

Effluent application for pasture and crops

Rising fertiliser costs and supply uncertainty can place significant pressure on farm input decisions. In these conditions, dairy effluent presents an opportunity to partially offset fertiliser requirements by supplying nutrients already available within the farm system.

Dairy effluent is a valuable source of nutrients and organic carbon that can support pasture growth, improve soil structure and reduce reliance on purchased fertiliser.

When used strategically, effluent can reduce input costs while maintaining pasture production. However, to achieve this, it must be managed as a fertiliser input with careful consideration of rates, timing and application area.

How much to apply

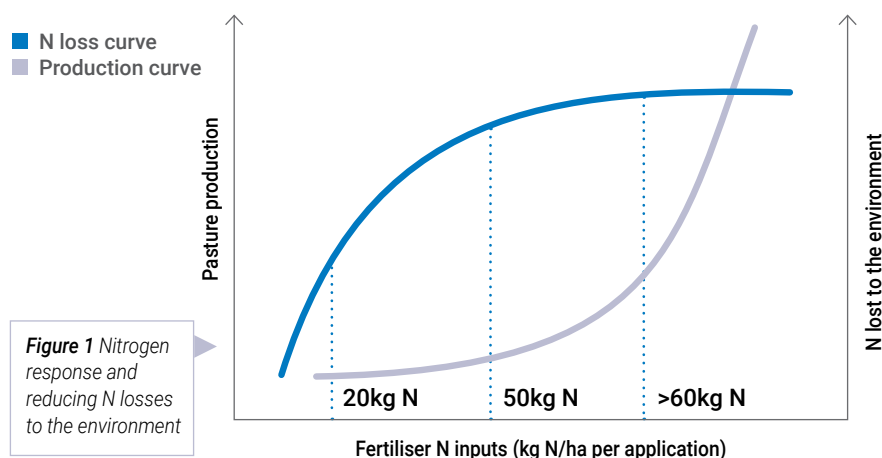
Applying the right amount of effluent is critical to achieving a productive response while avoiding nutrient overload. Effluent nutrients are not balanced, meaning each nutrient must be considered individually when determining application rates. In most cases, the nutrient that requires the largest land area, often potassium, will determine how much effluent can be safely applied.

Total potassium applications should not exceed 60kg per hectare in a single application and 120kg per hectare over a year. Nitrogen applications should be limited to 60kg per hectare per application. These recommendations reduce the risk of nitrate poisoning and metabolic disorders such as grass tetany and milk fever.

Limiting nitrogen applications to 60kg per hectare also improves pasture response rates (pasture response rates progressively decline after 50kg per hectare), and reduces nitrogen losses to the environment. Refer to Figure 1 Nitrogen response and reducing N losses to the environment.

If effluent analysis is not available for either liquid effluent or sludge, these conservative rates can be used:

- 8mm of liquid effluent per hectare (1 ML per 12 ha)
- 25mm of sludge per hectare (1 ML per 4 ha)



KEY POINTS

Treat effluent as a fertiliser input. Plan, monitor and adjust its use over time.

Apply liquid effluent and sludge at the correct rate, over the right area, and in suitable conditions.

Liquid effluent and sludge application rates:

- Potassium ≤ 60 kg/ha per application or 120 kg/ha annually.
- Nitrogen ≤ 60 kg/ha per application.

If no chemical analysis is available for liquid effluent or sludge, these conservative application rates can be used:

- 8mm of liquid effluent per hectare (1 ML per 12 ha).
- 25mm of sludge per hectare (1 ML per 4 ha).

For greatest response:

- Apply liquid effluent to actively growing crops or pastures.
- Apply sludge to established pastures or incorporate into seedbed prior to sowing.

Ensure adequate land area and rotate paddocks to prevent nutrient accumulation.

Do not graze young stock on paddocks that have received effluent due to disease risk.

Sample effluent and conduct regular soil testing to guide decisions.

Sample effluent

To ensure effective nutrient management, it is strongly recommended that farmers get their farms effluent regularly sampled by an approved service provider and use farm-specific results to guide reuse and application rate.



Soil testing

Conduct regular soil testing of the areas where effluent is being applied to monitor nutrient levels and soil health

provides valuable information on nutrient content and allows application rates to be tailored to individual farm systems.

Regular soil testing of paddocks receiving effluent helps track nutrient levels, identify any imbalances and inform future management decisions.

Where to apply

Ensuring there is sufficient land area available for effluent application is essential. Applying lighter rates across a larger area improves nutrient use efficiency and reduces the risk of nutrient accumulation.

Repeated applications to the same areas can lead to a reduced response rate and imbalances, particularly elevated potassium levels, which can affect both pasture composition and animal health.

When to apply

Timing of application plays a significant role in determining how effectively nutrients are used and the level of environmental risk. Effluent should only be applied when there is no likelihood of nutrient loss via runoff from the property or leaching through the soil profile.

Applying to saturated soils or ahead of heavy rainfall increases the risk of nutrients being lost to waterways and reduces the benefit to pasture growth. Matching application timing to periods of active pasture growth will maximise nutrient uptake and response.

Managing risks

Applying excessive amounts of effluent in a single application increases the risk of a range of issues, including nitrate poisoning, mineral imbalances and reduced nitrogen use efficiency. It also increases the likelihood of runoff and nutrient loss.

Effluent should always be treated as a fertiliser input that is managed strategically, rather than as a product requiring disposal.

Monitoring and follow-up

Monitoring and follow-up are important to ensure effluent is being used effectively over time. Testing effluent or sludge

Grazing management

Grazing management is an important consideration following effluent application. Paddocks should be isolated and grazing withheld for at least 21 days after effluent has been applied to pasture or crops. This allows time for nutrient uptake, reduces fouling and minimises the risk of pathogen transfer.

Where sludge has been applied, a longer withholding period of six to eight weeks may be required due to the higher solids and weather conditions.

Spreading effluent on pasture brings an increased risk of infectious pathogen spread, particularly for Johne's disease and Salmonella. The heightened susceptibility of young stock means that any paddocks intended to be grazed by calves or heifers should not receive effluent application.



Key message

When applied with care and planning, dairy effluent can be a highly effective tool to support pasture production and soil health. The key is to apply it at the right rate, across an appropriate area, and under the right conditions, while continuing to monitor and adjust management over time. ■ ■ ■