

Case Study

Calcifert Sulphur

Calcifert Sulphur application for grass silage



About Calcifert Sulphur

Applying Calcifert Sulphur granulated calcium sulphate is a quick and easy way to supply both calcium and sulphur to soil.

With a typical analysis of calcium as CaO: 39% and sulphur expressed as SO₃: 56%, Calcifert Sulphur is one of the purest calcium sulphate products on the market. Calcifert Sulphur has a neutralising value of zero, meaning it won't affect the pH of your soil.

It can be easily applied using a tractor-mounted fertiliser spreader, providing flexibility to farmers and growers.

Peter Clayton farms in Malpas, Cheshire. Calcifert Sulphur trials were carried out on two of Peter's fields used for grass silage. Field 1 has a history of significant applications of slurry due to its proximity to the farm buildings. Field 2 is not as easy to access and therefore received lower application rates of slurry.

Two application regimes of Calcifert Sulphur were used on this farm in the spring. A single application of 200kg/ha (68kg/ha Ca & 112 kg/ha SO₃) was applied to Field 1 in March. On Field 2, two applications of 90 kg/ha (31kg/ha Ca & 51kg/ha SO₃) were applied, one before each silage cut in March and June.

Tissue sampling results

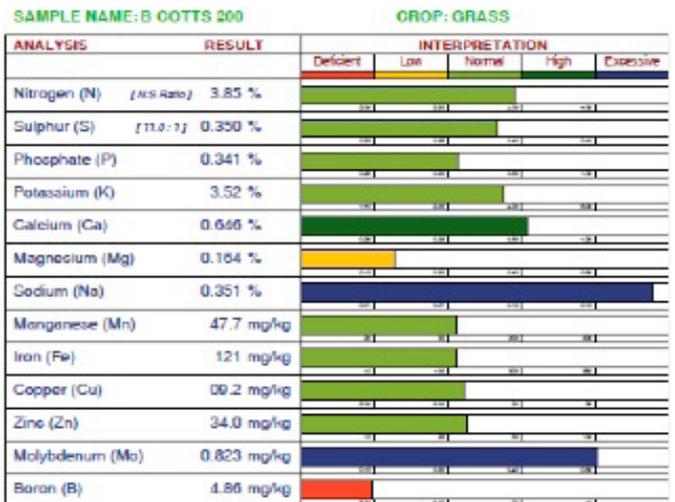
Sampling was carried on two dates; one in late April just prior to first cut, and the other in July before second cut. The main objective of sampling was to explore any potential deficiencies or excesses of sulphur in the crops by measuring nitrogen and sulphur to calculate the N:S ratio.

N:S ratio from tissue sampling			
	Application Rate	April	July
Field 1	200 kg/ha	10.9:1	11:1
Field 1 (control)	Zero	13.6:1	15.4:1
Field 2	90 kg/ha x 2	9.29:1	11.5:1
Field 2 (control)	Zero	15.6:1	18.5:1

The results show an improvement in sulphur uptake over the control blocks in both fields. The difference is more significant in Field 2 which had lower application rates of slurry previously and therefore not the same background sulphate in the soil.

It is clear from the Field 1 results there was a significant amount of soil sulphate present before first cut. This is the result of previous slurry spreading keeping the organic matter levels topped up. However it is clear a sulphur deficiency could easily occur for second cut as the N:S ratio gap between the treated and untreated parts of the field widened.

Field 2 results show a much more significant improvement over the control for both samples. The second sample in particular shows the crop was suffering from a sulphur deficiency and would not have been utilising nitrogen as efficiently.



The results of the tissue sampling, shown above, illustrate the uptake of a range of nutrients in the crop prior to second cut. Compared to the control sample, nutrient uptake across the board had improved. Of particular note were the sulphur and phosphate levels which moved from deficiency to normal.

The importance of sulphur

Sulphur is commonly ignored within a fertiliser programme for grass particularly with reference to the potential improvement in silage quality. Sulphur is vital in the production of protein as a core element of two essential amino acids. Sulphur leads to higher proteins when applied to deficient soils. Evidence also suggests soil deficient in sulphur shows lower levels of water-soluble carbohydrate, important for good fermentation and silage quality.

Shortage of sulphur in silage can affect how effectively its used in the rumen as the microbes present require both nitrogen and sulphur to produce their own protein. A shortage of sulphur stops them working when depleted, reducing forage digestibility.

Providing sulphur to the crop improves the utilisation of nitrogen and ultimately yield of the crop. Walking the treated crops on this farm showed an increase in crop cover, also evident at harvest.

Summary

Sulphur is a nationwide issue with the majority of the UK fertiliser programmes requiring its inclusion. In this trial, the tissue sample results show sulphur has been supplied effectively to the crop by Calcifert Sulphur, improving the N:S ratio significantly. This will have facilitated more efficient nitrogen utilisation and reduced nitrate leaching.

Research has shown the importance of sulphur in the production of quality silage with improved yields, protein levels, digestibility and rumen function of the cow. Knowledge of a farm's soil nutrient status is essential to prevent deficiencies or excesses being overlooked. Soil tests should be carried out to establish levels, taking into account slurry and manure policies, with Calcifert Sulphur applied where required.