



Fact Sheet 3:

The Value of Effluent

Key messages

Re-using effluent provides a range of benefits including:

- A source of essential plant nutrients, boosting crop and pasture yields,
- Replacing some bought in fertiliser, reducing annual fertiliser expenses, and
- Addition of organic matter to the soil, improving soil structure, water and nutrient holding capacity.

Effluent from second ponds contain nitrogen and potassium that is mostly available for immediate uptake by plants, whereas sludge contains more nutrients in an organic form which become available over a longer period – up to three years after application.

Effluent can provide a rich source of nutrients, minerals and organic matter to the soil. The characteristics of effluent vary depending on the cow's diet, and the use of feed and stand-off pads.

Farmers are increasingly finding value in the efficient re-use of effluent, particularly as the cost of brought in fertilisers increases. Effluent in a storage pond can be looked at as a pool of fertiliser which can be substituted for bought in fertiliser.

Agricultural research shows there are multiple benefits to the soil, pasture and crops from returning this nutrient and organic matter rich product, with its combination of fast and slow release nutrients to the farm. Other benefits include improving the soil structure, nutrient holding capacity, and soil health.

To get the best benefit from the re-use of effluent, the application rate of nutrients needs to match the agronomic requirements from the crop or pasture; particularly the N and K levels. Matching agronomic demand often means spreading a small amount of effluent over a large area. This has two benefits, firstly maximising the economic return of effluent re-use, as well as minimising any environmental risks.



The difference between first and second ponds

Sludge from first or main ponds

- Emptying solids from the pond is required as part of regular pond maintenance.
- High solids content.
- Most nutrients are in organic form (not immediately available to plants).
- Nutrients are slow release over time.
- Solids are ideal for incorporation into ploughed land prior cropping or sowing new pasture.
- Usually applied as a slurry or solid manure.
- If emptied by a contractor, the cost of applying to land is re-couped from the increased production within the first 3–6 months of application.

Effluent from second ponds

- Emptying the liquid from the pond is required to maintain storage capacity in the pond.
- Low solids content (if first pond or separation system is effective).
- Most nutrients are soluble and readily plant available, eg N and K.
- Some organic matter which is broken down rapidly.
- Ideal for application to pasture.
- A new system which includes underground mains and irrigators pays for itself within 4 to 5 years in terms of increased forage production, leading to increased milk production.



To effectively utilise effluent and sludge on the farm, you need to be aware that:

- 1 The main nutrients in effluent are not 'balanced' and each must be considered individually. The nutrient that requires the largest reuse area sets the application rate.
- 2 Total potassium per application should be no more than 60 kg K/ha, and no more than 120 kg K/ha per year. This applies for both liquid effluent and sludge.
- 3 For liquid effluent, the total nitrogen application should be no more than 60–80 kg N/ha. However, nitrogen application rates as sludge can be much higher due to the slow release nature of much of the organic N in the sludge.
- 4 Heavier applications increase the risk of problems such as nitrate poisoning, mineral imbalances and make less efficient use of the applied N as well as increasing the risk of losses to the environment.
- 5 A lighter rate over a larger area is preferable to overloading a small area. If no chemical analysis is available, effluent should be spread at a rate of 1 megalitre (ML) per 12 hectares. This is based on the upper end of typical nutrient concentrations found in surveys of farm treatment systems.

See section 13.5.1 in the *Dairy Soils and Fertiliser Manual*, Chapter 13 Using Dairy Effluent for more information.

References:

Dairy Soils and Fertiliser Manual, Chapter 13 Using Dairy Effluent. <http://fertsmart.dairyingfortomorrow.com.au/dairy-soils-and-fertiliser-manual/chapter-13-using-dairy-effluent/>

[View The value of effluent on dairy farms video](#)

Further information:

Dairy Australia's Farm Productivity & Delivery Team
Level 5, IBM Centre, 60 City Road
Southbank Victoria 3006 Australia
T + 61 3 9694 3777
F + 61 3 9694 3833
E cphelps@dairyaustralia.com.au
www.dairyaustralia.com.au