

Sustainable spring nutrient management

Carefully consider soil and weather conditions before applying N early in the growing season

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Early grass growth (January/February) is variable and response to early nitrogen (N) is often very low, leading to poor recovery of applied N.

Early nitrogen application and grass yield response
 With 1kg of grass grown worth approximately €0.18, it will take ~4.5 kg of additional grass growth per kg N applied to pay for early applications of urea or CAN fertiliser. Therefore, apply early N based on the decision table below to maximise the response to early applied N.

Sources of early N

- Ammonium or ammonium forming fertilisers such as slurry, protected urea or urea are safer from nitrate loss through leaching (Impacting water quality) and denitrification (releasing greenhouse gases).
- Where tanks must be emptied, use slurry as your early N on the driest fields but keep away from water courses. Low emission spreading of 22m³/ha (2,000 gal/ac) will supply 23kg available N/ha (18 units N/ac) which is adequate to support up to 250 to 500kg grass dry matter (DM) under good spring grass growing conditions.

Protected urea
 Protected urea has the potential to help Irish agriculture reduce national greenhouse gas and ammonia emissions.

- Using CAN – switch to protected urea (GHG saving).
- Yield and N efficiency effect? Same yield and N efficiency.

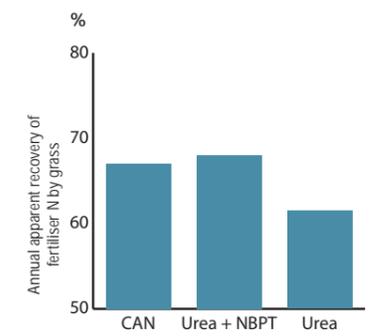


This group of farmers from north Tipperary attended a one-day nutrient management seminar delivered by Claire Mooney and Michael Hogan at the Teagasc office in Nenagh. The seminar (and others delivered across the country) was a requirement for farmers who applied to avail of a derogation to apply extra P on soils that were proven to be low in the element. Stephen Grace, who hosted the practical part of the seminar on his dairy farm near Toomevara, said: "Making best use of bagged and slurry fertiliser is vitally important to maximise grass production while protecting the environment".



Michael Hogan and Stephen Grace.

Figure 1
Fertiliser N source



Adapted from Forrestal et al (2016)

“Focus on being ready for spring application of slurry just in advance of the rapid increase in growth rates, which typically occurs in March

Slurry spreading method
 Teagasc recommends use of trailing shoe or band spreader to retain N for grass growth, limit sward contamination and because of the new national commitments to reduce national ammonia loss.

Slurry timing
 Focus on being ready for spring application of slurry just in advance of the rapid increase in growth rates, which typically occurs in March.
 Consider getting an agricultural contractor with low-emission spreading equipment:

- Saving time on the farm for other key tasks.
- Retaining more N where a low-emission spreader is not available on the farm.
- Benefiting soil structure and subsequent yields if an umbilical system is chosen.

- More even spread of nutrients across the spread width.

Fertiliser planning
 Prepare a fertiliser plan based on recent soil test results. A fertiliser plan will:

- Show fields that require lime over the next four years.
- Deliver a field by field plan for the application of farm manures (cattle slurry/FYM).
- Show detailed soil fertility maps for each field.
- Identify fields that need extra P and K to build soil fertility.
- Provide field specific advice for N, P and K for your farm.
- Include a list of fertilisers (shopping list) suitable for the soils on your farm.
- Ensure compliance with farm maximum limits as per new national action programme (nitrates).

Table 1: Decision support guidance for early N decision-making on your farm

Check	Consider	Where to check
Soil temperature Soil moisture conditions	No growth below 5.5°C When conditions allow, prioritise dry soils for early spreading. If soils are saturated or near saturated (SMD -10 to 0) soil structure damage from machinery is.	Met Éireann Met Eireann website
Forecast	Predicted forecast for cold weather (air temp <4°C) – little growth. Forecast for wet weather – N loss likely	Met Éireann
Grass growth rate	Grass growth rates/ expected grass response to N fertiliser ≤ 5kg dry matter/ha will not cover the cost of N fertiliser	On-farm measurement or PastureBase Ireland
Rate	Economic response is more likely at lower N rates	No more than 30kg/ha
Current sward	1) Higher sward grass cover will have higher N uptake rate compared with low or bare swards 2) Swards reseeded in last three to five years will give better N utilisation	1) Farmer knowledge 2) Minimum cover of 300kg to 400kg 3) Cattle slurry to bare swards 4) Recently reseeded fields
Choosing area of farm	Start with the kind, sheltered fields, avoid watercourses	Farmer knowledge