nitrogen required all in one go as the spreader drives across the field. The kit detects areas of different nitrogen supply and calculates the application rate. It also takes account of any FYM/slurry applications.

Cereal management differs from oilseed rape; in oilseed rape crops nitrogen is applied where the green area index is less to help push the crop on further. Elaine highlighted a Yara app which measures the green area index in oilseed rape crops to give you a nitrogen rate.

N testers can help to calculate crop nitrogen requirements. By measuring chlorophyll content in the leaf it can indicate if enough N is present (if the reading is 700 or above then enough N is present; if under 650 additional N is required).

Elaine and the group discussed the difference in fertiliser uptake for placement against broadcasting. Placement seemed to be the best option as Elaine pointed out that phosphate has to be within 2mm of the roots for the plant to take it up, potash has to be within 10mm for uptake and nitrogen can be up to 20 mm away for uptake.

This started a discussion within the group for a possible trial on the focus farm for looking into the use of N testers and sensors compared to conventional methods of applying fertiliser as normal.

### Can we cut emissions and benefit the farm?

Greenhouse gas emissions (e.g carbon dioxide, methane and nitrous oxide) are leading to a change in our climate. Scottish Government estimate that the agricultural sector contributes approx. 23% to Scotland's total emissions.

SRUCs Gillian Reid explained that the most common sources of emissions from arable farms are fertiliser, fuel and electricity. Making more efficient use of these/optimising production can also cut costs.

Strategies to reduce emissions include best use of fertiliser, so basic measures such as preparing nutrient budgets for crops, analyse soils and slurry/FYM before it is applied, check the calibration on spreader etc. will all help.

Greenhouse gas emissions can be measured with a carbon footprint. You can benchmark yourself against year on year performance, and against other similar farms. Funding is available to carry out a carbon footprint through the climate change focus farm project.

# Grain market update

Calum McIntosh from Frontier gave a brief update on how things were looking in grain market and future possibilities for the season to come. Here are his key points:

- There is a surplus of wheat and exportable barley in the UK just now.
- Scotland has had its biggest ever wheat crop which has led to a major surplus over and above the amount that is in demand.
- Scottish wheat drives the grain price in Scotland. For the 1<sup>st</sup> time ever there is a surplus of wheat, Scotland is usually in a deficit of wheat and has to import which helps keep the price up. However, this year due to the surplus in stores the price has dropped.
- The maltsters normally have an 8-10% carry over with crops but this year that figure is 30%. This may mean contracts on offer could be limited and there is currently no word on what will be offered this year.
- It is expected that maltsters will only need to buy in approx. 100,000t this year but plants will still all be running at 100% capacity.
- Wheat prospects seem to be that distilling usage will decrease; feed and milling demand is down compared to the last 3 or 4 years. There doesn't look to be a decrease in area sown in wheat but the yields have increased. There is a high crop carry over but the market remains strong.
- Barley prospects seem to be that crops are generally very good throughout the UK. There was an excellent range of nitrogen levels in crops in England this year but below average levels seen in Scottish crops.
- There are new varieties possibly appearing for growing but Scotland can struggle to grow a crop at a constant quality, mainly due to weather, which will be even more challenging in a changing climate.



There are nine climate change focus farms in Scotland. Keep up to date with their activities at



[www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org)

Meetings are free to attend and all farmers are welcome.

For Ardoch of Gallery, contact farm facilitator David Ross in the SRUC Stonehaven Office on 01569 762 305 or [david.ross@sac.co.uk](mailto:david.ross@sac.co.uk)

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