When to Apply Early Nitrogen (N)

Lack of nitrogen (N) supply in the soil can limit spring grass growth. The timing and rate of fertiliser N and slurry application are key decisions for every livestock farmer. Research has shown a large range in grass growth response to early N (between 5 to 18 kg DM/kg N applied). While the appropriate application of early N is beneficial, the incorrect application of early N is wasteful, costly, pollutes water and increases greenhouse gas emissions.

The following "***Do's & Don'ts***" should guide your decisions around early N application.

Do's

1. Refer to any short term guidance provided by Teagasc on the application of slurry and early N in January, February and March
2. Check weather forecast (www.met.ie) prior to making slurry and fertiliser N applications
3. Check soil trafficability before spreading (check soil SMD's)
4. Only apply fertiliser N when soil temperature is greater than 5°C and rising
5. Check grass growth predictions (Grass10 Newsletter, PastureBase Ireland, Farming Forecast on Sunday on RTÉ 1)
6. Target fields that are most likely to respond to an early N application:
   a. High perennial ryegrass content/recently reseeded fields
   b. Drier, free draining fields
   c. Fields with a grass cover of greater than 400 kg DM/ha or 6 cm grass
   d. Fields with optimum soil fertility, i.e. good P and K status, pH >6.2

7. Farms need to make best use of slurry across the whole farm. That means:
   a. Getting more area covered at moderate rates in spring
   b. Targeting the slurry to high demand areas, e.g. silage ground and low P and K grazing ground
8. Apply cattle slurry instead of chemical N fertiliser to approx. 50-60% of the whole farm area in spring
   a. Apply all slurry using LESS (low emissions slurry spreading) methods
   b. Target slurry applications to fields with low P & K levels and low grass covers (<1,000 kg DM/ha)
   c. 20 m^3/ha (2,000 gals/ac) applied using LESS will supply ~20 kg N/ha (16 units N/ac) of available N

d. 25 m³/ha (2,500 gals/ac) applied using LESS will supply ~25 kg N/ha (20 units N/ac)
e. Manage slurry application to ensure that no more than 2,500 gal/ac are applied in each application

9. Where silage ground is unavailable for grazing in spring, reserve some slurry for low P & K silage ground and apply in mid-February
10. Use protected urea (NBPT)
11. Link your early N application strategy with the spring feed budget for the farm
12. Calibrate and maintain your fertiliser spreader in good condition

Don'ts

1. Don't apply slurry or fertiliser N before the end of the prohibited spreading period (Table 3)
2. Never apply fertiliser on waterlogged or frozen soils
3. Don't apply slurry or fertiliser if a yellow, orange or red rainfall warning is in place or is forecast within the next 48 hours
4. Never apply slurry or fertiliser into buffer margins and know your buffer margins (Table 4)
5. Delay N application on bare fields (<400 kg DM/ha); instead spread on fields with 6 cm (cover of 400 kg DM/ha) grass cover or greater
6. Don't apply fertiliser N on fields that receive slurry in the first round
7. Don't apply more than 29 kg N/ha (23 units N/ac) chemical N fertiliser in February
8. Don't apply more than 75 kg N/ha (Slurry N + Chemical N) in total up to early April (Table 1)

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

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 (<1,000 kg DM/ha)[3]			
February[1]	Protected Urea (NBPT)			23 units N/ac (29 kg N/ha)	23 units N/ac (29 kg N/ha)
	Cattle Slurry		2,500 gals/ac (20 units N/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[3]	
March	Protected Urea (NBPT)	40 units N/ac (50 kg N/ha)	40 units N/ac (50 kg N/ha)	23 units N/ac (29 kg N/ha)	40 units N/ac (50 kg N/ha)
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)	63 units N/ac (79 kg N/ha) **Total 60 units N/ac (75 kg N/ha)[4]**

[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*
[4] *Combination of protected urea and cattle slurry*

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	1st 33% of Farm Area	2nd 33% of Farm Area	3rd 33% of Farm Area
February /March	Cattle Slurry[1]	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) Areas that are trafficable & mostly silage ground (Depending on land wetness and weather, this may be less than 33% of farm)[2]
	Protected Urea (NBPT)	23 units N/ac (29 kg N/ha)	46 units N/ac (58 kg N/ha) (Can be completed in 2 splits)	23 units N/ac (29 kg 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]**

[1] *Assumes slurry at 6% DM, adjust application rates based on slurry DM%*
[2] *Some of this area will be silage ground*
[3] *Combination of protected urea and cattle slurry*

Table 3:- *Closed Periods for the application of organic & chemical fertilisers*

Zone	Chemical Fertilisers	Organic Fertilisers	Farm Yard Manure
A	15 Sept – 12 Jan	15 Oct – 12 Jan	1 Nov – 12 Jan
B	15 Sept – 15 Jan	15 Oct – 15 Jan	1 Nov – 15 Jan
C	15 Sept – 31 Jan	15 Oct – 31 Jan	1 Nov – 31 Jan

Table 4:- *Buffer zones for fertiliser spreader*

Water Source / Body	Chemical Fertilisers (metres)	Organic Fertilisers (metres)	Farmyard manure stored in a field (metres) **
Water supply >1,000m³ or >500 people		200 m	250 m
Water supply >10m³ or >50 people		100 m	250 m
Water supply other		25 m	50m
Lake shoreline		20 m	20 m
Exposed carvernous or karstified limestone feature		15 m	50 m
Any surface watercourse where the slope towards the watercourse is > 10%		10 m	
Any other surface waters *	2 m	5 m	20 m

* *The buffer zone for spreading organic fertilisers increases for 2 weeks from 5 m to 10 m before and after the closed spreading period.*

** *FYM can be stored in a field prior to land spreading during the open period. You are not allowed to store FYM in a field during the closed spreading period*

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For further information on any issues raised in this newsletter, or to access other enterprise newsletters, please contact your local Teagasc advisor or see www.teagasc.ie