Digest-It® Trial

Summary

Mean of 15 Dairy Trial Farm Sites

June 2012

Digest-it® Headlines

- **NITROGEN INCREASED BY 33%**
- **AMMONIUM-N DECREASED FROM 41% TO 35% OF TOTAL N, WHICH INDICATES AN INCREASE IN ORGANIC-N FROM 59% TO 65% OF TOTAL N**
- **PHOSPHORUS INCREASED BY 28%**
- **POTASSIUM INCREASED BY 34%**
- **SLIGHT DROP IN pH**
- **AEROBIC:ANAEROBIC RATIO INCREASED OVER TRIAL PERIOD BY x 4.3 AT DAY 1 AND X 2.5 AT DAY 5 ANALYSIS**
- **ADDITIONAL SLURRY FERTILISER VALUE (£/ha) = + £58**
- **OVERALL DIGEST-IT COST BENEFIT = + £1,772 (150 cow herd)**
- **COST BENEFIT RATIO = 3.0:1**

DIGEST-IT TRIALS ANALYSIS SUMMARY – MEAN 15

Analyte	Slurry Sample		
	Initial	Final	Difference
Total Solids %	6.3	7.5	+19
Nitrogen %	0.254	0.339	+33
Ammonium N mg/kg	1,051	1,195	+14
Phosphorus mg/kg	259	331	+28
Potassium mg/kg	1,924	2,586	+34
Magnesium mg/kg	326	498	+53
Copper mg/kg	9.7	8.7	-10
Zinc mg/kg	8.5	10.9	+28
Sulphur mg/kg	198	257	+30
Calcium mg/kg	963	1,293	+34
Sodium mg/kg	369	442	+20
pH	7.67	7.52	-2
BOD mg/litre	7,338	12,869	+75
TVC – Aerobic – 5 days	34.8	67.8	+95
TVC – Aerobic – 1 day	8.3	13.6	+64
TVC – Anaerobic – 5 days	2.7	2.1	-22
TVC – Anaerobic – 1 day	4.0	1.5	-63

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SLURRY ANALYSIS REPORT

Distributor	**Thomson & Joseph Ltd.**	Distrib. Ref	**TJ**
Sample Ref	**Initial Mean of 15 UK Dairy Farm**	Farmer	**Dr David Atherton**
Date	**13/06/2012**	Report No.	**0**

Solids **6.30%**

		Nitrogen	Phosphate (P2O5)	Potash (K2O)	Magnesium (as MGO)	Sulphur (as SO3)
Nutrient Analysis	%	0.254	0.059	0.232	0.054	0.050
Total Nutrient	kg/m3	2.54	0.59	2.32	0.54	0.50
Nutrient Availability	%	45	50	90	100	100
Available Nutrient	kg/m3	1.14	0.30	2.09	0.54	0.50
	units/1000gal	10.29	2.66	18.79	4.86	4.50
Slurry Application						
68 m3/ha	kg/ha	78	20	142	37	34
6064 gal/acre	units/acre	62	16	114	29	27

Fertiliser nutrient requirement for forage (kg/ha)	120	40	80
Inorganic fertiliser needed for silage (kg/ha)	60	20	0
Assuming a fertiliser cost per nutrient unit	£0.95	£0.93	£0.57

Slurry Fertiliser Value per ha = £173

Comments The InitialMean Slurry sample is worth £173/ha in available fertiliser nutrients when applied at 6000galls/acre using current fertiliser prices.

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SLURRY ANALYSIS REPORT

Distributor	**Thomson & Joseph Ltd.**	Distrib. Ref	**TJ**
Sample Ref	**Final Mean of 15 UK Dairy Farm**	Farmer	**Dr David Atherton**
Date	**13/07/2011**	Report No.	**0**

Solids **7.50%**

		Nitrogen	Phosphate (P2O5)	Potash (K2O)	Magnesium (as MGO)	Sulphur (as SO3)
Nutrient Analysis	%	0.339	0.076	0.312	0.083	0.064
Total Nutrient	kg/m3	3.39	0.76	3.12	0.83	0.64
Nutrient Availability	%	45	50	90	100	100
Available Nutrient	kg/m3	1.53	0.38	2.81	0.83	0.64
	units/1000gal	13.73	3.42	25.27	7.47	5.76
Slurry Application						
68 m3/ha	kg/ha	104	26	191	56	44
6064 gal/acre	units/acre	83	21	153	45	35

Fertiliser nutrient requirement for forage (kg/ha)	120	40	80
Inorganic fertiliser needed for silage (kg/ha)	16	14	0
Assuming a fertiliser cost per nutrient unit	£0.95	£0.93	£0.57

Slurry Fertiliser Value per ha = £231

Comments The Final Mean Slurry sample is worth £231/ha in available fertiliser nutrients when applied at 6000galls/acre using current fertiliser prices.

DIGEST-IT ECONOMIC ANALYSIS

Ref: **Mean of 15 Dairy Farms**

1. Fertiliser Cost Saving (150 cow unit)

Initial slurry fertiliser value (£/ha)	=	173.00
Final slurry fertiliser value (£/ha)	=	231.00
Additional slurry fertiliser value (£/ha)	=	58.00
Land area used to spread slurry (ha)	=	46.00
TOTAL FERTILISER SAVING (£)	=	2668.00

2. Digest-it Input Costs

Number of cows (housed for 6 months)	=	150.00
Digest-it programme	=	0.75 litre per cow
Total Digest-it usage (litres)	=	112.00
Digest-it cost (£/litre)	=	8.00
Total Digest-it cost (£)	=	896.00

3. Overall Digest-it Cost Benefit (£)	=	**1772.00**
4. Cost Effective Ratio	=	**3.0:1**

Potential economic benefits of Digest-it not included in analysis

1. Increased ease of stirring and pumping	***Reduced energy and contractor costs***
2. Reduced smell	***Reduced environmental costs***
3. Increased slurry nutrient availability	***Reduced unit costs of plant growth***
4. Improved soil biological activity and fertility from aerobically digested slurry	***Long term reduction in fertiliser input costs and economic benefit from improved soil, plant and cow health and productivity.***

Notes on Assessing the Financial Value of Digest-It Using the Mean Data of 15 UK Dairy Farms

1. 150 cows and followers will produce 93.8m^3/week @ 7.5% DM. This equates to 89.3 litres of slurry/cow/day, using CAFRE and RB209 reference data.
2. Total slurry output per cow for the following winter housed periods is as follows:

Housed (months)	Slurry Output per cow (m^3)
4	10.9
5	13.6
6	16.3
7	19.0
8	21.7
9	24.4
10	27.2
11	29.2
12	32.6

3. Digest-it recommendations are based on:

   1 Litre Digest-it per 22m^3 slurry

   Or 20 litres Digest-it per 100,000 gallons slurry

4. Using the Digest-it recommendation translates to the following usage per cow for housed dairy cattle:

Housed (months)	Digest-it per cow (litres)
4	0.50
5	0.60
6	0.75
7	0.85
8	1.00
9	1.10
10	1.25
11	1.35
12	1.50

Common practice in the UK is based on a housed period of between 6-7 months, which relates to an average Digest-it usage of 0.80 litre per cow.

Notes on Assessing the Financial Value of Digest-It Using the Mean Data of 15 UK Dairy Farms

5. Based on an on-farm cost of Digest-it of £8.00 per litre, the following costs per cow would apply:

Housed (months)	Digest-it cost per cow (£)
4	4.00
5	4.80
6	6.00
7	6.80
8	8.00
9	8.80
10	10.00
11	10.80
12	12.00