

Information Sheet: Manure and Slurry - Cattle

NRM has conducted a review of agricultural manures and slurries going back to January 2011 to identify the mean values and variation in nutrient content. As well as looking at the variation, we have investigated the potential financial value of a typical manure/slurry within each category. This review uses standard manure analysis package results over this period. These samples were taken throughout the UK, covering many different farming practices within each category. The categories chosen are a selection of those highlighted in RB209 as types of organic fertilisers.

The purpose of this review is to highlight the possible variation there is in nutrient value and see how this translates to the value of the material when it is spread to land. The variation in nutrients for each material can highlight the importance of getting it tested so that it can be used in the most efficient way. This saves land managers money on fertiliser application or ensures that enough additional fertiliser is applied if manure values are low.

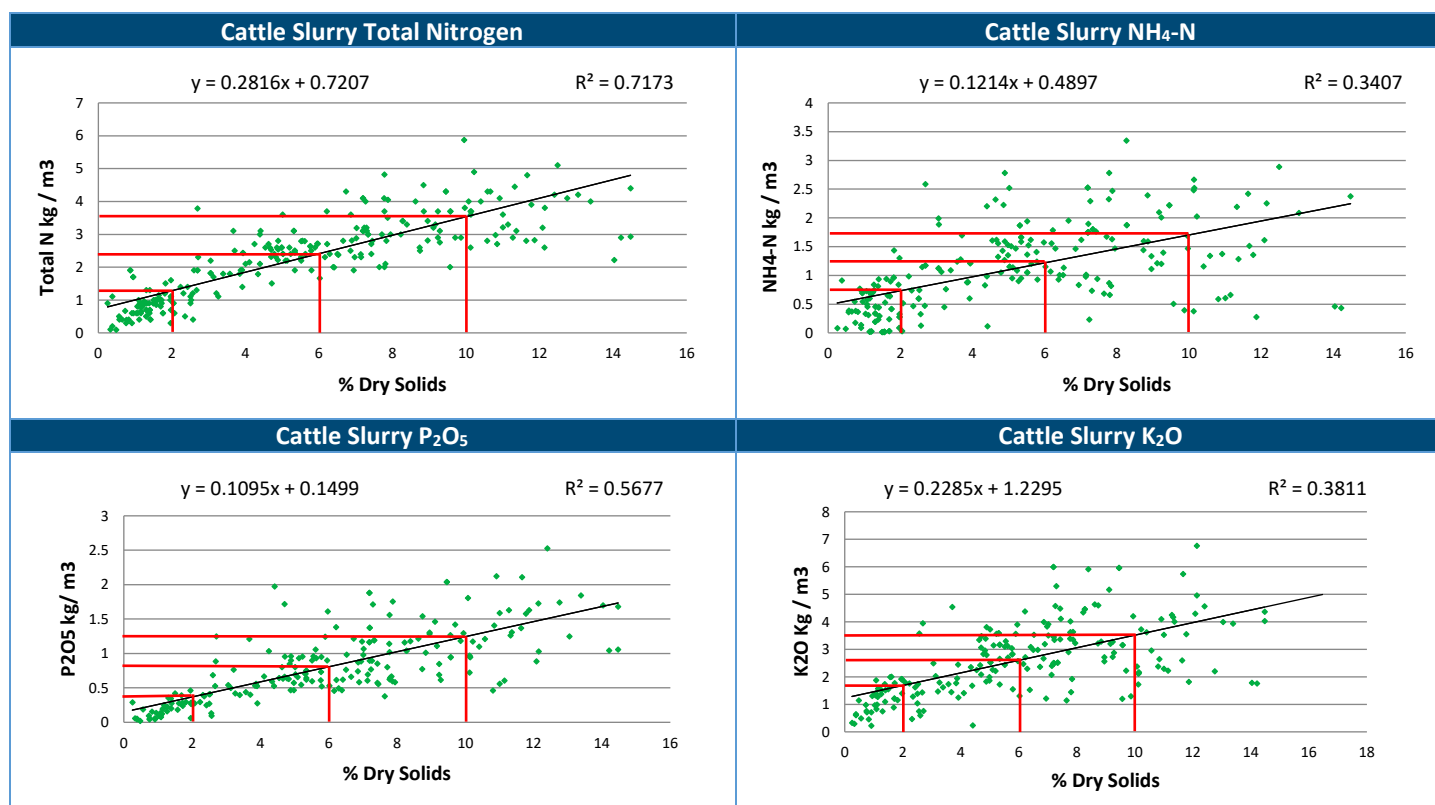
The full report can be found on the NRM website at <http://www.cawood.co.uk/resources>.

This document focuses on cattle manures and slurry and provides a brief summary of variation in financial and nutrient value for each material. Using current fertiliser prices and the mean nutrient values, we have produced a spreading scenario to show the potential financial savings in a real-life situation. This has been done with the use of the MANNER NPK software and takes into account a number of factors when it comes to spreading the material.

Variation in financial value and nutrients of Cattle FYM											
Manure	N					P			K		
Cattle FYM	Nitrogen (Kg/t)	NH ₄ N (Kg/t)	N Efficiency %	Crop Available N	£ / tonne	P ₂ O ₅ (Kg/t)	Crop Available P ₂ O ₅	£ / tonne	K ₂ O (Kg/t)	Crop Available K	£ / tonne
Mean	6.15	0.51	8	0.49	0.29	3.43	2.06	1.99	8.77	7.89	3.33
Max	32.60	5.58	12	3.85	2.23	21.88	13.13	12.69	35.04	31.54	13.31
Min	1.34	0.01	5	0.06	0.04	0.54	0.32	0.31	0.24	0.22	0.09

Variation in nutrients of Cattle Slurry

Providing variations in financial values of slurry would be very misleading as % dry solids needs to be considered. Further details on this can be found in the full report. The charts below show the wide variation that there can be in this material.



Cattle FYM spreading scenario

Potential financial value of manure application **£155/ha**

Application details	
Manure type	Cattle FYM fresh
Cropping	Grass 2 cut
Application date	15/02/16
Application rate (t/ha or m ³ /ha)	25
Application method	Broadcast spreader
Method of soil incorporation	Not Incorporated

Manure analysis (using Cattle Slurry mean values)		
DM (%)	Kg/t	23.9
Total N		6.15
NH ₄ -N		0.51
Nitrate - N		0
Total P ₂ O ₅		3.43
Total K ₂ O		8.77

Nitrogen in application								
		Nitrogen losses (kg/ha)			Crop available N (kg/ha)			
Total N (kg/ha)	Mineralised N (kg/ha)	Nitrate-N	Ammonia-N	Denitrified-N	Current crop	Next Grass Crop Current year	Following crop year 2	N use efficiency (%)
154	1	0	9	0	4	9	5	9

P & K in application			
Total P ₂ O ₅ (Kg/t)	Available P ₂ O ₅ (Kg/t)	Total K ₂ O (Kg/t)	Available K ₂ O (Kg/t)
86	51	219	197

Financial value	
Crop available N (£/ha)	£9
Total P ₂ O ₅ (£/ha)	£53
Total K ₂ O (£/ha)	£93
Grand total (£/ha)	£155

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*Based on 69 p/kg N, 61 p/kg P₂O₅ & 43 p/hg K₂O
Assumed soil index values: P ≤ 2, K ≤ 2+

Cattle slurry spreading scenario

Potential financial value of manure application **£139/ha***

*10% Dry Solids

Application Details	
Manure type	Cattle Slurry
Cropping	Winter wheat
Application date	15/02/15
Application rate (t/ha or m ³ /ha)	50
Application method	Band Spreader – Trailing Shoe
Method of soil incorporation	Plough

Manure analysis (using Cattle Slurry mean values)				
DM (%)	Kg/t	2	6	10
Total N		1.28	2.41	3.55
NH ₄ -N		0.77	1.17	1.56
Uric Acid - N		0	0	0
Total P ₂ O ₅		0.45	0.82	1.19
Total K ₂ O		1.73	2.51	3.28

Nitrogen in application								
			Nitrogen losses (kg/ha)			Crop available N (kg/ha)		
% Solids	Total N (kg/ha)	Mineralised N (kg/ha)	Nitrate-N	Ammonia-N	Denitrified-N	Current crop	Following crop year 2	N use efficiency (%)
2	64	1	8	3	3	26	1	41
6	120	3	14	6	4	37	2	31
10	178	4	19	11	5	47	3	27

P & K in application				
% Solids	Total P ₂ O ₅ (Kg/t)	Available P ₂ O ₅ (Kg/t)	Total K ₂ O (Kg/t)	Available K ₂ O (Kg/t)
2	22	11	86	78
6	41	20	125	113
10	60	30	164	148

Financial value			
	2%	6%	10%
Crop available N (£/ha)	£18	£26	£32
Total P ₂ O ₅ (£/ha)	£14	£25	£36
Total K ₂ O (£/ha)	£37	£53	£70
Grand total (£/ha)	£68	£104	£139

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*Based on 69 p/kg N, 61 p/kg P₂O₅ & 43 p/hg K₂O
Assumed soil index values: P ≤ 2, K ≤ 2+