

## 106.01 Fertiliser for Silage – Beef and Sheep

Decisions regarding fertiliser applications on silage ground can have major implications to the quantity and quality of winter forage produced. This fact sheets aims to help you make the right decisions about how much fertiliser your crops need and the best timing for any applications. **All figures are presented as kg/ha – multiply by 0.8 for units/acre)**

### NITROGEN (N)

A 2 cut silage system may produce 10t Dry Matter/ha (equivalent to 16t fresh silage/acre @ 25% DM) and will remove between 200 and 400 kg of N/ha. This nitrogen will have to come either from the soil reserves or from applications of inorganic fertilisers or manures. The **AMOUNT** of nitrogen you should apply will vary, depending on the following:

- How much nitrogen comes from the soil?  
This is generally dependant on previous management of the land

### SOIL NITROGEN SUPPLY

<b>High</b>	Long term grassland with high inputs – received over 250 kgN/ha last year.
<b>Moderate</b>	Long term grassland that received 100 – 25 kgN/ha last year or with substantial clover content. Or a first year ley following 2 or more years of arable – NOT on light sand soil
<b>Low</b>	Long term grassland with low inputs – received less than 100 kgN/ha last year First year ley following 2 or more years or arable on light sand soil
Increase by one class if more than 150 kgN/ha has been applied regularly as organic manure for several years. Decrease by one class if less than 150 kgN/ha has been applied regularly as organic manure & silage has been taken.	

- How long are you planning to shut for?  
The longer the period between shutting and cutting – the more nitrogen the crop will require
- Is it a 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> cut silage?  
Grass growth has different levels of nitrogen uptake through the year and applications should differ accordingly.

### HOW MUCH NITROGEN TO APPLY (kg/ha)

SOIL NITROGEN SUPPLY STATUS	LOW	MODERATE	HIGH
<b>68-70 D Silage</b> (generally 5-6 weeks shut)			
1 <sup>st</sup> cut	150	120	120
2 <sup>nd</sup> cut	110	100	100
3 <sup>rd</sup> cut	80	80	60
<b>64-67D silage</b> (generally longer than 7 weeks shut)			
1 <sup>st</sup> cut	150	150	120
2 <sup>nd</sup> cut	120	100	100
3 <sup>rd</sup> cut	100	80	80

- Following early spring grazing, reduce the 1<sup>st</sup> cut recommendations by 25 kg/ha.
- If growth prior to 3<sup>rd</sup> cuts has been severely restricted by drought then reduce or omit applications.
- Splitting dressings of over 100 kgN/ha will help reduce leaching losses that occur in a wet spring.

One useful rule of thumb is that applications should not be more than 2 ½ kgN/ha for each day between closing up and cutting. This amount should account for N applied in slurry/manure and residual fertiliser applied for any previous grazing.

Greater rates than this will risk high losses and problems with silage fermentation.

## POTASH (K<sub>2</sub>O)

Large quantities of potash are removed in silage crops, which must be replaced if yields and soil indexes are to be maintained. The crucial factor in replacing potash is for applications to be based on a 'little and often' approach. No more than 80 kg/ha of potash should be applied in one dressing to minimise the risks of luxury uptake. Where more than 80 kg/ha is required for 1<sup>st</sup> cut the extra should be applied the preceding autumn. No potash should be applied in spring where grazing may occur before closing for silage to reduce the risk of grass staggers. Applications at the time of shutting for silage should be the same for soil K indexes of less than 3 – correcting soil deficiencies should be done by increasing autumn applications.

	Apply when field is shut for 1 <sup>st</sup> cut	Apply when field is shut for 2 <sup>nd</sup> cut	Apply when field is shut for 3 <sup>rd</sup> cut	Apply to aftermath grazing and/or in autumn + winter			
				Index 0	Index 1	Index 2	Index 3
1 <sup>st</sup> cut silage + grazing	60			140	110	70	0
2 <sup>nd</sup> cut silage + grazing	60	60		200	150	75	0
3 <sup>rd</sup> cut silage + grazing	60	60	60	200	140	50	0

For soils of Index 3 and above – applications at the time of shutting should be reduced to 30 kg/ha.

## PHOSPHATE (P<sub>2</sub>O<sub>5</sub>)

Removal of phosphate by silage crops is far less than potash but to achieve good yields it is essential that sufficient levels are available to the crop. Phosphorous is particularly important for early season grass growth – and will also improve uptake and use of nitrogen.

	Apply as 1 <sup>st</sup> spring dressing				Apply for 2 <sup>nd</sup> / 3 <sup>rd</sup> cuts			
	Index 0	Index 1	Index 2	Index 3	Index 0	Index 1	Index 2	Index 3
1 <sup>st</sup> cut silage + grazing	100	65	30	30				
2 <sup>nd</sup> cut silage + grazing	100	65	30	30	50	30	30	0
3 <sup>rd</sup> cut silage +	100	65	30	30	50	30	30	0

## SULPHUR (S)

Sulphur deficiency is common in silage systems where more than 1 cut is taken, particularly where high nitrogen rates are used and in areas of naturally low levels of atmospheric deposition (north and west areas of Wales, Anglesey and some border regions). Light soils are more prone to S deficiency than heavy soils. Apart from reduced growth rate and yields, the main symptoms of sulphur deficiency are yellowing and stunting of the grass leaf blades. Tests for low sulphur are best carried out by testing fresh herbage collected just before cutting. If your soils are deficient apply 25-40 kg/ha SO<sub>3</sub> as a sulphate containing fertiliser at time of shutting for each cut. Fields receiving regular applications of FYM/slurry are unlikely to need extra S.

## SLURRY AND MANURE

Slurry and farm yard manure (FYM) are an excellent source of phosphates and potash and a good way of returning these nutrients to the land. An average application of cattle manure (12 t/ha) will provide 25kg/ha of phosphate and 60 kg/ha of potash in a form readily available to the grass. A typical application of cattle slurry at 40 m<sup>3</sup>/ha will supply 25 kg/ha of phosphate and 100 kg/ha of potash (these amounts should then be deducted from your next fertiliser application). The most crucial factors in applying FYM and slurry to silage ground are timing and the need to avoid contamination of the crop and high ammonia levels. No FYM should be applied within at least 8 weeks of the planned cutting date. Well diluted slurry should only be applied more than 6 weeks before cutting.

## FURTHER INFORMATION

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 Reading: MAFF Fertiliser Recommendations (RB209)