



Natural Capital fact sheet 6

Understanding the value of farm dairy effluent

At BNZ, we understand that natural resources such as water, soil, climate, biodiversity, and ecology, are the fundamentals of food production. We also know that New Zealand agribusinesses are highly attuned to harnessing and managing these natural resources. To help you manage and grow your farm's natural resources to the next level of efficiency and health, we've set up the BNZ Agribusiness Natural Capital team, dedicated to supporting farmers on this journey.

To better understand the effects of environmental regulations on New Zealand agribusinesses, we've partnered with AgFirst Consulting to help answer some of the key questions about the current environmental topics and on-farm management. Together, we've developed a series of Natural Capital fact sheets to help support our customers as they navigate change.

Please use this resource as a quick fact check as to why these topics are important to the future of your agribusiness, and what practical steps you could take on your farm to help you stay ahead of the curve.

This fact sheet looks at the nutrient value of farm dairy effluent, practical steps to capture the full value of effluent, and what best practice management looks like.

Why is understanding the value of farm dairy effluent important for your agribusiness?

Nutrient-rich farm dairy effluent (FDE), which consists of cattle excreta diluted with washdown water, is a byproduct of dairy cattle spending time in yards, feedpads, and the farm dairy. FDE is a valuable resource, and when managed well, can be used to increase pasture production, and reduce fertiliser costs. Poorly managed effluent poses an environmental and compliance risk, as well as a lost business opportunity. The discharge of farm dairy effluent is regulated by specific regional council rules and national environmental standards.

Why are good management practices important for your agribusiness?

Good effluent management is a combination of having a well-designed effluent system and processes in place that ensure effluent is applied to pasture or crops at the correct rates, at the right time. Effective and proactive decision making around effluent management is the key to minimising environmental and human health impacts.

What are the potential risks and liabilities of poor farm dairy effluent management practices to your agribusiness?

If farm dairy effluent is not managed appropriately through good management practices and well-designed infrastructure, it can be a liability to an agribusiness. Due to the high risk, regulatory authorities are clamping down on effluent non-compliance. Poor effluent management can impact everyone in the business, and the cost for non-compliance can range from less than \$1,000 for an abatement notice, to more than \$100,000 for repeat offences and prosecutions.

Who in your agribusiness is exposed to this risk?

Staff, managers, contract/share milkers, lessees, owners (absentee and present).

Common non-compliance issues include the following:

- Insufficient effluent pond storage and overflow.
- Overapplication and ponding, or incorrect irrigator for soil type.
- Hydrants, camlock, and pipe bursts.
- Unsealed pond resulting in groundwater contamination.
- Effluent solids stored on unsealed surfaces.
- Non-capture of effluent from underpasses.
- Poor practices by management and staff.

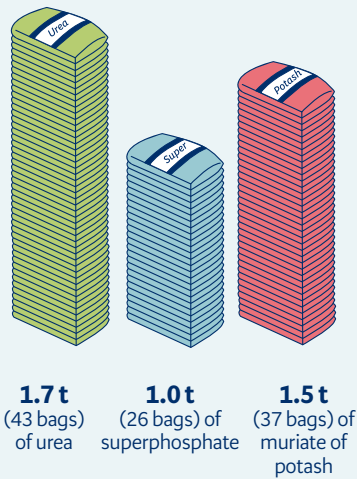
What is the value of a functional and well managed farm dairy effluent system within your agribusiness?

Farm dairy effluent offers a cheap source of nitrogen (N), phosphorus (P), potassium (K), and other key nutrients that are fundamental to pasture and crop production. Synthetic fertiliser requirements can be reduced by doing the following:

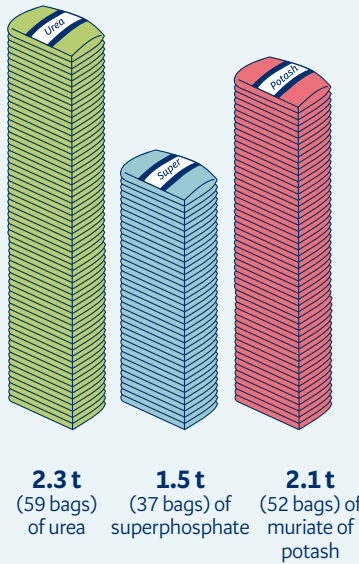
- Increasing the size of the effluent block to spread nutrients across the farm.
- Timing effluent applications to when there is a soil moisture deficit, and when pasture and crop demand is high, will result in better nutrient uptake, utilisation, and reduced losses (leaching and overland flow).
- Increasing effluent storage to allow for winter irrigation deferral, ensuring nutrients are available to apply when needed.
- Utilising effluent efficiently – low rates and even spreading across the effluent block.
- Use of a stirrer to mix and regulate effluent nutrients and consistency.
- Solid separation, with high-nutrient solids transferred to non-effluent or cropping areas.
- Regular effluent testing for nutrient composition.
- Regular and detailed soil testing to identify blocks with elevated nutrient loadings. Effluent blocks usually have high K levels which increase the risk of cow metabolic issues.

Solid fertiliser equivalent of effluent from 100 cows under different scenarios

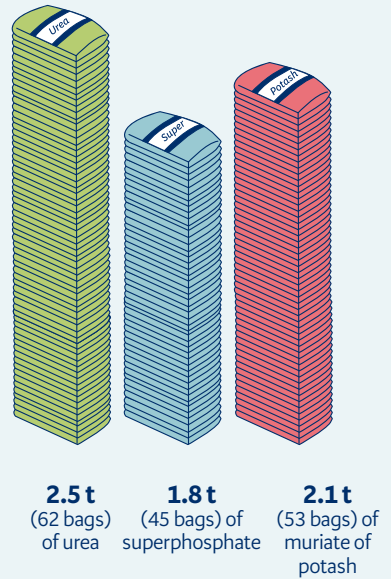
System one - All-grass system



System two - Maize 0.6 t/cow/yr on feed pad



System three - 0.6 t Maize + 0.4 t PKE/cow/yr on feed pad

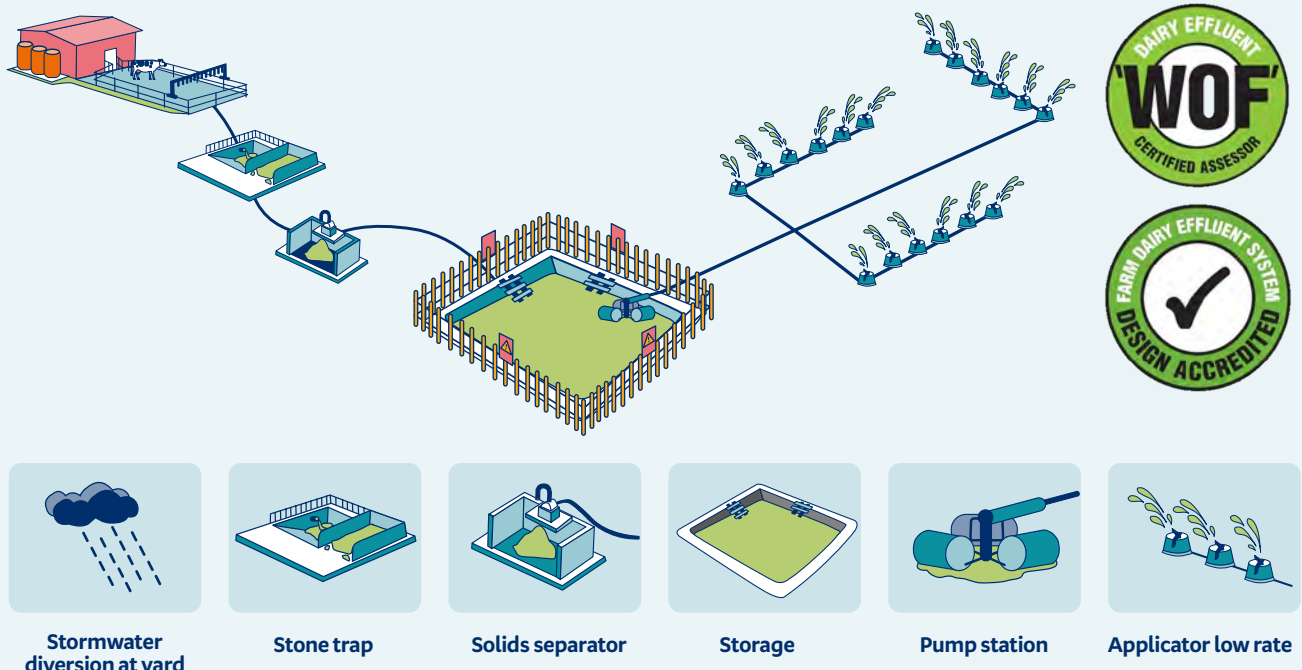


Source: A farmer's guide to managing farm dairy effluent - Dairy NZ.

The nutrient content of effluent depends on the effluent solids content, the length of time cows spend on any area that collects effluent, the cows' diet, and the length of time effluent is stored in a pond before application to land.

What makes up a good effluent system and who should you seek guidance from?

To understand your effluent requirements, it's important to talk to an accredited FDE company. The designer will ensure that the improvements or new system will suit your existing needs, future intentions, restrictions, and regulations that apply.



Source: Farm Dairy Effluent (FDE) Systems - Dairy NZ.

Is your current effluent system fit for purpose?

Regulation requires that your effluent system is compliant 365 days of the year. To understand if your effluent system is fit for purpose, the Dairy Effluent Warrant of Fitness (DEWoF) is a programme that can provide an independent assessment and risk assessment. A DEWoF is ideal for:

- part of the due diligence for buying or providing assurance when selling a farm
- a sharemilker or lessee coming onto a new farm
- planning any upgrades
- when you have made operational farm system changes (e.g. split calving)
- understanding the risk for a corporate farm or absentee owners.

Why is it important to have a good effluent system?

A poorly designed effluent system will have long-term implications, and result in problems such as:

- High risk of non-compliance.
- Lack of contingency for staff, poor weather, or breakdowns.
- Demand and stress on labour, particularly during busy and high-risk times (calving).
- High operating, maintenance, and compliance costs.
- Poor distribution and utilisation of key nutrients.
- Lack of flexibility for farm system changes or expansion.

Depending on your needs, some system upgrades can be costly. If system upgrades need to be staged over time to fit your budget, ensure these options have been discussed and allowed for with the effluent designer. This will allow flexibility in the future for farm system changes.

Along with our Natural Capital team, BNZ have dedicated Agribusiness Partners throughout New Zealand. Your local Agribusiness Partner can help you think about where to start with the planning and budgeting of costs when it comes to enhancing your natural resources and maintaining your effluent system. If you need any further information on Dairy Effluent Warrant of Fitness, Dairy Effluent Storage Calculations, your local BNZ Agribusiness Partner can put you in touch with their trusted advisors.

If you would like to read more about farm dairy effluent, here are some great resources that can help:

1. dairynz.co.nz/environment/on-farm-actions/effluent
2. effluentwof.co.nz
3. dairynz.co.nz/environment/on-farm-actions/effluent/effluent-storage/dairy-effluent-storage-calculator-desc
4. irrigationnz.co.nz/accreditation

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