GRASSLAND ADVICE ON LIMING FOR BEEF FARMS

THE BENEFITS OF LIMING

- Increase grass production annually
- Release up to 80kg N/ha/year
- Unlock soil Phosphorus & Increase the response to freshly applied N, P & K

Lime is a soil conditioner and controls soil acidity by neutralising the acids generated from artificial N use and rainfall.

Soil pH has a large influence on soil nutrient availability. Aim to maintain minerals in the range pH 6.5 to 7.0 and peat soils pH 5.5 to 5.8 for most readily available.

The Impact of soil pH on nutrient availability on a mineral soil

![Figure 1: Soil pH <6.0 will reduce the availability of soil N, P & K and the response to applied nutrients]

- Reduced P Availability
- Fertilisers less available

IMPORTANCE OF SOIL PH FOR GRASS PRODUCTION

- Maintaining soil pH in the optimum range will increase grass production by up to 1.5t DM/ha.
- Correcting soil pH from 5.5 to 6.3 increased grass production by 1.0tDM/ha (See figure 2)
- The application of 5t/ha ground limestone produced similar grass yields compared to the application of 40 kg/ha P fertiliser alone.
- The addition of lime + P fertiliser in combination produced the largest grass yield response (1.5 t/ha more grass than the control in the season of application).
- Lime increases the availability of both stored soil P and freshly applied fertiliser P

![Figure 2: Relative grass DM yield response in grassland treated with Lime (5 t/ha of lime), P fertiliser (40 kg/ha of P), and P + Lime over a full growing season (No Fert. = No P, No Lime)]
We often put up many reasons as to why not to calve heifers at 24 months such as if they calve at 2 years they will not calve again at 3 years. The table above doesn’t really support this notion. Heifers that calved at 23-26 months had as good a calving interval and calved down again as a second calver as heifers calving down in the older age categories.

Another reason is that they are harder to calf at a younger age. The figures do show that younger heifers do have slightly higher calf mortality. On the same token heifers irrespective of age will be more difficult to calve and as the figures show will need a high level of assistance at calving. Perhaps this could be reduced if we were more selective in the sires we put on heifers. Even the younger calving heifers are being mated with sires with an average calving difficulty of 4.7%. Interestingly our dairy counterparts try and mate their heifers calving down at two years with sires with a calving difficulty of 2% or less. We may never drop that low on the beef side but should we aim for 4% calving difficulty or less on heifers.

Heifers that calved for the 1st time at 23-26 month had greater survivability in herds with almost 40% reaching 5th parity compared to only 4% of those that calved for the 1st time at 31-35 months.

KEY POINTS

Heifers that are to calf down at two years of age will:
• Come from the best cows in the herd and be sired by bulls with strong maternal traits.
• Be born early in the calving season to allow them to be heavier at bulling
• Need to achieve a daily liveweight gain of 1.1-1.3kg/day up to weaning.
• Have to be fed to achieve 60-80kg liveweight over the first winter so they will need good quality silage plus 1-2 kg of concentrates.
• Be turned out early in spring to grass to achieve good weight gain in the run up to bulling
• Have reached 60% of their mature weight by bulling.
• Be bred to a known easy calving sire (ideally < 4% calving difficulty)
• Have achieved 80% of their mature weight at calving.

MATURE COW WEIGHT WEANING WT . BULLING WT . CALVING WT . TARGET % OF MATURE WT .

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<tbody>
<tr>
<td>600KG</td>
<td>260-280kg</td>
<td>360kg</td>
<td>480kg</td>
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<tr>
<td>700KG</td>
<td>300-320kg</td>
<td>420kg</td>
<td>560kg</td>
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RETURN ON INVESTMENT (ROI) FROM GROUND LIMESTONE USAGE

• Research shows an average grass production response of ~1.0t/ha from lime alone
• This is worth €105/tonne
• An investment of €25/ha to maintain soil pH in the optimum and returns €105/ha
• This represents a return of €4 for every €1 invested in lime

ADVICE ON SPREADING LIME

How much lime?
• Test soils on a regular basis (every 3 to 5 years) to determine lime requirements
• Only apply lime based on a recent soil test report
• Don’t exceed 7.5t/ha in a single application
• Application rates >7.5t/ha, apply 50% now & remainder in 2 years

When?
• Prepare a farm liming plan
• Lime can be spread all year round

How Often?
• Apply lime as per the soil test report
• On very acidic soils apply 50% now and remainder in 2 years’ time
• Apply lime to 20% of the farm annually

Which Lime to Use?
• Calcium ground limestone is most common
  o Fast acting and rapid pH adjustment
• Magnesium (Dolomitic) ground limestone is available
  o Slower to react but higher liming value
  o Useful on high Mo soils
• Granulated Limes
  o Finer lime (less than 0.1mm particle size) and very reactive
  o Apply as maintenance product where soil pH is in the optimum range
  o Consider costs over a 3 to 5 year period

Lime & High Molybdenum Soils
• Soils with high Mo status give rise to copper deficiency in grazing animals
• Increasing soil pH increases Mo availability
• To reduce elevated Mo levels maintain soil pH <6.2

Lime & Slurry /Urea
The type of N in slurry and urea is ammonical N and prone to loss if applied to freshly limed soils. To avoid N loss the following is recommended
• Leave 7 days between applying urea / slurry application and applying lime afterwards
• Leave 3 months between applying lime first and following with urea / slurry application