



Organic Manures

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Teagasc Specialist TILLAGE CROPS REPORT



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Organic manures

Organic manures are a valuable source of N, P, K, Mg, S, Ca & minor nutrients such as Cu, Mn & Zn. They also contain significant quantities of organic matter and carbon depending on the type of manure applied. For example low dry matter liquid manures (pig slurry) will not supply as much organic matter / carbon compared to a high dry matter manure such as FYM or spent mushroom compost.

With fertiliser prices at all time highs organic manures offer major savings in fertiliser costs. For example an application of 25 m³/ha of cattle slurry can reduce costs by €~115/ha in N, P & K.

When working with organic manures ideally have manures analysed to determine their nutrient values plus their dry matter %. For example there are fresh organic manure products coming from poultry manure and their nutrient values are reported on a fresh weight basis. In addition there is poultry manures and other organic fertilisers that are processed for example dried and therefore the final nutrient values will be higher compared to the fresh manures. This can be confusing when values are compared to standard / typical organic manure values as reported in this report.

Therefore also check manure analysis and dry matter % to ensure application rates are adjusted based on the product being applied. For example SoilWorx Natural Fertilisers produce a drier layer manure with a DM% 90% + and has a higher nutrient concentration compared to fresh broiler manure.



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Organic Manures will help reduce the overall crops N, P, K & S requirements / costs depending on the manure type and application rates. Deduct manure N, P & K from crop requirements to make both cost savings and environmental savings in the year of application. With recent changes to the nutrient values for cattle slurry (Total N 5.0 to 2.4kgN/m³) and over grassland farm legislative changes consider importing cattle slurry to reduce farm fertiliser requirements for tillage crops in 2023.

Steps to take to maximise the return from organic manures

1. Apply organic manures to crops / fields that have an N, P & K requirement, otherwise it is a waste of N, P & K
2. Ensure slurry is well agitated; apply accurately and evenly for best results
3. To maximize N recovery from manures incorporate within 3 to 6 hours
4. Adjust crop fertiliser programmes to take account of organic fertiliser applications and make cost savings

5. On index 1 & 2 soils P availability is reduced by 50%. Adjust fertiliser type and apply appropriate rates to complement organic manure applied.
6. Ensure organic manures are compliant with the nutrient legislation
 1. When importing organic manures do not exceed the whole farm 170kg Org N/ha limit
 2. Complete Record 3 (*Record of Organic Movement of Organic Fertilisers*) to reflect manure type and quantity imported

Have manures analysed to check N, P & K values for optimum use. Fertiliser replacement values for a range of manures plus monetary values are shown in table 1 below for example an application of 22m³/ha (2,000 gal/ac) of pig slurry (incorporated) is worth approximately €262/ha (excluding transport & spreading costs).

Table 1. Available Nutrient Content & Value (€) of Organic Fertilisers 2023 (kg/m³)

Organic Fertiliser Type ²	N kg/m ^{1,3}	P kg/ m ^{3, 6}	K kg/ m ³	Value €/ m ^{3, 4,5}
Cattle (6% DM) (SI 113 of 2022) ¹	1.0	0.5	3.5	9.7
Pig (4% DM) ³	2.1	0.8	1.9	11
Soiled Water	0.48	0.08	0.6	2.2
Dungstead Manure	1.4	0.9	4.2	13
Farmland Manure	1.35	1.2	6.0	17
Broiler / deep litter ³	14	6.0	18.0	81
Layers (30% DM) ³	6.85	2.9	6.0	35
Layers (55% DM) ³	11.5	5.5	12.0	65
Turkeys ³	14	13.8	12.0	104
Spent Mushroom Compost	1.6	1.5	8.0	20

¹ Nitrogen availability based on Nitrates Directive SI 113 of 2022 (Cattle slurry total N of 2.4kg). kg by 2 = units.

² Spring application of organic manures is required to maximize N recovery. Manures should be tested to determine manure nutrient content

³ Incorporation of high N manures within 2 to 6 hrs after application assume 50% N availability.

⁴ Value of N = €1.97/kg. P = €4.16/kg, K = €1.60/kg (Nutrient values based on price / volume of range of fertiliser products).

⁵ Cost of spreading & transport not included.

⁶ Reduce P availability to 50% on P index 1 & 2 soils. Low emission application of cattle slurry will increase N recovery by 0.3 kg/m³ (3 units/ 1,000 gals)

Table 2: Available Nutrient Content & Value (€) of Organic Fertilisers 2023 (Units / 1,000 gals or Units/tonne)

Organic Fertiliser Type ²	N units /1,000 gal or units/t ¹	P units /1,000 gal or units/t ⁶	K units /1,000 gal or units/t	Value € / 1,000 gal or t ^{4,5}
Cattle (6% DM) (SI 605,2017) ¹	9	5	32	44
Pig (4% DM) ³	19	7	20	50
Soiled Water	4	0.7	5	10
Dungstead Manure	3	2	8	13
Farmyard Manure	3	2	12	11
Broiler / deep litter ³	28	12	36	81
Layers (30% DM) ³	14	6	12	35
Layers (55% DM) ³	23	11	24	65
Turkeys ³	28	28	24	104
Spent Mushroom Compost	3	3	16	20

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Maize and Organic Manure

Maize crops have a large nutrient requirement and have a great ability to utilize organic manures such as cattle slurry. Table 2 below shows fertiliser advice where 33 m³/ha of cattle has been applied.

Table 3: Nutrient advice (N, P & K) for a continuous maize (kg/ha), assuming a dry matter yield of 15 t/ha and an application of 33m³/ha of cattle slurry

N, P & K Soil Index ²	Nutrient Advice (Kg/ha)			Cattle Slurry @ 33 m ³ /ha			Balancing Nutrients Required as Chemical Fertiliser (kg/ha)			Suggested Fertiliser Programme
	N ¹	P	K	N	P	K	N	P	K	Product & Rate kg/ha

N, P & K Soil Index ²	Nutrient Advice (Kg/ha)			Cattle Slurry @ 33 m ³ /ha			Balancing Nutrients Required as Chemical Fertiliser (kg/ha)			Suggested Fertiliser Programme
	N ¹	P	K	N	P	K	N	P	K	Product & Rate kg/ha
1	180	70	250	33	13	105	147	57	145	695 kg 12-8-20 + 138 kg Urea ³
2	180	50	225	33	13	105	147	37	80	460 kg 12-8-20 + 270 kg Urea ³
3	180	40	190	33	26	115	147	14	75	280 kg 10-5-25 + 330 kg Urea ³
4	180	20	120	-- ⁴	--	--	147	20	120	390 kg Urea + 125kg Super P (16%) + 240 kg 50% K

¹ Nitrogen advice for continuous maize (Soil N Index 1) assumed

² Cattle slurry P & K reduced to 50% and 90% availability, respectively on index 1 & 2 soils

³ Fertiliser N source is Protected Urea (Urea + NBPT). ⁴ Omit slurry application on Index 4 soils

Spring Barley and Manures

Table 4: P & K advice kg/ha (units/ac) for Spring Barley at 7.5 t/ha + 17 m³/ha Cattle Slurry

Soil Index	N	P	K	17 m ³ /ha (1,500 g/ac)			Programmes (bags/ac)
1	155 (124)	49 (39)	115 (92)	35 (28)	7 (6)	34 (27)	3.2 bags/ac 10-10-20 1.6 bags Urea /ac
2	155 (124)	39 (31)	100 (80)	35 (28)	7 (6)	34 (27)	2.4 b/ac 10-10-20 1.8 bags Urea /ac
3	155 (124)	29 (23)	85 (68)	35 (28)	13 (11)	37 (30)	1.2 bags/ac 10-10-20 2.1 bags Urea /ac
4*	155 (124)	20 (16)	0	--	--	--	3.1 bags Urea /ac
* Soil pH > 7.0 & P Index 4 - 20 kg P/ha recommended. Protected Urea 40% N & 7% S							