

Lime: the forgotten fertiliser

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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 nitrogen (N), which is worth €80/ha annually.

Maintaining the soil pH in the optimum range of 6.3 to 6.5 will also increase the availability of stored soil P and fresh fertiliser and manure P.

The application of lime is often influenced by factors such as cashflow and weather conditions. Based on soil test results and lime use statistics over the last three decades, there are clear indications that lime is the forgotten fertiliser on the majority of Irish farms.

Soil testing and lime advice – what should you do?

Test soils on a regular basis (once every three to five 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 (C) v magnesium (Mg).

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 three possible scenarios that you may identify for your farm when you receive your soil test results.

LIME THE FACTS

- 65% to 70% of grassland soils are below the target soil pH6.3.
- 60% of tillage soils are below the target soil pH6.5.
- National lime use currently ~50% of what it was in the 1980s.
- Grassland mineral soils release up to 80kg N/ha once restored to soil pH6.3.
- 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.

1. Maintenance lime applications

Soil testing on a regular basis and liming as per recommended on your test report is a good approach to liming. In this situation, a comparatively small quantity of lime may be 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 on grassland farms when covers are low (e.g. post-silage harvest).

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 five years. For example, take a 100-acre farm that requires a maintenance lime application of 2t/ac over each five-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) with ground limestone costing €25/t.

Secondly, on farms with a risk of high molybdenum (Mo), treating 20% of the farm annually reduces the risk of acute copper deficiency across the entire farm from occurring in cattle.

2. Half of the farm requires lime

Soil test results indicate that 50% of the farm requires lime. Therefore, target lime applications to those fields based on soil results. It is not advisable to exceed 3t/ac in a single application.

Apply lime when soil conditions are suitable, for example early spring time, after grazing, after first-cut silage or at reseedling. On tillage land, apply lime to ploughed soils after rolling or pressing and work into the seedbed during crop establishment. Alternatively, you could apply lime to stubble fields after harvest.

In this example, our 100-acre farm requires 4t/ac of lime on 50% of the area. This approach will require additional cashflow to cover the cost. Apply 50% now and the remainder in year three. The cost of lime is now

Liming
TIPS

- Calcium (Ca) limestone is faster acting than magnesium limestone in lifting soil pH.
- Magnesium (Mg) lime has a somewhat slower reaction time and is more suitable for soils with high Mo risk.
- Leave a minimum of three months between lime application and closing for grass silage.
- Leave a minimum of three 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 is best.



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spread over a three-year period, with an initial whole-farm cost of €25/ac in year one and the remaining €25/ac in year three. In subsequent years, lime should be applied on a maintenance approach for the remainder of the farm.

3. All of the 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 to 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 1.5t/ac now and apply the balance in year three.

This will allow the opportunity to capitalise on the benefits of liming from increased N, P and K availability to enhance grass and grain produc-

tion. This strategy incurs a higher annual lime cost in the initial years. The typical cost of lime in this situation will be €38/ac in year one and €38/ac in year three.

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.

High molybdenum soils

Take care when liming high molybdenum-risk soils, as increasing soil pH above 6.2 exacerbates the problem. Increased Mo availability can lead to reduced copper uptake in the rumen and deficiency in cattle (rusty coats).

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.

