



Balnellan Soil and Nutrient Network Meeting

5-11-18

FARM YARD MANURES and ORGANIC MANURES

Nutrients in farm yard manures

	Total nutrients (kg/t fresh weight) in different Farm Yard Manures							
	Cattle FYM (fresh)	Cattle FYM (old)	Balnellan Cattle FYM	Pig FYM (fresh)	Pig FYM (old)	Layer manure	Broiler / Turkey litter	Sheep FYM (fresh)
N	6	6	5.5	7	7	19	30	7
Readily available N	1.2	0.6	0.1	1.8	1	9.5	10.5	1.4
P ₂ O ₅	3.2	3.2	3.2	6	6	14	25	3.2
K ₂ O	8	8	8.3	8	8	9.5	18	8
SO ₃	2.4	2.4	2.2	3.4	3.4	4	8	3
MgO	1.8	1.8	1.7	1.8	1.8	2.6	4.4	1.6

Nutrient content of slurries

Dry matter (%) and total nutrients (kg/t fresh weight)				
	Cattle slurry	Balnellan Slurry	Pig slurry	Dirty water
Dry matter (%)	6.0	3.4	4.0	0.5
N	2.6	1.2	3.6	0.5
Readily available N	1.2	0.3	2.5	0.3
P ₂ O ₅	1.2	1.1	1.8	0.1
K ₂ O	3.2	0.4	2.4	1.0
SO ₃	0.7	0.5	1.0	0.1
MgO	0.6	0.2	0.7	0.1

Nutrient content of digestate



Dry matter (%) and total nutrients (kg/t fresh weight)					
	Typical farm based Digestate TN699	Typical food based Digestate TN699	Local Digestate 1	Local Digestate 2	Local farm Digestate
Dry matter (%)	5.5	4.1	7.2	5.6	12.8
N	3.6	4.8	7.8	5.9	11.1
Readily available N	2.8	3.8	3.8	3.1	0.9
P ₂ O ₅	1.7	1.1	3.9	1.7	10.6
K ₂ O	4.4	2.4	2.3	0.6	1.5
SO ₃	0.8	0.7	1.5	0.8	4.0
MgO	0.6	0.2	0.9	0.3	1.5

Nutrient supply from typical FYM application



	Total nutrients (kg/t fresh weight) in different Farm Yard Manures Application Rate (25 tonnes per Ha (10 tonnes per acre))					
	Cattle FYM (fresh)	Cattle FYM (old)	Balnellan FYM	Pig FYM (fresh)	Pig FYM (old)	Sheep FYM (fresh)
N	150	150	137.8	175	175	175
Readily available N	30	15	1.6	45	25	35
P ₂ O ₅	80	80	80.5	150	150	80
K ₂ O	200	200	207.5	200	200	200
SO ₃	60	60	53.9	85	85	75
MgO	45	45	41.8	45	45	40

Nutrient supply from typical Slurry application



Total nutrients (kg/m ³ fresh weight) in different Farm Slurries Application Rate (25 /m ³ Ha (2,225 gallons per acre))			
	Cattle slurry TN650	Balnellan Slurry	Pig slurry TN650
Total N	65	30	90
Readily available N (RAN)	30	9	63
P ₂ O ₅	30	28	45
K ₂ O	80	10	60
SO ₃	18	13	25
MgO	15	5	18

Nutrient supply from typical digestate application



Total nutrients (kg/m³ fresh weight) in different Digestates
Application Rate (25 /m³Ha (2,225 gallons per acre))

	Typical farm based Digestate TN699	Typical food based Digestate TN699	Local Digestate 1	Local Digestate 2	Local farm Digestate
N	90	120	195	148	278
Readily available N	70	95	94	78	22
P ₂ O ₅	43	28	97	43	265
K ₂ O	110	60	56	16	37.5
SO ₃	20	18	38	20	100
MgO	15	5	21	8	38

Manures – a valuable resource



- As the price of inorganic fertilisers is rising the manure benefit from organic manures can produce a considerable saving to the overall farm fertiliser bill.
- Current Cost of typical fertiliser grades
 - Ammonium nitrate £297/tonne
 - Triple super phosphate £345/tonne
 - Muiriate of potash £300/tonne
- Typical prices at present:-
 - N £0.87/kg
 - P £0.75/kg
 - K £0.50/kg

Value of a typical FYM application



	Financial Benefit (£ per Ha) of a typical Application Rate (25 tonnes per Ha (10 tonnes per acre) based on Available N and total P ₂ O ₅ and K ₂ O.					
	Cattle FYM (fresh)	Cattle FYM (old)	Balnellan FYM	Pig FYM (fresh)	Pig FYM (old)	Sheep FYM (fresh)
Available N	£26.21	£26.21	£1.41	£39.31	£21.84	£15.29
Total P ₂ O ₅	£60.00	£60.00	£60.38	£112.50	£112.50	£60.00
Total K ₂ O	£100.00	£100.00	£103.75	£100.00	£100.00	£100.00
Total (£)	£186.21	£186.21	£165.54	£251.81	£234.34	£175.29

Value of a typical Slurry application



	Financial Benefit (£ per Ha) of a typical Application Rate (Total nutrients (kg/m³ fresh weight) in different slurries Application Rate (25 /m³Ha (2,225 gallons per acre) based on Available N and total P₂O₅ and K₂O.		
	Cattle Slurry	Balnellan Slurry Mix	Pig Slurry
Available N	£26.21	£7.73	£54.60
Total P ₂ O ₅	£22.50	£20.63	£33.75
Total K ₂ O	£40.00	£4.88	£30.00
Total (£)	£88.71	£33.23	£118.35

Value of a typical digestate application



**Financial Benefit (£ per Ha) of a typical
Application Rate (Total nutrients (kg/m³ fresh weight) in different slurries
Application Rate (25 /m³Ha (2,225 gallons per acre)
based on Available N and total P₂O₅ and K₂O.**

	Typical farm based Digestate TN699	Typical food based Digestate TN699	Local Digestate 1	Local Digestate 2	Local farm Digestate
Available N	£61.15	£82.99	£81.89	£67.92	£18.91
Total P ₂ O ₅	£31.88	£20.63	£72.64	£32.52	£198.75
Total K ₂ O	£55.00	£30.00	£28.21	£7.89	£18.75
Total (£)	£148.02	£133.61	£182.74	£108.33	£236.41

CROP and GRASS NUTRIENT REQUIREMENTS

Nutrient availability from organic manures in year of application



**FARM
ADVISORY
SERVICE**

Nutrient availability in the year of application (%)				
	Slurry	Poultry Manures	FYM	Digestate
N	10 - 65	10 - 50	10 - 20	10 - 55
P ₂ O ₅	50	60	60	50
K ₂ O	90	90	90	90

Crop Nutrient Requirements (based on Technical Notes TN633 and TN651)



Nutrient requirement (kg/ha) following a Group 1 crop on a sandy loam soil type at (Moderate – Phosphate and Potash levels).					
	Crop Requirement Spring barley (feed)	25 tonne/ha Balnellan FYM	Nutrient Availability (%) in Year of Application	Total Available Nutrients	Balance to be applied
RAN	130	138	10	13.8	116.2
P ₂ O ₅	52	81	100(60)	81(48.6)	-29(3.4)
K ₂ O	71	208	100(90)	208(187.2)	-137(-116.2)

Crop Nutrient Requirements (based on Technical Notes TN633 and TN651)



Nutrient requirement (kg/ha) following a Group 1 crop on a sandy loam soil type at (Moderate – Phosphate and Potash levels).

	Crop Requirement Spring barley (feed)	25 m³/ha Digestate local 1 Application 1		Total Available Nutrients	Balance to be applied
RAN	130	94		94	36
P ₂ O ₅	52	97		97	-45
K ₂ O	71	56		56	15

Grass Nutrient Requirements (based on Technical Notes TN652)



Nutrient requirement (kg/ha) for Site Class 1, on a sandy loam soil type at (Moderate – Phosphate and Potash levels).

	2 Cut Silage plus grazing Site Class 2	25 m ³ /ha Balnellan Slurry Application 1	25 m ³ /ha Balnellan Slurry Application 2	25 m ³ /ha Balnellan Slurry Application 3	Total applied kg/ha		Total Available Nutrients kg/ha	Balance to be applied kg/ha
RAN	250	9	9	9	27		27	223
P ₂ O ₅	39+20+3	28	28	28	84		84	-22
K ₂ O	138+72+ 2	10	10	10	30		30	182

Grass Nutrient Requirements (based on Technical Notes TN652)



Nutrient requirement (kg/ha) for Site Class 1, on a sandy loam soil type at (Moderate – Phosphate and Potash levels).

	2 Cut Silage plus grazing Site Class 2	25 m ³ /ha TN650 Cattle Slurry Application 1	25 m ³ /ha TN650 Cattle Slurry Application 2	25 m ³ /ha TN650 Cattle Slurry Application 3	Total applied kg/ha		Total Available Nutrients kg/ha	Balance to be applied kg/ha
RAN	250	30	30	30	90		90	160
P ₂ O ₅	39+20+3	30	30	30	90		90	-28
K ₂ O	138+72+ 2	80	80	80	240		240	-28

Grass Nutrient Requirements (based on Technical Notes TN652)



Nutrient requirement (kg/ha) for Site Class 1, on a sandy loam soil type at (Moderate – Phosphate and Potash levels).

	2 Cut Silage plus grazing Site Class 2	25 m ³ /ha TN650 Pig Slurry Application 1	25 m ³ /ha TN650 Pig Slurry Application 2	25 m ³ /ha TN650 Pig Slurry Application 3	Total applied kg/ha		Total Available Nutrients kg/ha	Balance to be applied kg/ha
RAN	250	62.5	62.5	62.5	187.5		187.5	62.5
P ₂ O ₅	39+20+3	45	45	45	135		135	-73
K ₂ O	138+72+ 2	60	60	60	180		180	32

Grass Nutrient Requirements (based on Technical Notes TN652)



Nutrient requirement (kg/ha) for Site Class 1, on a sandy loam soil type at (Moderate – Phosphate and Potash levels).						
	2 Cut Silage plus grazing Site Class 2	25 m ³ /ha Digestate local Application 1			Total Available Nutrients kg/ha	Balance to be applied kg/ha
RAN	250	94			94	156
P ₂ O ₅	39+20+3	97			97	-35
K ₂ O	138+72+2	56			56	156

Grass Nutrient Requirements (based on Technical Notes TN652)



Nutrient requirement (kg/ha) for Site Class 1, on a sandy loam soil type at (Moderate – Phosphate and Potash levels).						
	2 Cut Silage plus grazing Site Class 2	25 m ³ /ha Digestate local 2 Application 1			Total Available Nutrients kg/ha	Balance to be applied kg/ha
RAN	250	78			78	172
P ₂ O ₅	39+20+3	43			43	19
K ₂ O	138+72+2	16			16	196

Any Questions?

