

105.01 FERTILISER FOR SPRING GRASS

Spring grass extends the grazing season and can have a major effect on the feeding costs and performance of livestock. This factsheet is a guide for the use of spring fertiliser for grazed pasture. The guide also applies to fields grazed prior to a later silage crop.

VALUE OF SPRING GRASS

- Grazed grass typically costs 5-7p/kg compared to 8-10p/kg for silage and 15-18p/kg for compounds.
- Spring grass stimulates increased milk production in ewes and cows.
- Early grass will allow earlier silage closure for better yields and quality.
- Early growth will favour the most productive grasses (Perennial ryegrasses) in the sward.
- Even with a response as low as 6 kg grass/kg N, nitrogen fertiliser produces a lower cost feed option than a combination of silage and compound feed.

Table 1: Effect of fertiliser N *cost and grass response rate (kg Dry Matter) on cost of spring grass (p/kg)

N Cost p/kg	70p	80p	90p
Response rate - kg DM**/kgN			
6	11.5	13	15
8	9	10	11
10	7	8	9

*At £280/t for ammonium nitrate (34.5%N) a kg of N costs 81p

- There are also significant savings in labour by having stock out on early grass. Total savings (feed + feeding + slurry handling) can be around £1/cow/day.

RESPONSE TO NITROGEN

Grass growth occurs at temperatures above 5°C. Short periods with temperatures high enough for growth will occur before temperatures remain high enough for sustained growth and this can be exploited. Decisions on N application date should be based on a combination of soil temperature prediction and some 'site' and 'sward' characteristics are shown in Table 2.

Soil temperature: IGER has shown a good correlation on upland swards between N response and date of 5.5°C (5 consecutive days) at 10cm soil depth.

Location: Coastal v inland - altitude, aspect, soil type and drainage all affect soil temperature.

Sward type: Early varieties will respond better to earlier N. Young leys have more vigorous spring growth than older leys and permanent pasture.

- N applied too early results in increased N loss through leaching, run-off or gaseous N loss from waterlogged soils. N should therefore **not** be applied onto wet or frozen soils **nor** before the dates indicated in Table 2. The soil is dry enough to receive N when the ground can carry a normal farm tractor without breaking the turf. The risk of run-off on steep slopes requires some additional caution.

Table 2: Spring Fertiliser Application Date Guide

Location/altitude	Early sites*	Average sites	Late sites**
Lowland (<100m)	Early Feb	Late Feb	Early/mid March
Upland (100-250)	Early March	Mid March	Late
Improved Hill (>250m)	Late March	Early April	Late April

If the site has two or more of following characteristics:

***Early Site** – Coastal, S aspect, light soil, well drained, Italian/Hybrid Ryegrass, young ley.

****Late Site** – N aspect, heavy soil, impeded drainage, low PRG ley permanent grass, steep slope.

NITROGEN (N)

- All fertiliser forms of N are water soluble and very mobile. They are easily leached, or subject to run-off from wet soils.
- Under warm, sunny conditions Urea is at greater risk than ammonium nitrate to loss of nitrogen to the atmosphere. Under spring weather conditions Urea has similar efficiency to other N fertilisers.
- Prilled forms of Urea are more easily and uniformly spread but fertiliser applicator density and smaller spread width compared to other fertilisers.

60 kg N/ha is recommended for spring grazing. This should be reduced by 10-20 kg N/ha for grass/clover swards.

- The N value of slurry will depend on its source, dry matter, time and method of application. A typical surface application of cattle slurry may supply about 40 kg N/ha of available nitrogen.

POTASSIUM (K)

- K is associated with the clay component of soil. Light sandy soils have little capacity to retain K. Clay soils hold a larger reserve of total K but most soils will need annual or more frequent replenishment through dung, urine, manures or fertilisers. Soils should be fertilised to maintain a K index of 2- or 2.
- K is an important element for leaf growth. Silage crops remove large amounts (6kg K/tonne fresh silage).
- Excessive applications of K result in inefficient 'luxury' crop uptake. High levels of herbage K may aggravate low magnesium in livestock leading to hypomagnesaemia (GrassStaggers). **K fertilisers should not be applied on grass for spring grazing other than limited amounts on soils at K Index 0.**
- Most of the K is contained in the liquid part of manures and most (90%) is in crop available form. A typical slurry application will provide about 80-120 kg K/ha.

PHOSPHORUS (P)

- Most soil reserve of P is in non-available and non-mobile forms. Available P is measured by soil analysis and this is the basis for fertiliser recommendation. At high Soil Index levels (>3) P losses increase and can cause water pollution.
- Low and high soil pH and low soil temperatures reduces P availability.
- P plays an important role in seedling and root growth. This and the temperature effect on phosphate availability make it an important nutrient for spring grass.
- Where P is required in spring fertiliser it should be in a water-soluble 'available' form (as in compound fertilisers, triple-superphosphate or di-ammonium phosphate).
- The target for grassland soils is Soil P Index 2. On grazed grass annual P requirements range between 60 kg P₂O₅/ha at Index 0 and zero at Index 3. Requirements increase on silage fields. Where there is an annual P requirement all or a part of this should be applied in the spring.
- Most of the P is in the solids part of manures. A typical slurry application will provide about 25 kg P₂O₅/ha of available P. Winter or spring applied slurry will provide sufficient P for spring grass at Index 2.

SULPHUR (S)

- There is an increasing need for S as a fertiliser on grassland in England and Wales. Soils are substantially dependent on deposition from the atmosphere. West Coast and low rainfall areas have low deposition rates.
- Deficiencies are most likely on light, low organic matter soils which receive little livestock manures and are cropped for silage. These soils will frequently need S for second silage cuts. **S is not required in spring grazing fertiliser.**

NOTE: To convert kg/ha to 'units/acre' - multiply x 0.8.

PRODUCT CHOICE

Condition	Product*/Rate
Soil P Index 2 with slurry/manure OR Soil P Index >2 without slurry/manure	Straight Nitrogen: Ammonium Nitrate (200kg/ha) OR Urea (140kg/ha)
Soil P Index 0 or 1 with/without slurry/manures or Soil P Index 2 without slurry/manure	N-P compound (250 kg/ha)