

Fertilising for grass silage

Mark Plunkett

Fertiliser specialist, Teagasc Crops, Environment and Land Use Programme.



Increasing fertiliser prices mean the cost of making grass silage has shot up. However, the cost of good-quality silage is still a lot lower than the cost of comparable concentrate feed in dry matter terms. First-cut grass silage costs around 20c/kg DM, while a kilo of concentrate feed is 40c/kg and rising.

Maximising grass yield and the quality of first-cut grass silage should be the aim on all livestock farms to ensure sufficient winter fodder. Grass for silage is a hungry crop and has a large nutrient (N, P and K) demand, as outlined in Table 1.

To reduce the impact of high fertiliser prices in 2022, aim to apply P and K offtake (index 3) levels to maintain soil fertility levels – this is not a year to be trying to raise soil indices.

Nitrogen

Good-quality grass silage will reduce the need to feed additional concentrates and also reduce the requirement for second-cut silage.

To achieve a high-yielding quality grass silage crop, it is essential to apply sufficient levels of nitrogen (N) at closing time, as there is a very good response to N fertiliser during this period. Under-application will mean that the crop will run out of steam before the expected harvest date.

However, oversupplying N will delay the harvest date, result in very heavy crops of low-quality material and lower animal intake next winter.

For first-cut silage, apply 125kg N/ha (see Table 1). The optimum rate on individual fields will depend on soil type, how much early N was applied and cattle slurry N spread. Between 20 to 25% of early-applied N may be available.

Good-quality cattle slurry can supply from 20 to 25% of the crop's N requirements where it has been applied using LESS technology (trailing shoe/band spreader) at closing time.

For example, a typical cattle slurry application of 33m³/ha (3,000 gals/ac)



Seamus and James Bourke with Teagasc dairy advisor Adrian Curtin.

by LESS will supply around 33kg N/ha of available N. Therefore, adjust fertiliser N rates to take account of this slurry N. It is important to take into account expected harvest date. On average, the crop will utilise 2.5kg N/ha/day.

P and K

The P and K requirements for grass silage are shown in Table 1. Aim to apply index 3 recommended rates (i.e. matching offtake rather than attempting to raise indices) this year to reduce the impact of high fertiliser prices.

Table 2 shows the P and K supplied through an application of 33m³/ha of cattle slurry on a P and K index 3 soil. This will deliver the majority of

the crop's P and K requirements. In this situation, a straight fertiliser N product plus sulphur (S) will supply the balance of the crop's nutrient requirements.

On soils with P and K index 1 or 2, the availability of cattle slurry P and K reduces to 50 and 90% respectively. To maximise the availability of cattle slurry P and K, apply it as close as possible to closing time. This will result in a better match of the slurry P and K to peak grass nutrient demand.

Apply additional fertiliser P to balance the crop's full P requirements if needed. For example, apply 27-2.5-5 or 25-4-0, etc.

Sulphur

Recent research from Teagasc Johnstown Castle on S shows yield responses of up to 3t DM/ha, and increased N recovery by 25%, in grassland. S also reduced nitrate leaching by 46% compared to where N was applied alone. Therefore, aim to apply 20kg S/ha/cut to meet the crop's S requirements.

Table 1: Fertiliser advice (kg/ha) for first-cut grass silage yielding 25t/ha fresh grass (5t DM/ha).

Soil Index	N	P	K
1	125	40	185
2	125	30	155
3	125	20	125
4	125	0	0



Adrian Curtin and James Bourke. James says he believes a good earthworm population is a sign of a healthy soil, the basis for good grass yields.

Table 2: N, P and K (kg/ha) supplied by an application of 33m³/ha (3,000 gals/ac) on soils at P and K index 3.

Nutrient	Available nutrient
Supply kg/ha	
N	33
P	16
K	115

Aubane discussion group

The Aubane group are progressive and seek new ways to boost grass yield and quality while protecting the environment. Father and son dairy farmers Seamus and James Bourke are members of the group and farm near Rathcoole, west of Mallow in north Cork, and are passionate about how they manage their soils. "We try to encourage earth worms

says Seamus. "We believe healthy soils are the secret to good silage crops." To enhance the value of their manure, they compost it before applying it on their paddocks. "We're not organic, but we do like to see plenty of life in the soil," adds James. "We used protected urea last year and we were very pleased with it, it seems to keep releasing nitrogen to the crop for longer than CAN."

The pair are part of the Aubane discussion group, whose members compare their silage analysis each year. The group average for the 2021 silage was 25.7DM, 70DMD and 12.1% CP. "Our colleague, Tadhg Sheehan, came out top this year with 22.3DM, 75.6DMD and 12.3% CP, but we'll be aiming to catch up with him next year," smiles James.

– Adrian Curtin, Teagasc Kanturk

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