Lime the Forgotten Fertiliser

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- 65 to 70% of grassland soils are below the target soil pH 6.3
- 60% of tillage soils are below the target soil pH 6.5
- National lime use currently ~50% of what it was in the 1980’s
- Grassland mineral soils release up to 80kg N/ha once restored to soil pH 6.3
- Maintaining the correct soil pH is critical for nutrient availability of N, P and K
- Lime will increase the production potential of acidic soils by ≥1.0 t/ha of grass DM

It is well recognised that liming is an essential ingredient in maximising the production potential of our soils. Liming acidic grassland soils can release up to 80kg of N which is worth €80/ha annually. Maintaining the soil pH in the optimum range of 6.3-6.5 will also increase the availability of stored soil P and fresh fertiliser and manure P inputs. The application of lime is often influenced by factors such as cash flow and weather conditions. Based on soil test results and lime use statistics over the last 3 decades, there is clearly indications that lime is the forgotten fertiliser on the majority of Irish farms.

Soil Testing & Lime Advice - What should you do?

Test soils on a regular basis (once every 3 to 5 years) to monitor soil pH levels. This will provide a reliable basis for calculating the rate of lime required to suit the soil types on your farm. It is also important to select the correct type of lime (i.e. Calcium vs. Magnesium). Where soil magnesium levels are low (<50ppm), apply magnesium limestone to correct soil pH and Mg levels. Knowing the lime requirement for your soils is the starting point to planning and organising what and where lime applications are needed.

Liming Strategies - Which scenario does your farm fall into?

The following are 3 possible scenarios that you may identify for your farm following the receipt of soil test results.

1. Maintenance lime applications
   Soil testing on a regular basis and liming as per soil test report is a good approach to liming. In this situation a smaller quantity of lime maybe required on a regular basis depending on the farming system. This can be applied at any time of the year to maintain optimum soil pH. For example lime can be applied at sowing time on tillage farms or when grass covers are low (e.g. post silage harvest) on grassland farms.
   It is good practice to apply lime to 20% of the farm annually. This strategy has many benefits firstly, spreading the cost of lime over a 5 year period. For example take a 100 acre farm that requires a maintenance lime application of 2t/ac over each 5 year period. If lime was applied to 20 acres per annum it represents a relatively small annual farm lime maintenance cost of €5/ac/year (total €500 per year) using ground limestone costing €25/tonne.
   Secondly, on farms with high molybdenum (Mo) risky soils, treating 20% of the farm annually reduces (the risk of an acute issue of copper deficiency across the entire farm from occurring in cattle.
2. 50% of the farm requires lime
Soil test results indicate that 50% of the farm requires lime. Therefore target lime applications to these fields based on soil results. It is recommended to not exceed 3t/ac in a single application. Apply lime when soil conditions are suitable for example early spring time / after grazing / after 1st cut silage / reseeding time. On tillage soils apply to ploughed soils after rolling / pressing and work into the seedbed during crop establishment. Alternatively apply to stubble fields after harvest time.

In this example our 100 acre farm requires 4t/ac of lime on 50% of the area. This approach will require additional cash flow to cover the cost of lime. It's recommended to apply 50% now and the reminder in year 3. The cost of lime is now spread over a 3 year period with an initial whole farm cost of €25/ac in the year 1 and the remaining €25/ac in year 3. In subsequent years lime should be applied on a maintenance approach for the remainder of the farm.

3. 100% of farm requires lime
Where soil test results show that the whole farm has sub-optimal soil pH a different approach will be required. Low soil pH will be a major limiting factor to the productivity of the farm. Therefore if grass or crop production is required across the whole farm (i.e. for grass with reasonably high stocking rate) it's important to focus on the whole farm to increase performance rather than a proportion of the farm. It will be important to examine the costs and budget accordingly and spread the cost of lime. The strategy is to apply 50% of the recommended lime across the whole farm. For example where the recommended rate of lime is 3t/ac, apply 1.5ton/ac now and apply the balance in year 3. This will allow the opportunity to capitalise on the benefits of liming from increased N, P & K availability to enhance grass and grain production.

This strategy incurs a higher annual lime costs in the initial years. The typical cost of lime in this situation will be €38/ac in year 1 and €38/ac in year 3. The main difficulty with this scenario is getting suitable times of the year to apply lime as the whole farm requires an application. This can be done in a staged approach over time by selecting smaller proportions of the area (e.g. treating silage ground, spring and autumn applications). In this scenario every opportunity should be taken to improve soil pH levels by applying lime over time.

**Liming Tips**

- Calcium (Ca) limestone is faster acting and more reactive than magnesium limestone in lifting soil pH.
- Magnesium (Mg) lime has a somewhat slower reaction time and more suitable for soils with high Mo risk.
- Leave a minimum of 3 months between lime application and closing for grass silage.
- Leave a minimum of 3 months between liming and the application of urea or slurry
- For crop establishment apply lime at sowing time and work into the seedbed
• On soils that are prone to poaching a “little and often approach “to lime application is best.

**High Molybdenum Soils (Mo)**

Take care when liming high Mo risk soils as increasing soil pH above 6.2 exacerbates the problem with increased Mo availability leading to reduced copper uptake in the rumen and deficiency in cattle (Rusty coats). It is advised to maintain a soil pH of less than 6.2 on these high Mo risk soils. An alternative strategy on these soils is to lime to the target soil pH 6.3 as normal and to provide copper supplementation to the animals as routine. Consult with local advisory services to develop a liming strategy in situations where soil Mo is an issue.