

Fertiliser for silage: Are you using enough?

Under-fertilisation of grass crops can hit the quality and quantity of silage available over winter. This simple tool can help you optimise your inputs

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Teagasc advisor Joe Hand and Walsh Fellowship masters student Louise Pierce identified inadequate fertiliser application levels as one of the main reasons why farmers do not achieve adequate yields of silage at the time of year when grass quality is at its highest. They developed a simple worksheet to help farmers get their fertiliser programme correct (see Figure 1).

Poor-quality silage is a disaster. Feeding it means you will need to feed higher levels of concentrates to get animal performance, leading to higher costs.

If you decide not to supplement the poor-quality silage, your cattle will perform poorly, achieving low, or zero, levels of weight gain over the winter months.

Given that winter can last up to six months on some of the heavier land, this means that stock might gain no weight whatsoever for up to half the year.

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Often, if faced with low yields, many farmers let the crop grow for another two to four weeks to allow the grass crop to bulk-up. This leads to an increase in the proportion of stem and a serious deterioration in feed value. Any increase in quantity is more than offset by the drop in quality.

Typically, land that is under-fertilised won't have generated adequate grass by mid-May, the target cutting date for quality grass. Using recommended rates of fertiliser on silage land can increase grass yields by 30%, enabling farmers to achieve quality and quantity by mid-May.

The recent Tipperary study by Louise Pearce and Joe Hand confirmed this. This can add up to 80kg on cattle over winter, with reduced costs.

Store cattle
The 80kg of weight gain valued at €2.00/kg liveweight amounts to €160



per head. A weight gain of 20kg (the result of poorly fertilised silage swards harvested late) comes to €40. For a typical beef farm of 100 store cattle, this amounts to an increase in liveweight worth €12,000.

Weanlings
A similar picture emerges when weanlings are housed, but they are usually fed meals in addition to silage, to achieve the target weight gain of 80kg. The level of meal fed will typically need to be increased from one kg per day on good-quality silage, to 3 or 4kg per day where the silage is of poor quality, at around 60% DMD.

Taking an average weanling ration costing €270/t at 16% protein over a 140-day winter, this will result in additional cost of €7,000 in meal where you are feeding 100 weanlings over the winter.

Table 1 summarises the recommended meal feeding rates for weanlings, depending on the silage quality, and

Figure 1: Teagasc Fertiliser Worksheet for First Cut Silage.

Step A	Requirements from above (N, P, K)				
	N	P	K		
E.g. Index 2 (Units/acre)	100	24	124		
Step B	Fertiliser Type	Quantity Applied	N	P	K
	E.g. 24-2.5-10	3 Bags/acre	72	7.5	30
Step C	Total Applied (N, P, K)				
Step D	Deficit left to be applied (A-C)				
E.g. Deficit from example above	28	16.5	94		



John O'Dwyer and his daughter Emma, who farm near Urlingford in Tipperary, took part in a detailed survey which proved the value of adequately fertilising grass crops for silage.

Summary

Winter finishing cattle is an expensive sport. For many years, factory prices have been insufficient to cover the costs. Farmers are working off tight margins and in terms of cost cutting, the only real area that is within a farmer's control is the quality of silage they make.

Farmers must aim for leafy silage in excess of 70% DMD to achieve weight gains of 80kg over winter. High-quality grass, cut in May and carefully ensiled, is essential to achieving this level of performance at economic cost.

High-quality silage delivers high weight gains at lower cost. This is because supplementation with meals, the only alternative, is hugely expensive.

Planning for this year's silage crop needs to begin now, if you are to have ground grazed and recommended fertiliser rates applied by late March. This will allow a mid-May cutting date.

Planning for profit is the key to success – start today.

of nitrogen.

The figures, in kg/ha, make the calculations very simple when ordering bulk fertiliser.

Also, some forms of 38% Protected Urea have sulphur fertiliser included, which can give a further increase in yield of up to 7%.

Return for 100 cattle

Farmers who have used this worksheet and followed its advice by applying the recommended rates of fertiliser have increased their yields by 30% and commenced harvesting their first cuts two to three weeks earlier than before.

The study showed that the increased winter weight gain is worth €10,000 from farm produced feeds, for just an additional €1,600 in fertiliser costs. Earlier after-grass is a bonus, which can help get you through a drought spell.

the cost of the meals.

Silage yields.

Farmers like to get a heavy crop of silage at harvest, which spreads the cost of harvesting over a larger number of tonnes. This makes sense,

providing you are harvesting quality grass.

This can be achieved by:

- Soil sampling the silage area to assess P, K and lime requirements.
- Applying the recommended amounts of fertiliser, including up to 100 units

Table 1: Recommended meal feeding rates for 80kg weight gain.

Silage Quality	Good 72% DMD	Average 68% DMD	Poor 62% DMD
Concentrate required (kg/hd/day)	1.0	2.0	3.0
For 100 weanlings 140 day winter	14 Ton	28 Ton	42 Ton
Conc. Costs over winter	€3,500	€7,000	€10,500

Table 2: Recommended fertiliser rates in units per acre.

Soil Index	N	P	K	Fertiliser (bags/ac)	Nitrogen (bags/ac)
Index 1	100	32	140	0-7-30	Protected Urea 38%
Index 2	100	24	124	4.5	2.66
Index 3	100	16	100	3.5	2.66
				2.25	2.66

Table 3: Recommended rates in kg per ha.

Soil Index	N	P	K	Protected Urea 38%	46% Urea
Index 1	125	40	175	550	340
Index 2	125	30	155	430	340
Index 3	125	20	125	280	340
					280