Liming Grassland Soils for Drystock Production

Why do it?
70% of Drystock farms are below the target soil pH 6.3
Increase the availability of soil nutrients N, P & K
First step to consider when improving / building soil P levels
Releases up to 80kg N/ha/year worth €80/ha/year
Maximise grass production annually

Why are farmers reluctant to apply lime?
Heavy soils prone to poaching / poor trafficability
Can’t use urea / cattle slurry where lime applied
Lime application tends to involve heavy application equipment
Limited windows of application for lime
Limited recognition of the value of lime
Lime takes 2 years to fully react and to see benefits

Dispelling some of the Myths around liming
  o Some soils tend to poach (break down of soil organic matter) easily after liming on certain soil types. On these soils apply a reduced rate of lime on a more regular basis to control soil acidity.
  o It is recommended to leave at least 3 months between liming and urea / slurry application to reduce the N loss through volatilization. To overcome this apply urea / slurry first and apply lime 7 to 10 days later.
  o Lime can be applied at any time of the year. Ideally apply after grazing or after silage harvest.
  o Lime will start working once it applied and washed into the soil. The finer fractions of the lime will adjust soil pH while the large components will work over an 12 to 24 month period in correcting soil pH to the target pH. 35% of the ground limestone is <0.15mm which is the most reactive part to the lime in the year of application. This will remove soil acidity and improve availability of major soil nutrients.
  o Maintaining soil pH will result in the release of soil N from the soil organic N pool valued at €80/ha/year

Lime Advice

Ground limestone

- Apply lime based on the soil test report.
- Aim for a pH 6.3 to 6.5 on mineral soils & pH 5.5 on peaty soil types
- On high molybdenum (Mo) soils maintain soil pH <6.2
- Aim to apply lime to 20% of the farmed area annually
- Don’t exceed 7.5t/ha in a single application and apply balance in year 3.
Granulated Limes

- Apply at a ratio of 3:1 for example where 3t/ac ground limestone is required apply 1tonne of granulated lime over a 5 year period (1,000 ÷ 5 = 200kg/ac/year)
- Apply granulated lime annually.

Importance of soil pH and Nutrient availability

Recent research from Johnstown Castle clearly shows the importance of lime in relation to the availability of soil P and the improved efficiency from P applied bag fertilizer. Figure 1 shows the benefits of lime in un-locking soil P and is the first step to consider when building soil P levels.

![Figure 1](image.png)

*Figure 1:* Average change in soil test P (Morgan’s) across 16 soils (av. pH 5.5) treated with P (100 kg/ha of P), Lime (5 t/ha of lime), and P + Lime and incubated over 12 months in controlled conditions.

Key Points
Liming soils will result in the following;

1. Increased grass production annually
2. Aim to maintain a soil pH 6.3 to 6.5 on mineral soils
3. Increase the release of soil N by up to 80kgN/ha/year
4. Increase the availability of soil P and K
5. Increase the response to applied N, P & K as either manures or fertilizer
6. Always apply lime as recommended on the soil test report