

Grassland liming

Liming is required to maintain the soil in the optimal pH 6-6.5 range for grass and clover production (Section 11).

For new re-seeds liming should be undertaken at pH 6.4 or below.

Soil acidity increases and pH declines as calcium is leached from the soil into drainage water.

This movement is particularly marked in areas of high rainfall and, as water movement through soil is not uniform, it can have a patchy affect on field productivity.

High calcium contents mean calcareous soils normally maintain a fairly stable pH and require little, if any, liming.

On non-calcareous soils liming is usually required every 3-5 years, more frequently on lighter land.

In addition to calcium, major elements like magnesium, potassium and sodium also contribute to the pH status of the soil.

Assessing Lime Sources

Several sources of lime (calcium carbonate) are available – including ground limestone, chalk, calcareous sea sand and lime from sugar beet processing (**Table 1**).

The effectiveness of the lime depends on its:

- Neutralising value (NV)
- Fineness of grinding – the finer the more quickly available
- Hardness – softer materials are also available more rapidly.

How do you compare one lime to another?

The value of a liming material is based on its ability to neutralise the soil quickly. A lime with a high percentage passing through a 150 micron sieve will work quickly as it has a larger proportion of fine particles which will work its way into the soil structure quickly to start its work. A lime with a high NV has a greater ability to neutralise. Therefore, lime value can be determined by its neutralising value (NV) and its fineness (% passing through a 150 micron sieve). So, Granular lime with a high NV of 54 and 100% passing through a 150 micron sieve would have the greatest value. Coarse screened limestone with a low NV and only 15% passing through the sieve would have the lowest value.

What about using limes from outside your area so you do not compound any inherent local problems?

There is no harm in using lime from outside the area if you do not want to increase magnesium levels. But it is a bit of an old wives tale that it is better to use lime from outside the area. 'Local' lime with a good NV and % passing through a 150 micron sieve will work perfectly well in all circumstances.

Over-liming can reduce mineral availability in the soil, so the target must always be to maintain the correct pH range for the crop.

In order to prevent trace element lock-up and reduced microbial activity in the medium term (6-12 months) lime applications are best limited to one tonne/acre (2.4 tonnes/ha).

Applying Lime

On pastureland lime, should always be applied:

- Before final cultivations when re-seeding or adding clover
- After ploughing – to avoid placing it too deep in the soil profile
- After grass sprays such as Roundup – which can be de-activated on contact
- Before direct drilling – to aid in breakdown of surface crop residues
- To silage fields at least 2-3 weeks before spring N fertiliser application
- Before lush grass growth occurs
- If you have high magnesium soil indices (3-4) avoid using a magnesium-containing lime.

On sandy soils less lime is required to increase pH to the recommended range.

Unless the pH is at or above 6.5 or can be raised to 6.5 by liming, over-sowing or re-seeding with perennial ryegrass and clover should not be attempted.

Frequent smaller applications of lime are more effective than large infrequent applications.

Table 1: Typical Liming Materials

Liming material	Description	NV	Minimum (%) passing through sieve of			
			6.3 mm	5.0 mm	3.35 mm	150 micron
Ground limestone	Ground limestone rock	50		100	95	40
Limestone dust	Screened limestone	48		100	95	20
Coarse-screened limestone	Coarse limestone dust	48		100	95	15
Ground chalk	Natural chalk	50	98			
Calcareous sea sand	Available from Cornwall and Scotland	25-40	100			
Magnesium ground limestone	Min 15% Mg O and up to 40% from Derbyshire			100	95	40
Granucal	Very finely ground chalk granulated for spreading (containing 8% Mg O)	54				100
LimX70	Available from British Sugar					
Phastlime	Mixture of burnt lime and screened lime from Nottinghamshire	61				

Source: Kingshay Farming Trust.