Do’s & Don’ts
Soils & Drainage

This meeting of the Climate Change Focus Farm HiFEN group was held at Corrimony Farm and focused on Soils and Drainage.

Key points:

- Soil Sampling - know nutrient and pH value of farm soils
- Understand liming value of different products and assess which one is right for you
- Assess farm soils for compaction
- Review farm drainage - are there cheap and easy measures you can put in place to support existing drainage?
- Compile a drainage plan for your farm, identifying existing drainage and areas for future improvement

Soil Sampling - Best Practice

Without knowing the nutrient and pH values within your farm soils, it’s difficult to accurately apply additional nutrients. You could be over or under applying - each will cost you money in terms of spending on excess product or by not achieving target crop yields.

You could use a grid sampling techniques to assess farm soils. Grid sampling is done by taking between 1 - 4 samples per Ha and 12 sub samples from a grid in a circle about 15cm from the grid centre. This allows for at least one sub sample from every pass of the lime spreader when it was previously spread with lime no matter which way the spreader passed through the grid (see diagram).

Something to remember is that the higher the sampling rate the more expensive the cost will be, however it also means the results will be more accurate.

Grid sampling will allow you to get a truer representation of the range of pH levels across your fields. This allows you to spread lime based on the actual pH result from the lab. This decreases the variability of pH after the precision application of lime has been done, resulting in a more consistent pH level throughout the field.
Know your Soil Texture

Soil texture is the term used to describe the physical composition of the soil including the percentage of sand, silt and clay. It also refers to the mineral fragments of the soil and not the water or organic material. Soil texture can be estimated by hand, but some soils will need laboratory analysis to accurately confirm their soil texture class.
Soil Structure

Good soil structure will have macropores and cracks that allow water infiltration and drainage. This keeps the soil aerated which reduces nitrous loss and increases water uptake and crop yield.

A good soil structure will be conducive to a well developed root system which will result in a healthy crop.

Soil Compaction

A compacted soil will have lost its pore spaces, reducing the air spaces and reducing water infiltration through the soil.

The main causes of soil compaction include over-cultivation or continuous cultivation, the use of heavy machinery and over-grazing or grazing in wet conditions.

Top tips for maintaining farm drains

It is important to have a good programme of drainage maintenance in place on the farm. Its worth considering the following:

- mark outfalls clearly and clear them on a regular basis, either annually or biannually.
- How often you clear drains can depend on your soil type:
  - clay soils - clear ditches every 3 to 5 years
  - Peaty soils - every 2 to 3 years
  - Sandy soils - every 1 to 2 years
- Ensure that any trees, shrubs or bushes on the banks are cut back every 3 to 5 years; this is especially important regarding flood banks.
- Check and clear culverts on an annual basis (before Autumn time in preparation for winter rainfall)
Top tips for maintaining farm drains (cont.)

- Check flood banks for any damage in the summer months and again after any flooding has occurred to allow time to fix any issues addressed before winter rainfall or other floods.
- If your drainage system includes flap valves then you should ensure they are checked on an annual basis, they should be free to open and close before winter rains.
- Mark unusually wet areas on your drainage plan. This can help you to identify areas where existing drainage may need repaired or where new drains are needed.

Don't ignore your drains!

Affects of Poor Drainage include:

- Reduces crop yield - leads to low nutrients, toxins, oxygen deficiency etc.
- Encourages poor vegetation – rushes, buttercup
- Affects soil management - e.g. cultivations
- Reduces access to the field
- Increases animal health risks – e.g. Liver Fluke
- Wastes fertiliser
- Increases diffuse pollution risks

Benefits of Good Drainage include:

- Improved root growth
- Better crop and grass yields
- Better animal health – reduces risk of some parasites and diseases
- Less surface run-off (diffuse pollution)
- Less soil damage
- Longer utilisation of fields

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

Meetings are free to attend and all farmers are welcome.
For more information on HIFEN group of farms contact project facilitator derek.hanton@sac.co.uk or telephone 01463 233266

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