Early spring grass

Nitrogen for spring grass

Apply slurry and bagged fertiliser prudently to get the best return

John Maher
Grass10 campaign

Deirdre Hennessy,
Teagasc Animal and Grassland, Research and Innovation Programme Moorepark.

Early nitrogen (slurry or fertiliser) application

Nitrogen, either in slurry or fertiliser form, is essential to encourage early grass growth. The timing, and which fields to give early N, are key decisions. Potential grass growth rates are low in early spring but even modest responses to slurry or fertiliser N are worthwhile as this extra grass is more nutritious and cheaper than even very good silage. And, despite the higher fertiliser prices, it's a better investment than concentrates.

Targeting early turnout and high grass utilisation will increase the total grass growing capacity of your farm. Applying slurry or fertiliser in early spring (weather permitting) will grow more grass and also assist sward recovery after grazing. There will be more grass available for the next round.

Dry land

The recommendations for early slurry, once allowed, and fertiliser N application are outlined in Tables 1 and 2. For drier farms, about 40% of the farm should get an initial application of slurry in January/February. After grazing has started in February, slurry can be applied on these grazed areas.

Most of the remainder of the farm should get 29 kg of protected urea/ha (23 units of protected urea/acre). About 15% of the area that gets early fertiliser N is then grazed and slurry applied in late February. It should get an additional 29 kg of protected urea/ha (23 units of protected urea/acre) in March.

Everywhere else should receive an application of 50 kg/ha of protected urea (40 units of protected urea/acre) in March. Following this plan will result in about 75 kg/ha (60 units/acre) of total N applied by early April.

Grass10
GRASSLAND EXCELLENCE FOR IRISH LIVESTOCK

Heavy land

The early spring slurry and fertiliser application strategy is a lot more challenging for those who farm on heavier land. Generally, both fertiliser and slurry application targets have to be lower and later. Flexibility in application is essential, as not every paddock will be able to carry machine traffic.

However, some paddocks will be trafficable and slurry needs to be targeted on the low grass cover paddocks with low soil fertility at about 2,500 gals/acre as outlined in Table 2 on page 16.

Applying fertiliser N also requires flexibility. Target the paddocks that will give the best response first.

Less intensively farmed land.

On more extensive farms and farms where there is not a high demand for early grass (regardless of soil type), follow the slurry and fertiliser strategy outlined in Table 2.

Slurry for spring grass

High fertiliser prices can be offset, to some degree, by making more and better use of slurry. Getting the application rate right will help maximise the contribution slurry can make. Aim to get slurry out as soon as the closed period ends, providing conditions allow.

Slurry can be used to replace the N fertiliser application on a high proportion of the farm (see Table 1 and Table 2). An application of about 2,000-2,500 gals of slurry/acre will supply about 20-25 kg N/ha (16-20 units N/acre). Prioritise the paddocks with lower soil phosphorus (P) and potassium (K) status for slurry application.

Paddocks with the lowest grass covers should be preferred for slurry application. There will be a need for greater flexibility required to get slurry spread.

- Target the most watery slurry in the farmyard to be spread.
- Use LESS methods such as trailing shoe, dribble bar, etc. These machines apply slurry closer at the surface and can be used where the cover of grass

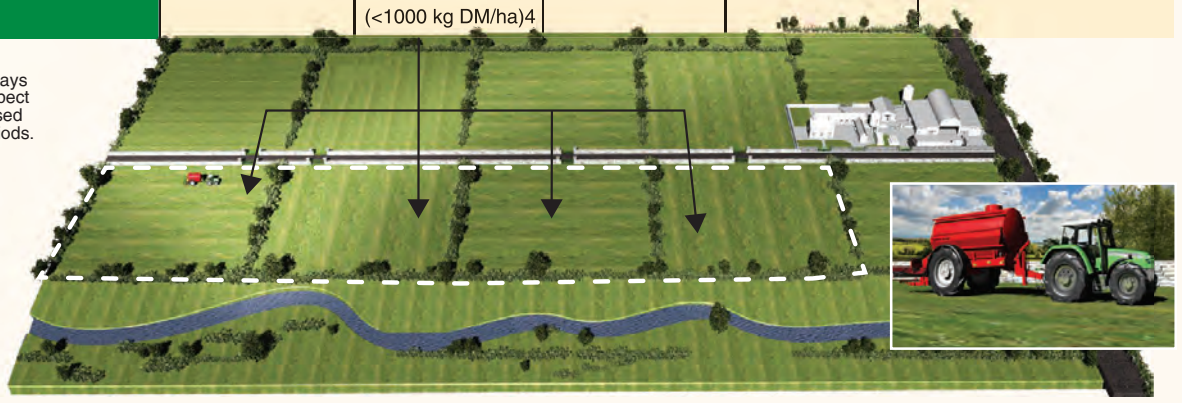
Continued on p17

Table 1. Nitrogen fertiliser and slurry application plan for the early spring period on well-drained soil

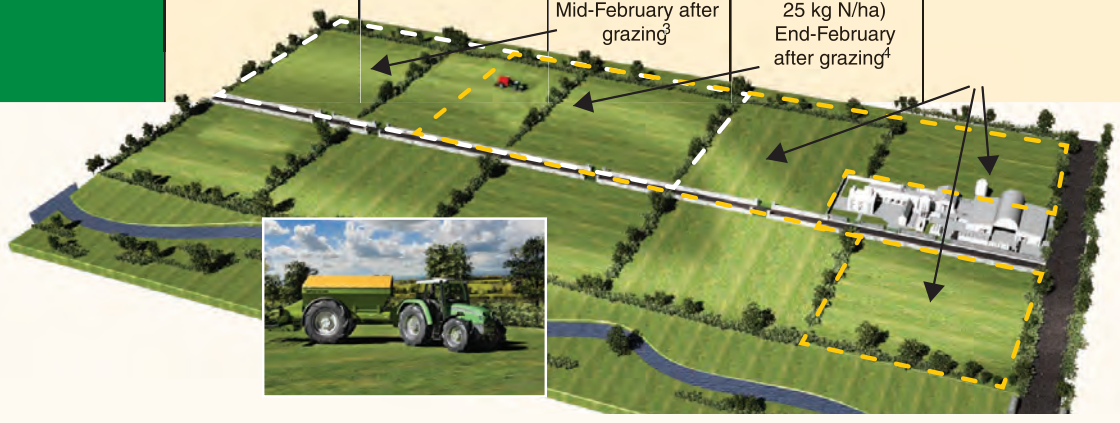
Dotted white line indicates areas receiving slurry. Dotted Yellow line shows areas receiving bagged fertiliser. Each field is 10 acres and 10% of the farm area.

Fertiliser/Slurry Split	Product	40% of Farm Area	15% of Farm Area	15% of Farm Area	30% of Farm Area
January/ February [1]	**Cattle Slurry** [2]	2,000 gals/ac (16 units N/ac – 20 kg N/ha) Lower covers (<1000 kg DM/ha)4			

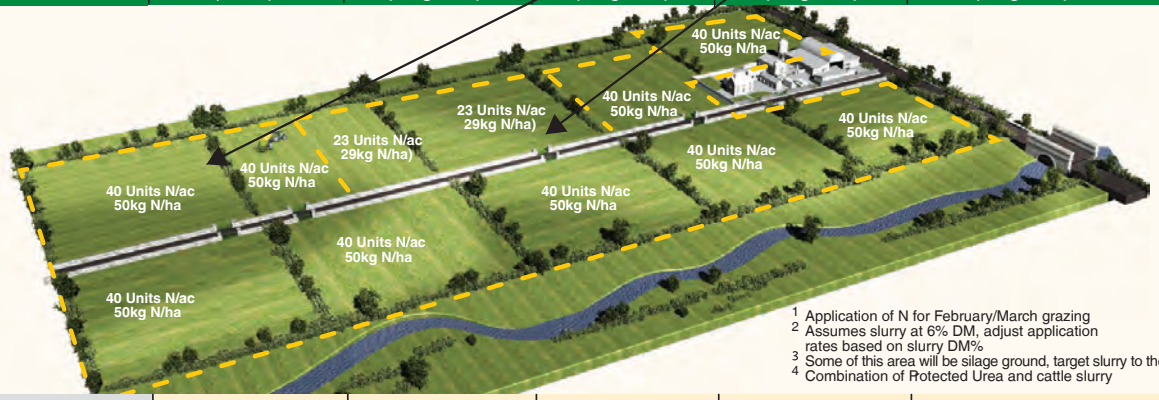
Always respect closed periods.



Fertiliser/Slurry Split	Product	40% of Farm Area	15% of Farm Area	15% of Farm Area	30% of Farm Area
	Protected Urea (NBPT)			**23 Units N/ac (29kg N/ha)**	**23 Units N/ac (29kg N/ha)**
February [1]	**Cattle Slurry** [2]		2,500 gals/ac – 25 kg N/ha) Mid-February after grazing[3]	2,500 gals/ac (20 units N/ac- 25 kg N/ha) End-February after grazing[4]	



	Product	40% of Farm Area	15% of Farm Area	15% of Farm Area	30% of Farm Area
March	**Protected Urea (NBPT)**	**40 Units N/ac (50kg N/ha)**	**40 Units N/ac (50kg N/ha)**	**23 Units N/ac (29kg N/ha)**	**40 Units N/ac (50kg N/ha)**



[1] Application of N for February/March grazing
[2] Assumes slurry at 6% DM, adjust application rates based on slurry DM%
[3] Some of this area will be silage ground, target slurry to these fields.
[4] Combination of Protected Urea and cattle slurry

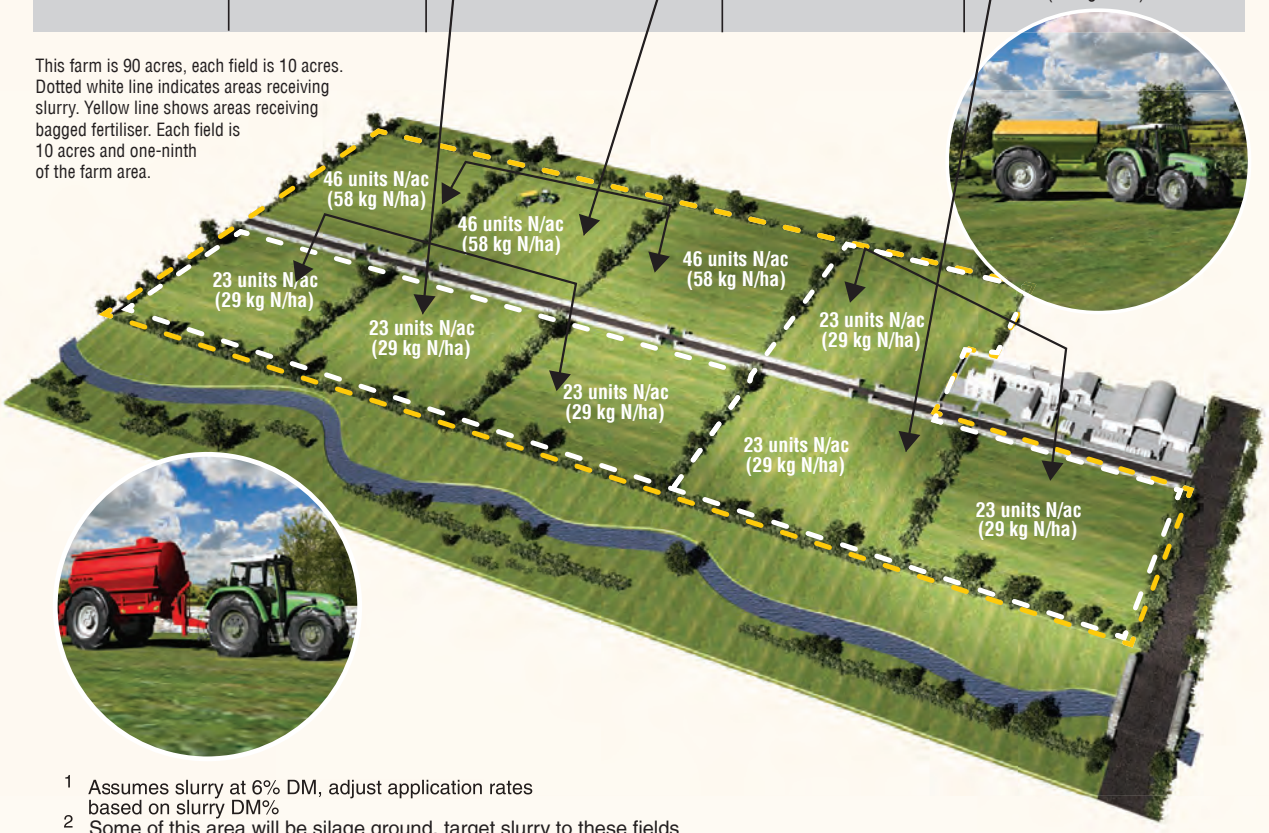
Total N by 1st April	**Slurry + Fertiliser N Units/ac (kg/ha)**	56 units N/ac (70 kg N/ha)	60 units N/ac (75 kg N/ha)	66 units N/ac (83 kg N/ha)	56 units N/ac (70 kg N/ha) Total 60 units N/ac (75 kg N/ha)4

Early spring grass

Table 2. Nitrogen fertiliser and slurry application plan for the early spring period on heavy soil, less intensive and/or later turnout farms (flexibility in application is essential on heavy land)

Fertiliser/Slurry Split	Product	33% of Farm Area	33% of Farm Area	34% of Farm Area
February/ March	Cattle Slurry[2]	2,500 gals/ac (20 units N/ac) Driest land with lowest cover and some silage ground (Depending on land wetness and weather, this may be more or less than 33% of farm)2		2,500 gals/ac (20 units N/ac) Driest land with lowest cover and some silage ground (Depending on land wetness and weather, this may be more or less than 33% of farm)2
	Protected Urea (NBPT)	23 Units N/ac (29kg N/ha)	46 units N/ac (58 kg N/ha) (Can be completed in 2 splits)	23 Units N/ac (29kg N/ha)
Total N by 15th April	Slurry + Fertiliser N Units/ac (kg/ha)	43 units N/ac (54 kg N/ha)	46 units N/ac (58 kg N/ha)	43 units N/ac (54 kg N/ha) Total 44 units N/ac (56 kg N/ha)3

This farm is 90 acres, each field is 10 acres. Dotted white line indicates areas receiving slurry. Yellow line shows areas receiving bagged fertiliser. Each field is 10 acres and one-ninth of the farm area.



1 Assumes slurry at 6% DM, adjust application rates based on slurry DM%
2 Some of this area will be silage ground, target slurry to these fields.
3 Combination of Protected Urea and cattle slurry

is higher than 400-500 kg DM/ha with minimal grass contamination.

Sometimes grass responds better to an application of slurry than N fertiliser. This is due to the fact that there is also P and K in slurry. Phosphorus is crucial for early spring grass growth, particularly where the soil P status is poor.

The targeted application of slurry in spring, based on soil test results, will ensure the most efficient use of slurry nutrients for grass production and minimise potential ammonia losses. Using LESS methods has a large positive effect on reducing N losses and also increases slurry N value, thereby increasing pasture growth and reducing fertiliser N requirements.

Response to early nitrogen

The best response to early fertiliser N application will be achieved when the soil temperature is above 5°C (and rising) and in paddocks that:

- Have predominantly perennial ryegrass.
- Have been recently reseeded.
- Are drier, free-draining, south-facing etc.
- Have a grass cover over 500 kg DM/ha.
- Have good soil P and K fertility.

Precision fertiliser application

Knowledge of farm grass covers (grass availability on farm) and current grass growth rates can lead to more efficient use of fertiliser/slurry N. The MoSt grass growth model, operated by Elodie Ruelle at Teagasc Moorepark, is used to predict grass growth on 87 farms across the country. Grass growth predictions will restart in early spring to help in decision-making around N fertiliser application.

The growth prediction will be combined with weather forecast data (rainfall and soil temperature) to provide information for decision-making around fertiliser/slurry in any particular week.

The information available from the MoSt grass growth model and from PastureBase Ireland (PBI) will be:

- Average grass growth for the previous week recorded in PBI by county and a comparison with the previous year for the same period.
- Grass growth average by farm (87) and by county for the next seven days.
- Average forecasted rainfall for up to the next seven days for the 87 locations.
- Average forecasted soil temperature for up to the next seven days for the 87 locations.

This information will be collated weekly and available every Tuesday through the Grass10 newsletter (www.teagasc.ie/crops/grassland/grass10/grass10-newsletter) and PastureBase Ireland website (www.pbi.ie) and the Met Éireann twitter account.

> The targeted application of slurry in spring, based on soil test results, will ensure the most efficient use of slurry nutrients for grass production and minimise potential ammonia losses

You should monitor weather forecasts, more carefully than ever when planning fertiliser or slurry applications early next spring. Application of slurry or fertiliser N should be avoided if heavy rainfall is expected. This, obviously, will help minimise losses. Fertiliser is expensive and slurry is now a more valuable form of N, P and K. Maximising the benefit of these inputs is essential.

Protected urea

Recent studies have shown that protecting urea with a urease inhibitor reduces loss of ammonia to the environment by about 80%.

Teagasc research has shown that protected urea grows the same amount of grass as CAN under real-world grazing conditions. Currently, protected urea is at a lower cost per unit of N than CAN. Protected urea can help reduce N losses to water by holding N in the ammonium form, which is more stable in soil.