BioAg
Biological Solutions

The Mineral Specialists

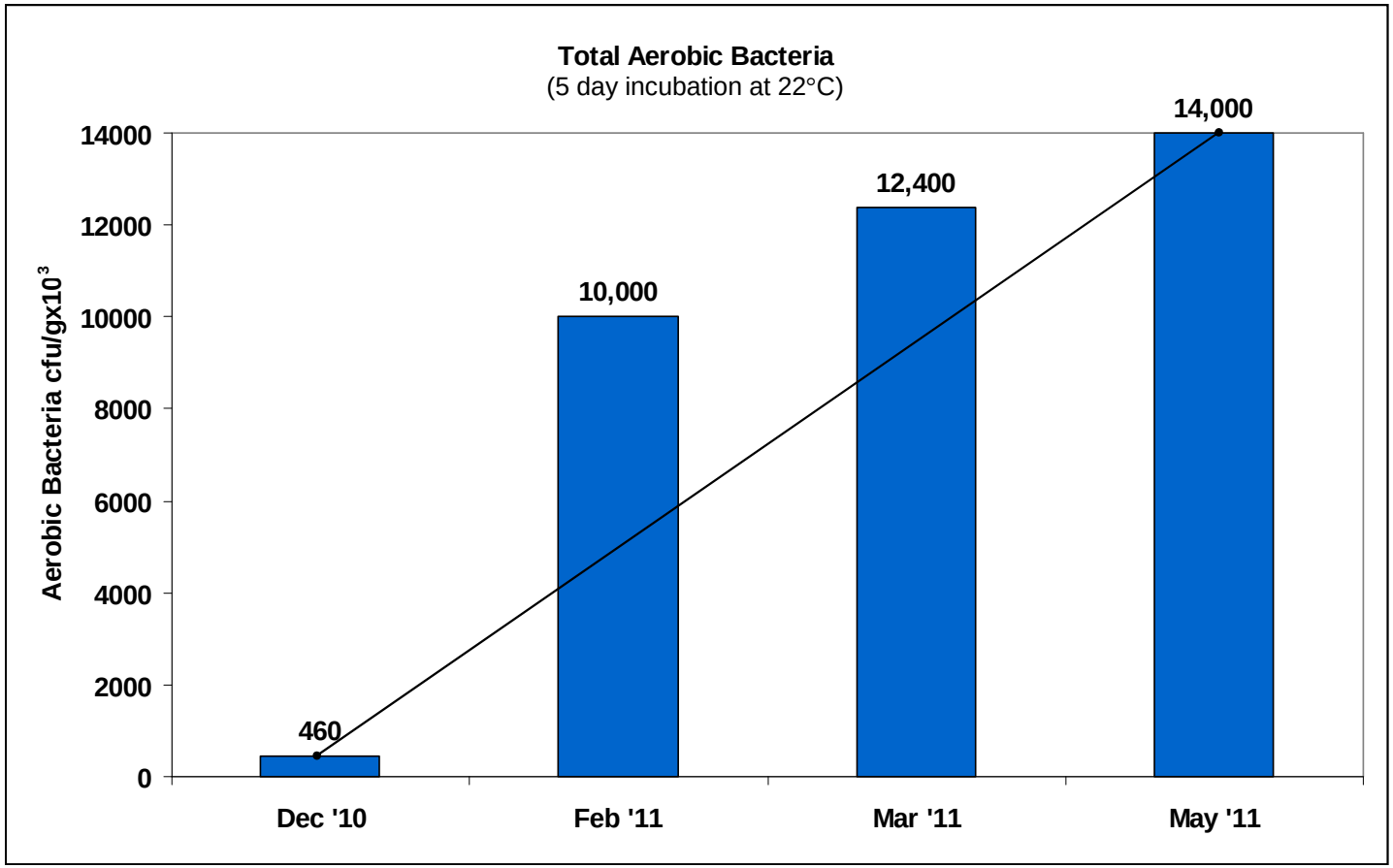
Troston Piggery – Digest-it® Evaluation

- 1500 Finishing Unit on slats
- 3+ Finishing Cycles per year
- 4,500 – 5,000 pigs produced per year
- Wet Feed System
- Slurry Lagoon – 4500m^3 or approx 1x10^6 gallons capacity
- LAGOON – Butyl lined, approx 60% of capacity is sludge, which is incapable of being pumped
- OBJECTIVE of evaluating Digest-it® is to breakdown sludge to enable the lagoon to be emptied
- 2011 SUMMER approx 1 metre depth of sludge (40%) was digested to the extent it could be incorporated into the liquid fraction by stirring and pumped out.

BioAg
Biological Solutions

The Mineral Specialists

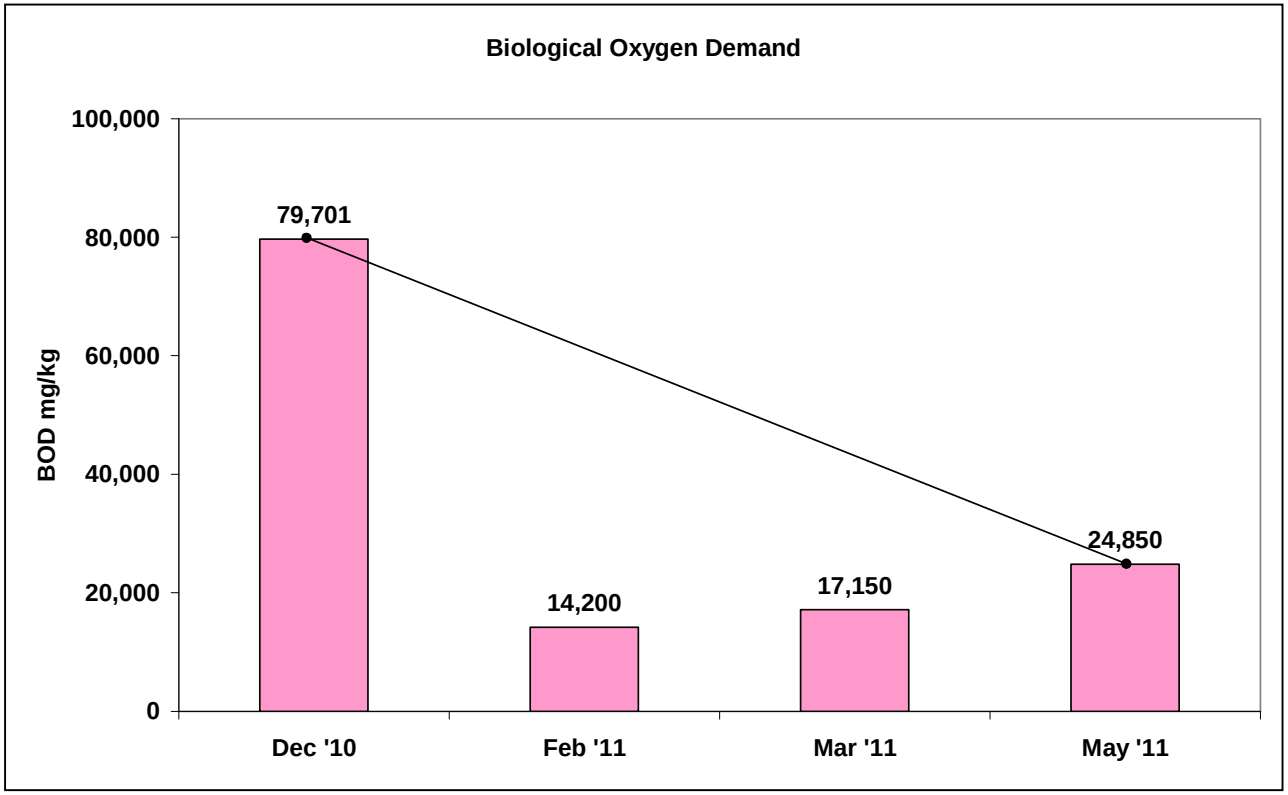
Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

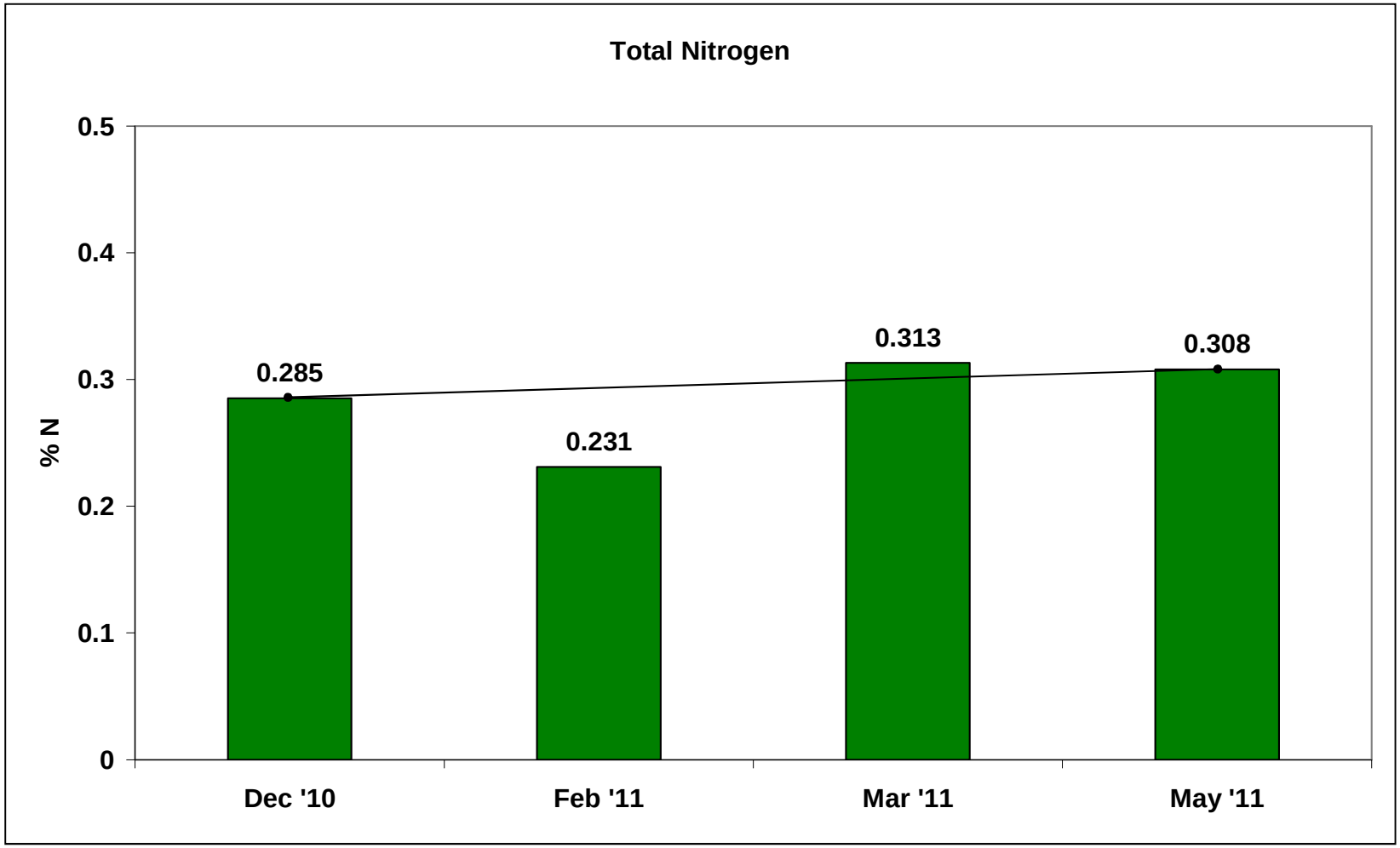
Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

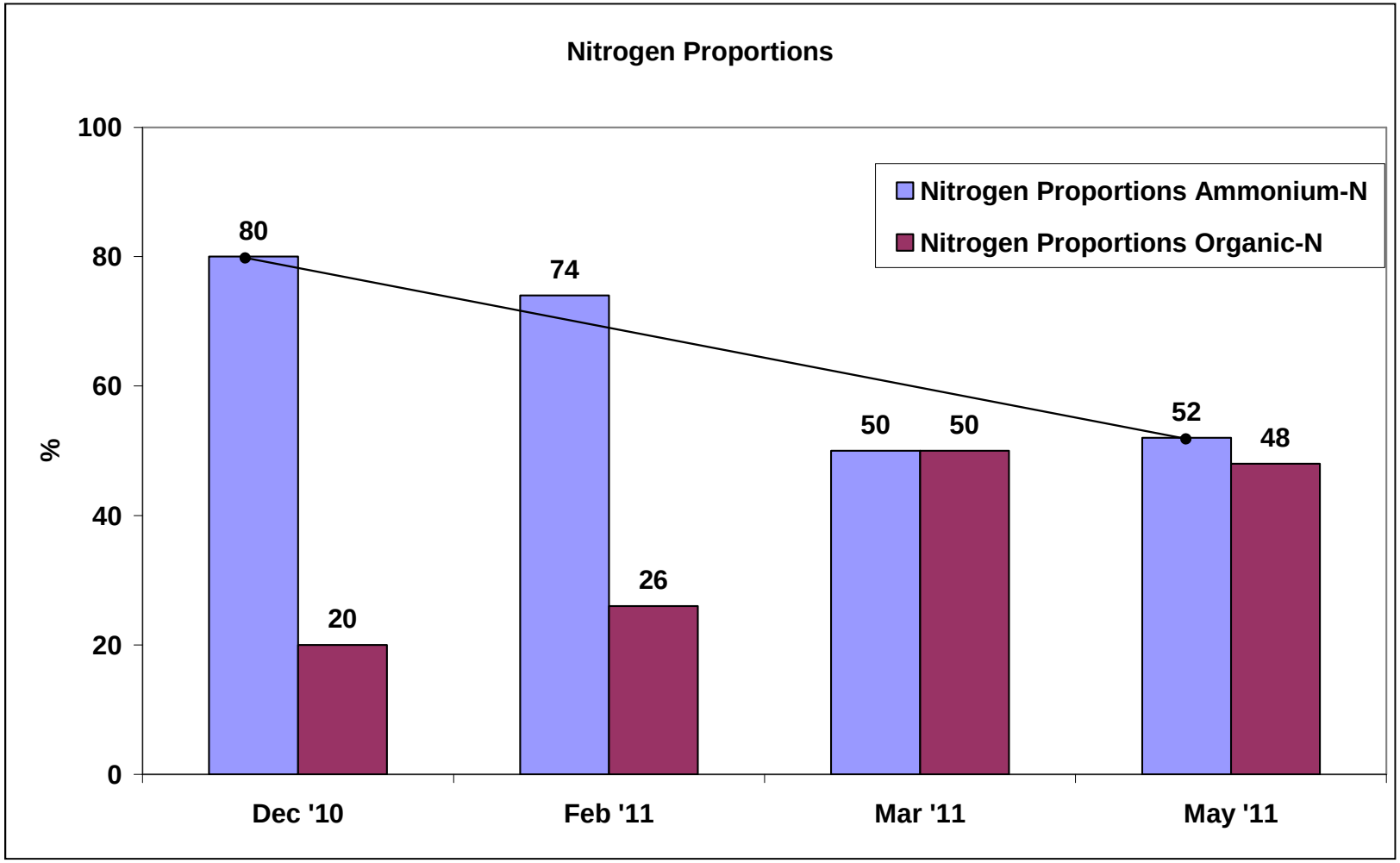
Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

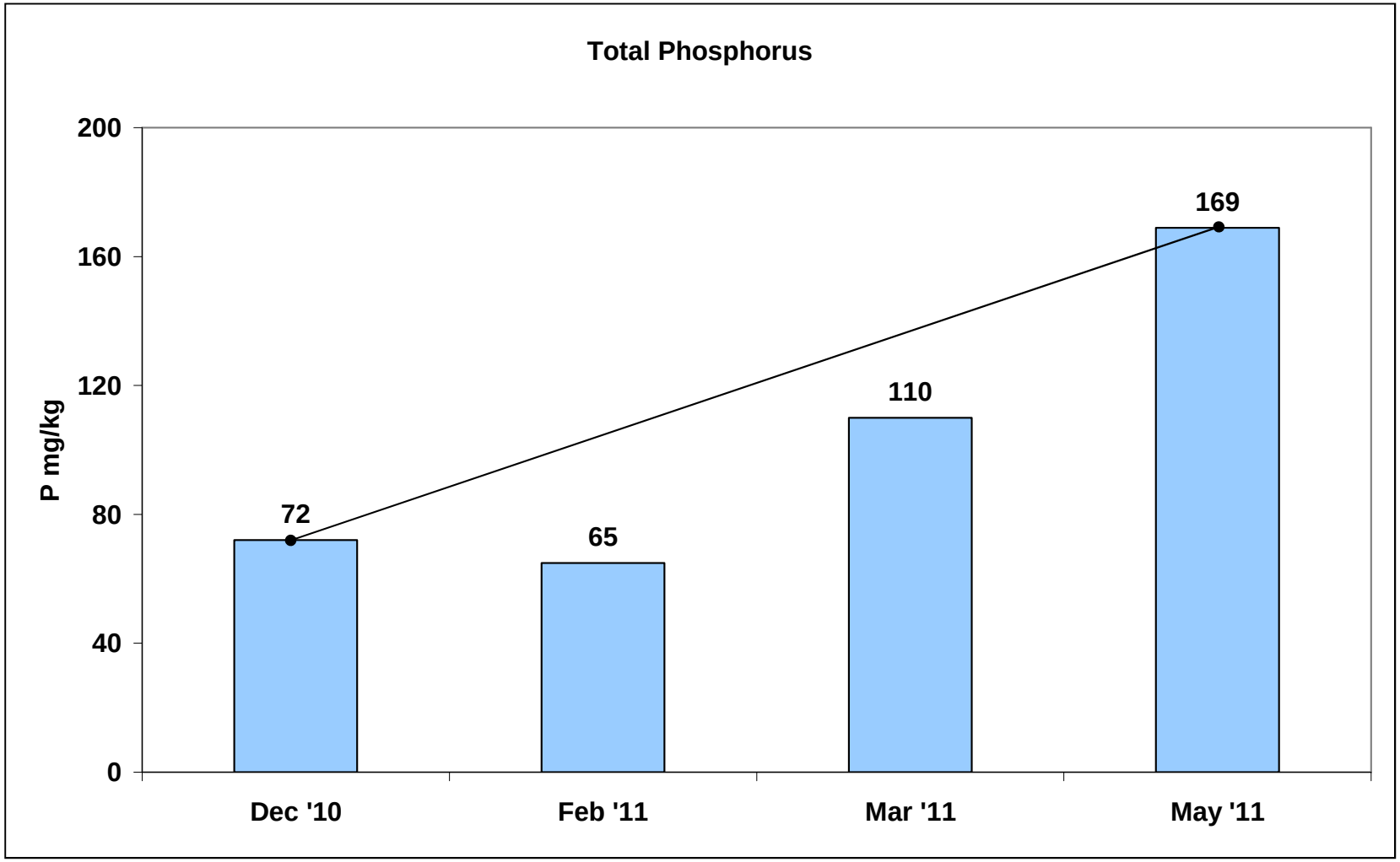
Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

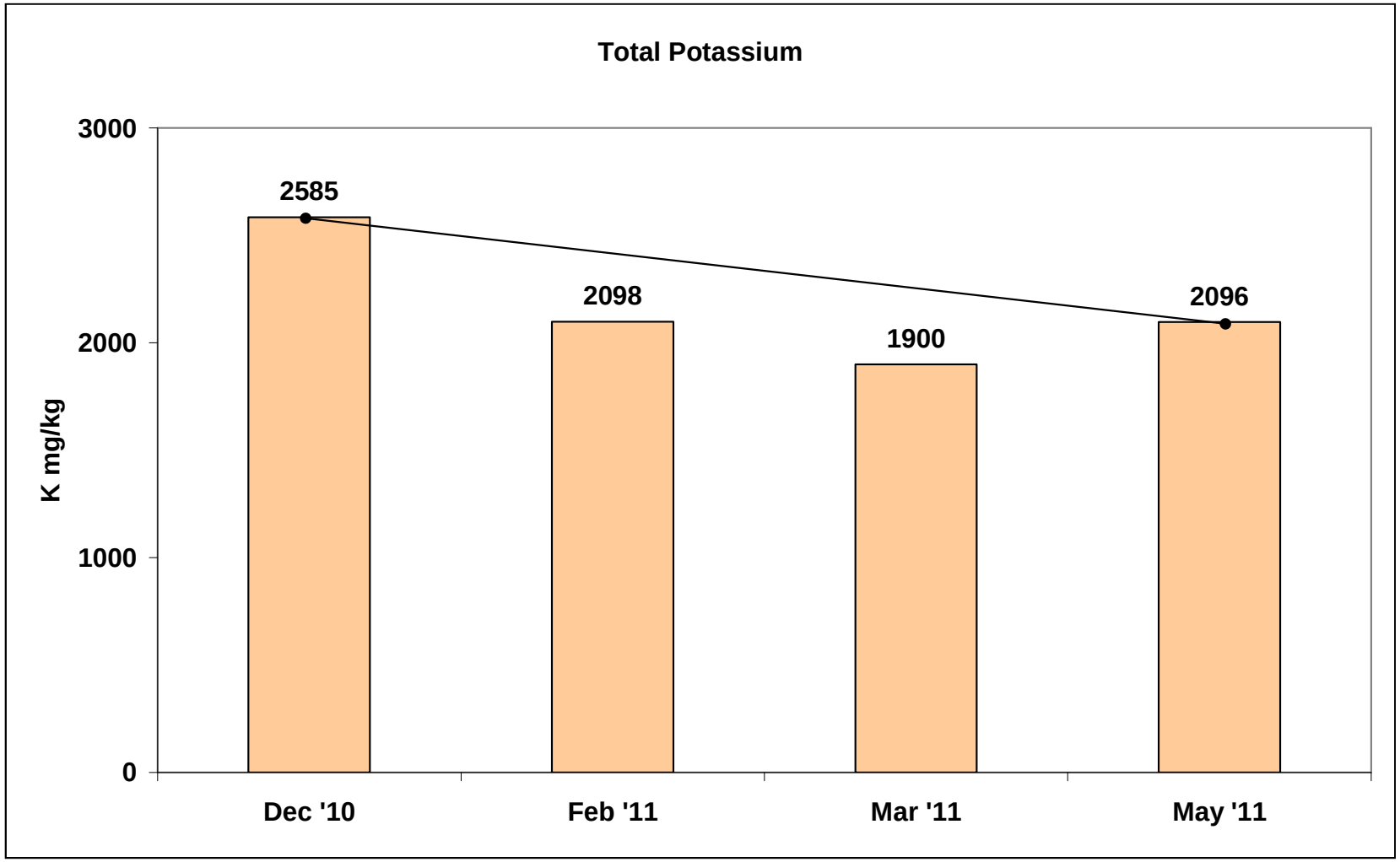
Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

Troston Piggery



BioAg
Biological Solutions

The Mineral Specialists

Troston Piggery - Slurry Headlines

Digest-It® response within….

2 months - Total Aerobic Bacteria increased x22

- Biological Oxygen Demand (Odour) decreases by 82%

3 months - Total Aerobic Bacteria increased x27

- Total Nitrogen up by 10%
- Ammonium-N proportion decreases from 80% to 50% of Total N
- Organic-N proportion increased from 20% to 50% of Total N
- Total Phosphorus increased by 53%
- Total Potassium decreased by 26%

5 months - Total Aerobic Bacteria increased x30

- BOD reduced by 69%
- Total Nitrogen increased by 8%
- Ammonium-N and Organic-N fraction remain unchanged at 52% and 48% of Total N
- Total Phosphorus up by 135%
- Total Potassium reduced by 19%

BioAg Biological Solutions

The Mineral Specialists

Troston Piggery – Digest-it® Action

- Explosion in Aerobic Bacterial Activity → Composting process started

- Rapid reduction in BOD in line with Aerobic Bug levels → Reduced odour

- Increase Total N due to aerobic bug capture and conversion into organic (bacterial) N fraction → Increased Nitrogen level and availability

- Substantial increase in Total Phosphorus as P-rich sludge in lagoon bottom starts to breakdown → Digestion of bottom solids releases Phosphorus

- Total Potassium levels decline due to expansion in liquid pool, as bottom sludge is digested → Evidence liquid fraction of lagoon is expanding

BioAg
Biological Solutions

Troston Piggery

The Mineral Specialists

THOMSON & JOSEPH LIMITED

SLURRY ANALYSIS REPORT

Distributor	**J & H Bunn Ltd**	Distrib. Ref	**MT**
Sample Ref	**Lagoon**	Farmer	**Troston Farms Ltd**
Date	**05/05/2011**	Solids %	**2.21**

		Nitrogen	Phosphate (P2O5)	Potash (K2O)	Magnesium (as MGO)	Sulphur (as SO3)
Nutrient Analysis	%	0.285	0.016	0.311	0.004	0.02
Total Nutrient	kg/m3	2.85	0.16	3.11	0.04	0.2
Nutrient Availability	%	35	50	90	100	100
Available Nutrient	kg/m3	1.00	0.08	2.80	0.04	0.20
	units/1000gal	8.98	0.72	25.19	0.36	1.80
Slurry Application						
56 m3/ha	kg/ha	56	4	157	2	11
4994 gal/acre	units/acre	45	4	126	2	9
Fertiliser nutrient requirement for forage (kg/ha)		120	40	80		
Inorganic fertiliser needed for silage (kg/ha)		64	36	0		
Assuming a fertiliser cost per nutrient unit		£0.96	£0.70	£0.70		

Slurry Fertiliser Value per ha = £166

Comments Final lagoon sample, reasonable levels of N and K, P has increased but remains low.1

BioAg Biological Solutions

The Mineral Specialists

Troston Piggery – Digest-it® Economics

Slurry Fertiliser Value

			£
1.	Available Nitrogen -	+ 0.69kg/m^3 x £0.96	= + 0.66
2.	Available Phosphorus -	+ 0.12kg/m3 x £0.70	= + 0.08
3.	Available Potassium -	always in excess of crop requirements	= nil value
		Total	+ 0.74/m3

Digest-it® Cost

1. Application rate of 1 litre Digest-it® per 22m^3 slurry
2. For 1m3 slurry the Digest-it® application rate is 45mls
3. At £8.00 per litre Digest-it® cost for 45mls is £0.36
4. Digest-it® Cost Effective Ratio = **2.1 : 1**

BioAg
Biological Solutions

The Mineral Specialists

Digest-it® Pig Slurry Usage Rates

1. **Recommended Digest-it® application rate = 1 litre per 22m^3 slurry**

2. **RB209 (Defra Fertiliser Manual – 2010) states:**
   - **(a) Sow housed for 100% produces 4.0m^3 slurry per year**
   - **(b) Finishing pig housed for 88% produces 1.4m3 slurry**

3. **Digest-it® usage rate therefore is:**
   - **(a) Sows – 182mls per year**
   - **(b) Finishing pigs – 64mls/pig cycle**

4. **Digest-it® farmer cost at £8.00/litre delivered in 20ltr cans is:**
   - **(a) Sows - £1.45 per sow per year**
   - **(b) Finishing pigs - £0.51 per pig**


BioAg®
Biological Solutions
T&J