Soils, Nutrients and Fertiliser Factsheet

Weights & Measures

Avoid confusion, move to kg/ha rather than 'units'

- Fertiliser recommendations are given in the form: kg of nutrient per hectare, e.g. 70 kgN /ha

- The old 'unit' system is based on the proportion of a 50 kg bag (originally a cwt or 110 lb) so that a 27% N product contains 27 units (which is actually 13.5 kg of N)

- It is easier to work with the weight of nutrient required (e.g. kg N/ha) and then simply to calculate the application rate required based on the concentration or percentage in the fertiliser (bagged, bulk or organic manure or slurry/FYM)

So, if you have a recommendation to apply 70 kg of N per hectare, what does that convert to in terms of the product in your yard?

- CAN has 27% N. Every kg of the fertiliser has 0.27 kg of N. 70/0.27 or 259 kg of fertiliser CAN per hectare to apply 70 kg N/ha. This is the setting that you need to have for your fertiliser spreader

- Urea is 46% N, 70/0.46 or just 152 kg/ha of urea per hectare

- A 18-6-12, has 18% N, 70/0.18 or 389 kg/ha of 18-6-12 must be applied to apply 70 kg N/ha. product but note that this will also apply 23 kg of P and 47 kg K per hectare

- Pig slurry that has 2 kg of available N per cubic meter, will require an application of 70/2 or 35 cubic meters per hectare (3150 gallons /acre) to apply 70 kg N/ha. This would also supply 28 kg of P and 77 kg /ha assuming the slurry has 0.8 kg P/ha and 2.2 kg of K per cubic meter

Some computerised spreaders will allow you to type in the type of product and will automatically calculate the application based on your selected rate

Volumetric conversions

1000 litres = 1 cubic meter

4.5 cubic meters = 1,000 gallons

1.0 cubic meters = 220 gallons

Weights

0.8 units = 1.0 kg N

units/ 1,000 gals   divided by 9 = kg/m³

So if cattle slurry has a nutrient content of 1 kg N, 0.6 kg P / and 3.5 kg K / m³ and a slurry tanker applies at a rate of 20 m³/ha (approx. 1,800 gals/ ac), then the nutrients supplied are 20 kg N, 12 kg P and 70 kg K

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Relative value of fertilisers (using CAN, urea or protected urea)

The purpose of this Teagasc program is to allow advisors and farmers to compare the relative value of fertilisers at any one time based on the price of three of the main fertilisers on the market. The primary components of fertilisers are nitrogen, phosphorous and potassium. This program calculates the relative cost of a unit of nitrogen, phosphorous and potassium and using this information calculates the value of compound fertilisers, depending on the proportion of each component in it

The input sheet consists of a table of the main fertilisers available on the market, their component analysis and current price. Fertiliser prices marked with an asterisk must be entered for the calculation to be done

You can access the program by scanning the QR code

http://interactive.teagasc.ie/
Open/RelativeValueFertCAN

http://interactive.teagasc.ie/
Open/RelativeValueFertUrea

Fertilizer Calculator

https://www.fertilizer-assoc.ie/p-k-calculator/calculator/

The P and K Calculator was developed by the Fertilizer Association of Ireland (FAI) in Association with Teagasc and K+S UK & Eire Ltd (the FAI spell fertiliser with a z)

- Click on the link to 'Fertilizer Calculator' above

- Select crop category from the list of options (e.g. Dairy Grazing, Cereals, etc.)

- Enter details on soil P and K index, stocking rates, concentrate feed usage, yields, and organic manures by selecting from the lists provided

- Click submit to see the breakdown of the P and K requirements for maintenance, soil buildup, P and K applied in organic manure, and chemical P and K required

- Note that P fertiliser rates may need to be adjusted based on Nitrates limits on your farm

- Repeat steps 2-5 to calculate and P and K requirement for a different crop or grassland scenario

Note 1 – To calculate stocking rate as kg/ha Org N, allow 85 kg of Org N per for every 1 LU/ha
Note 2 – To calculate concentrate feed used in t/ha, divide the total concentrate feed used on the farm (t) by the total grassland area (ha)
Note 3 – For crop yield, use DM yield for silage crops, and fresh yield for cereals, oilseed, legume and root crops
Note 4 – 1000 gallons per acre of slurry applied is equal to 11 t/ha. 1 t/acre of solid manure is equal to 2.5 t/ha
Note 5 – Multiply kg/ha * 0.8 to convert to units/acre

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