

Soil and Nutrient Network



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Helping farmers improve soil and nutrient management

Case study - Clachan Farm, North Uist

The host for the Uist Soil and Nutrient Network is Donald Norman MacDonald. Donald has the tenancy of Clachan Farm, a croft on the Isle of North Uist, in the Western Isles. The croft and other land which is sublet by the business extends to over 320ha.

The current stocking on the croft consists of a herd of 40 spring calving cows and 195 breeding ewes. The cattle herd is a mix of Limousin and Simmental cross cows which are put to a Charolais Bull; a Limousin Bull hired through the Crofter Bull Hire Scheme is used to cover heifers. Calves are sold store with the bulk leaving in October. North Country Cheviots make up the breeding sheep flock and these are crossed to a Suffolk terminal sire.

There is a large variation in soil types across the croft, ranging from calcareous machair type land on the coast, to more organic peaty soils as you move inland. This sees pH range from highs of 7.8 to lows of 5.2.

Large areas of moorland to the east were successfully reseeded during the 70's and went on to provide sufficient grazing to maintain stock during the summer and autumn months however there has been a noticeable decline in the quality and quantity of the grazing in these fields over the years.



Clachan Farm - Soil Analysis

To help ascertain the current pH and nutrient levels on the croft sampling was undertaken. A number of fields were sampled including machair fields which are used for silage production and some reseeded hill fields which are for grazing. The large variation in soil type across the farm lead to some quite stark differences in pH. Due to the low levels of fertiliser applied it was no surprise to see that P levels were low, this is one area which we are looking to address.

Field	Analysis	pH	P	K	Mg
1	SRUC	6.4	L	VL	M
2	SRUC	5.3	L	M-	M
3	SRUC	5.2	VL	M-	M
4	ADAS	7.8	1	0	1
5	ADAS	7.9	2	0	2
6	ADAS	8.0	1	0	1
7	ADAS	7.8	1	0	2

Fields 2 and 3 were reseeded during the 80's and have now reached a stage where the pH is well below target. Applying liming material to these fields to lift the pH would significantly improve the potential grass yields. Furthermore it would lead to improved utilisation of applied fertiliser.

In Uist the most economic liming material is sand. Assuming an neutralising value (NV) of 36%, sand is usually applied at a rate of 1.4 times that of lime. It can be spread with a lime spreader or for small areas a shovel! Use our [Liming Calculator](#) to work out how much lime you should be applying.

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 @FASscot



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Soil Analysis Method and Recommendations

Soil Sampling - Olsen or Morgan's

As with anywhere else in the country soil testing is a crucial step in managing a healthy soil. It will provide details of soil pH, and the status of major nutrients. If you don't measure it, you can't manage it! Due to the vast differences in soil types and pH we have here on Uist selecting the correct method of analysis is critical as it can have a significant effect on the resulting fertiliser recommendations.

The calcareous based machair soils should be tested using the ADAS method (Olsen bicarbonate) as this is suited to areas with a pH above 7. Using the standard SRUC method (Modified Morgan's) is likely to give misleading results in that it tends to overestimate the amount of both P and K which is available to the crop on these soils. Away from the unique Machair soils the SRUC test is the most appropriate and should be used.

Once you get your results it is imperative that the results of the analysis are interpreted using the correct recommendations.



pH

pH is typically the main limiting factor and should be addressed before any other deficiencies in the soil. The majority of crops on Uist are grown on the machair land. These machair areas have a high pH, and do not require liming. On the opposite end of the pH spectrum are the hill reseeds, the majority of these were improved during the Island Development Programme in the 1980s and are now badly in need of rejuvenation as the pH and nutrient levels have dropped considerably below target in many cases.

Macro Nutrients

Machair areas, with the associated high pH are generally found to be low in P and K. Fertiliser should be targeted to replace nutrient offtake as the soil is prone to leaching or locking up nutrients applied in excess of crop needs. Due to these leaching and lock up issues, it is not economical to aim to build soil P and K reserves on most machair soils. The hill reseeds would typically benefit from correcting P and K levels in the soil, but only once the pH has

Optimising Grass Yield and Quality

A large number of crofters in the Uists are in agri environment agreements, as a result much of their land will have restrictions on grazing and cropping dates. These restrictions, particularly the late cutting of silage crops, have a negative impact on both the yield and quality of the crops which can be harvested. David Lawson, SRUC grassland agronomist came to visit the group to discuss potential ways to mitigate the losses. He suggested the following top tips.

Late heading varieties

To improve grassland quality consider using mixes which contain a high percentage of late heading varieties, this will help particularly where late silage cuts are being taken as a result of agri-environment agreements.

Splitting N applications

Consider splitting N applications on silage fields with half applied at the start of the grazing season and the remainder applied when fields are shut off for silage.

Appropriate legumes in sward

Ensuring swards contain a good content of clover or other legumes will help to reduce the levels of bagged nitrogen which needs to be applied. Due to the tough growing conditions in Uist clover varieties should be small leaved varieties as these are hardier and more likely to endure the climate. On the calcareous machair soils birds foot trefoil could also be added to the mix as a substitute to clover.

CAGS Funding

- There is potential funding available to crofters through the Crofting Agricultural Grant Scheme (CAGS) to help with the cost of rejuvenating old pasture.
- To apply for the grant you need to carry out soil analysis and get a recommendation. The cost of this sampling along with the cost of fertiliser, lime, grass seed and labour are eligible for grant aid.
- The intervention rates are 60% for over 40's or under 40's who have been in business over 5 years. Under 40's who have been in business under 5 years get a higher rate of 80%