

Agricultural Greenhouse Emissions Project

Effluent Management

A Valuable Resource

Effluent is a valuable resource - on average, first pond effluent contains approximately \$4,000 worth of nutrients per mega litre. Average 2nd pond effluent (sludge at 8% dry matter) contains \$2,500 worth of nutrients per mega litre. The tables below highlight a 'typical' breakdown of nutrients in dairy effluent.

Effective effluent management ensures that water use is kept to a minimum, valuable nutrients are used across the farm and the amount of methane and nitrous oxide gases emitted from the pond and paddock can be reduced.

Typically, methane from an effluent pond can be around 12tCO₂e per year and nitrous oxide emitted from waterlogged soils can total >70% of total nitrous oxide emissions from a farm. Utilising best practice management can reduce these emissions.

Best Practice:

- Effluent system is correctly sized and well maintained with regular clean out of solids and effluent application.
- Plate cooler water reused and recycled effluent water used for yard cleaning
- Effluent application system rotated around the farm to match application rates with soil, pasture and crop requirements.
- Effluent applications follow best practice Nitrous Oxide management. For example, **No more than 50 kg N /Ha is applied to a pasture at a time and not applied to waterlogged soils**
- Nutrient plan used in conjunction with effluent plan
- **Allow minimum of 3 weeks before grazing to avoid nitrate poisoning**
- Never introduce unadapted, hungry cows.
- Cows close to calving should not have access to high K diet – avoid effluent areas
- **Young stock (< 12 months) must not have access to treated paddocks, (Johne's Disease).**
- Entire system ensures that no nutrients leave the property boundary.
- **Correct timing and application methods are critical to maximise the value of nutrients and minimise losses to the environment.**

Environment Protection Act 1970

The Act states that **landholders must not allow effluent to enter surface water or ground waters.** This includes billabongs, canals, springs, swamps, natural or artificial channels, lakes, lagoons, creeks and rivers. Effluent **must not enter ground waters either through infiltration or directly via seepage from ponds.**

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Private contractors

As of July 2009 the provision of effluent management plans (EfMP) was transferred to the private sector. The DPI has a list of accredited providers.

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Analysis of First Pond Effluent

Nutrient	Kilograms / Mega-litre	Fertiliser Source	\$/tonne	\$/kilogram of nutrient	Fertiliser Value \$/Mega-litre
Nitrogen	1000	Urea Single	\$700	\$1.52	\$1,520
Phosphorus	192	Superphosphate	\$420	\$4.77	\$916
Potassium	625	Muriate of Potash	\$1200	\$2.40	\$1,500
Calcium	2,174	Ag Lime	\$40	\$0.13	\$283
Magnesium	872	Dolomite			
TOTAL					\$4,218
DemoDAIRY 2006 sludge at 8% Dry Matter. (Approx Autumn 2009 prices)					

Analysis of Second Pond Effluent

Nutrient	Kilograms / Mega-litre	Fertiliser Source	\$/tonne	\$/kilogram of nutrient	Fertiliser Value \$/Mega-litre
Nitrogen	260	Urea Single	\$700	\$1.52	\$395
Phosphorus	30	Superphosphate	\$420	\$4.77	\$144
Potassium	800	Muriate of Potash	\$1200	\$2.40	\$1,920
Calcium	230	Ag Lime	\$40	\$0.13	\$30
Magnesium	400	Dolomite			
TOTAL					\$2,488
DemoDAIRY 2008 Effluent (Approx Autumn 2009 prices)					

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