

Soil Sampling II - Benefits to your business Practical Guide



Soil sampling and analysis offer fundamental information to farmers and crofters on pH and nutrient levels available in the soil highlighting areas requiring improvement to support nutrient demand from the growing crop.

This practical guide details how soil sampling can benefit businesses by increasing productivity and create efficiencies on fertiliser inputs through better nutrient planning.

Why sample your soil?

Soil sampling is a simple and easy technique with relatively small costs to have samples analysed. It measures the pH and nutrients in the soil, helping you make informed decisions on the type and quantity of fertiliser or manures required to reach target levels for optimum crop production. This allows better planning of nutrient applications to the soil, avoiding over or under application of particular nutrients (such as when the same fertiliser is applied each year with no adjustment for changes). Not only will this make your business more efficient, it will also help to reduce the risk of valuable nutrients being lost to the environment.

Interpreting the results

The analyses results will be summarised in a table which will show what was tested, the result, the status level for each nutrient, the soil pH and a lime recommendation (see below). The nutrient status levels will tell you if you need to make adjustments to your management strategy to ensure your soils are kept on target. The factors which are tested in a routine soil analysis include pH, lime requirement, Phosphorus, Potassium, and Magnesium levels. From the status of each nutrient or factor, an indication is given as to whether more or less is required.

Our Practical Guides cover five useful topics:

1. Use energy and fuels efficiently
2. Renewable energy
3. Lock carbon into soils and vegetation
4. Making the best use of nutrients
5. Optimise livestock management

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www.farmingforabetterclimate.org
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Determination	Result	Units	Status
pH	5.8		
Lime req (Arable)	4.0	t/ha	
Lime req (Grass)	0.0	t/ha	
Extractable Phosphorus	6.93	mg/l	M(-)
Extractable Potassium	132.0	mg/l	M(-)
Extractable Magnesium	138.0	mg/l	Mod



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How soil analysis can benefit your business

Soil analysis can benefit all farming systems by increasing the efficient use of both purchased and home produced fertiliser inputs.

The analysis results show the nutrient levels in the soil, allowing you to adjust fertiliser applications according to the recommendations provided in the SRUC Fertiliser Technical Notes. These more targeted fertiliser applications reduce the risk that excess nutrients are lost to the environment and ensure crops are not deficient in the major nutrients.

Ensuring a correct soil pH remains the most important aspect of soil analysis. The ideal pH target varies depending on the crop being grown and soil type. For example, sandy soils require a higher pH than peaty soils. (see FAS Technical Note TN 656 *Soils information, texture and liming*). The soil analysis results will provide you with a lime recommendation based on the cropping information you have provided.

Many other factors can also affect the uptake of nutrients by growing crops including soil compaction and poor soil structure limiting root growth and therefore uptake of nutrients. The VESS (Visual Evaluation of Soil Structure) guide can be used to measure soil structure.

Achieving the correct balance of nutrients in the soil without over-applying nutrients can not only save money but can also mitigate the effects of climate change by ensuring greater efficiency of production and optimum use of nutrients.

Once soil analysis has been received from the lab, detailed plans of fertiliser applications can be created either using the SRUC Technical Notes or using PLANET Scotland software freely available at www.planet4farmers.co.uk/. PLANET Scotland recommendations are based on the Fertiliser Technical Notes series available online.



GPS soil analysis

Soil analysis can be further refined by using GPS soil sampling for pH testing. This process divides fields into a grid system with each section equating to 0.25 ha. These smaller sections show more variations within a field, which may not be registered through traditional soil sampling, as the whole field will have an average figure, ignoring variation across the field that can impact yields.

This technique can help you to improve cost benefit of crop inputs with accurate detail of where lime applications are required.

GPS sampling of phosphate and potash can also be applied to farming systems for more insight into the most efficient fertiliser applications and practices.

