

# Planning your slurry applications

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Cattle slurry has a major role to play in balancing farm soil fertility, reducing large fertiliser bills and meeting new chemical nitrogen (N) allowance as per the new nitrates directive.

Cattle slurry is the largest national source of on-farm organic fertiliser and is a valuable source of N, phosphors (P) and potassium (K). The nutrient content will vary between farms. The largest factor affecting its nutrient value is the degree of dilution with soiled water.

Table 1 below shows the effect of dry matter on the N, P and K values of cattle slurry.

**Nitrogen (N)**

The N in slurry comes in two forms, 50% ammonium N, which is plant available, and 50% the organic N form that is not plant available at the time of application. Retaining the available ammonium N will determine the fertiliser N replacement value of the slurry in the year of application.

The ammonium N can be easily lost to the air as ammonia if weather conditions are warm, sunny or dry. Cool, damp, overcast weather conditions reduce ammonia loss at time of application.

Low emission application techniques such as the band spreader, trailing shoe or direct injection reduce N losses, increasing the fertiliser N value of the slurry.

The timing of application will improve the fertiliser value of slurry. For example, aim to maximise slurry application in spring rather than summer time.

Spring application with a trailing shoe will normally recover 40% of the



available N in slurry, while a summer application is reduced to 25% N recovery.

**Phosphorus (P) and potassium (K)**

The P and K fertiliser replacement value of cattle slurry will depend on the soil P and K fertility levels.

On index 1 and 2 (very low to low) soils, P is deemed to be 50% available while P index 3 (medium) soils slurry P is deemed 100% available.

For K on index 1 and 2 soils, slurry K is deemed 90% available, while on index 3 soils, slurry K is 100% available. This is an important consid-

eration to factor in, especially for P on low index soils (1 or 2) to ensure sufficient P requirements are applied for grazed or cut grass swards.

Ideally, you should supply 50% of P in slurry and 50% as bag fertiliser.

The other factor is the nutrient profile in cattle slurry, as shown in Figure 1 on the next page.

This shows that 81% of the nutrients in cattle slurry are P and K, while only 19% is nitrogen.

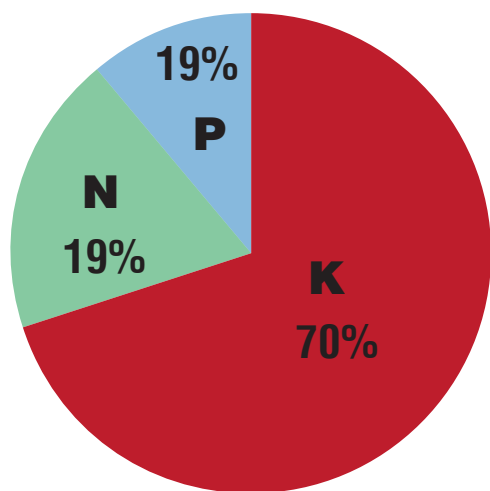
Therefore, target cattle slurry to fields that have significant P and K requirements based on soil analysis, or fields which will be cut for silage.

**Table 1**

Dry matter % Slurry description)	N kg/m <sup>3</sup> (units/1,000 gals)	P kg/m <sup>3</sup> (units/1,000 gals)	K kg/m <sup>3</sup> (units/1,000 gals)
2 (very dilute)	0.4 (4)	0.21 (2)	1.4 (13)
4 (watery)	0.7 (6)	0.35 (3)	2.1 (21)
6 (typical)	1.0 (9)	0.5 (5)	3.5 (32)
7 (thicker)	1.1 (10)	0.6 (6)	4.0 (36)

Note – On index 1 and 2 soils reduce slurry P availability by 50% & reduce K availability by 10%.

**Figure 1: Percentage (%) N, P and K in cattle slurry.**



### Key points

In 2023, to make best use of cattle slurry ask yourself the following questions:

- **Where to apply?** Target cattle slurry to fields with an N, P and K requirement.
- **When to apply?** Apply cattle slurry in springtime under good soil trafficability and when weather conditions are suitable, for example soil temperatures less than 6°C.
- **How to apply?** Apply with LESS technology to maximise fertiliser value.

Over the coming weeks, take soil samples if the ones you have are greater than four years old and update the farm fertiliser plan to identify areas of the farm that can make best use of all three major nutrients in slurry.

Be aware that organic fertiliser buffer margins are 5m, and increase to 10m in the first and last two weeks during the spreading period.

### Adding commercial value to animal slurry and manure: an invitation to farmers

Farmers know the value of manure and slurry as organic fertilisers. However, there are numerous other commercially valuable uses for these materials, including composting, conversion into biogas using anaerobic digestion, as a fuel for combustion, filler for cement mortars, processed for feed, etc.

Teagasc is seeking 30 beef, dairy, pig, sheep and broiler farmers to participate in a study that will analyse the composition of animal slurry and manure, and assess their suitability for a range of uses with and without pre-treatment.

All results will be anonymous and each farmer will receive their results for free. To express an interest, please fill the online form (name, farm type and email) using the link [www.teagasc.ie/animalwastes](http://www.teagasc.ie/animalwastes).

## ADVERTORIAL



### Metabolic Disorders: Think Prevention > Cure

Maeve Regan,  
Head of Ruminant Nutrition, Agritech

Prevention of metabolic issues next spring will hinge around management decisions that will be made over the next number of weeks. When costs associated with clinical cases are assessed alongside the time and labour involved in such cases, prevention is always better than cure.

#### Body Condition Score (BCS)

It is best practice to dry off cows at, or close to the same condition that they should calve down in (target BCS 3.0-3.25). The dry cow diet should maintain condition over the 60-day dry period. Thin cows should be dried off early to allow for recuperation of condition. Be mindful also that over-conditioned cows at calving can be just as problematic. Cows should be condition scored prior to drying off to make a tailored plan for the herd, which may include grouping cows according to BCS where there is a large variation in the herd.

#### Silage Quality – The Decision Factor

Feed plans for the dry cow will centre around the quality of silage available. High quality silage will need dilution with straw to avoid over-conditioning or where quality is very low, some level of energy supplementation will be required. Testing dry cow silage reserves will illustrate feed requirements. Where issues around calving occurred last spring, it is also worthwhile carrying out a silage mineral analysis to highlight any precursors.

Silage DMD	BCS 2.75 8-10 weeks dry	BCS ≥3.0 60 days dry
>72%	Silage Ad-Lib (SAL)	Silage Diluted
68-72%	SAL + 1 kg Conc.	SAL

#### Dry Cow Mineral Provision

Feeding a dry cow mineral throughout the dry period is essential to build up mineral reserves and allow the cow to calve down without any issues. Most Irish silage lack the required mineral levels to get the cow through the dry period, leading to the provision of a high-quality mineral supplement to avoid metabolic disease risks.

High Potassium (K) levels in Irish silage is a running trend, which will require a high level of soluble magnesium to help overcome the risk of milk fever. Research indicates a single case of milk fever is estimated to cost ~€312; with sub-clinical cases estimated to cost a herd >€100/case. It is also estimated that for every clinical case that manifests itself on farm, 6 sub-clinical cases go undetected.

**For further advice on metabolic disease prevention, contact your local Agritech Sales Advisor or visit [www.agritech.ie](http://www.agritech.ie)**



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