DairyNZ

Tactics

Reducing your environmental footprint

Our international brand, and the value of our products in international markets, increasingly depends on our environmental credentials. Dairy farmers are known as innovators and producers of premium products and play a crucial role as stewards, guardians, and caretakers of the land.

DairyNZ has pulled together nine tactics that will help farmers improve on-farm efficiency and have positive benefits for the environment. These tactics are based on research, data, and learnings from leading farmers.

Every farm is different, so take time to consider your options and find out what works best for your business.

#	Tactic	Addresses GHGs	Addresses freshwater	Supports biodiversity
1	Manage fertiliser and feed use to improve the efficiency of production.	✓	✓	
2	Manage the total feed eaten on farm.	✓		
3	Improve animal health to increase on-farm efficiency.	✓		
4	Improve the management of on-farm effluent.	✓	✓	
5	Identify and manage critical source areas (CSAs) to minimise losses to waterways.		✓	✓
6	Consider how cultivation and grazing can be managed to minimise erosion and contaminant loss to waterways.		✓	✓
7	Minimise contaminant losses by using water efficiently in the dairy shed and for irrigation.		✓	✓
8	Keep stock out of waterways.		✓	✓
9	Look at opportunities to plant or restore on-farm vegetation and enhance biodiversity.	✓	✓	✓

For more information, check out **dairynz.co.nz/environment**
or contact your local DairyNZ team 0800 4 DairyNZ

Tactic #1	Manage fertiliser and feed use to improve the efficiency of production.
Key messages	Managing fertiliser and feed use can help minimise losses to waterways and improve the efficiency of pasture and crop production. These efficiency improvements may also reduce greenhouse gas emissions if the total feed eaten on-farm is decreased or production is increased from the same inputs. • Prepare an annual nutrient budget based on regular soil tests with your trusted farm consultant or fertiliser representative. • Minimise surplus nitrogen through reduced use of nitrogen fertiliser and supplementary feed. • Use urease-coated fertilisers which reduce losses of ammonia from urea use and maximise the nitrogen available for plant uptake. This means less nitrogen needs to be used and less nitrous oxide is emitted. • Manage the timing and placement of nitrogen fertiliser to reduce the amount of nitrogen applied while still increasing pasture growth. • Consider the use of Plantain in your pasture sward. Research has shown it can help reduce nitrogen surplus. • Monitor and maintain soil phosphorus levels below or within the target ranges for the soil-type and crop. • Match feed demand with pasture growth and utilisation. Balancing pasture growth and utilisation is key to optimising stocking rates that result in the same or higher profit with lower inputs. • Manage pasture and crop husbandry to optimise production through fertility, rotation, and inputs, while minimising damage from compaction, diseases, and pests • Store fertiliser in a contained system to minimise losses and calibrate and maintain fertiliser spreading equipment.
DairyNZ website links	• Managing nitrogen fertiliser • Reducing nitrogen loss • Reducing phosphorus loss • Plantain • DairyNZ forages for reduced nitrate leaching research programme • DairyNZ Plantain potency and practice research programme

Tactic #2	Manage the total amount of feed eaten on-farm.
Key messages	Managing fertiliser and feed use can help minimise losses to waterways and improve the efficiency of pasture and crop production. These efficiency improvements may also reduce greenhouse gas emissions if the total feed eaten on-farm is decreased or production is increased from the same inputs. • Evaluate your farm's comparative stocking rate, individual animal performance and the need for supplementary feed in your farm system. • Identify and cull less productive stock early to reduce demand later in the season. • Reduce wastage rates from unplanned losses so replacement rates can be optimised, and total feed eaten reduced. • Use genetic selection over time to increase animal performance and decrease livestock maintenance requirements. This is a long-term decision and will only yield a small response over time.
DairyNZ website links	• Climate - Managing GHG emissions • Climate - On-farm emissions • DairyNZ Less Methane project • Comparative Stocking Rate

Tactic #3	Improve animal health management to increase on-farm efficiency.
Key messages	Actions that increase performance while reducing animal wastage will lead to on-farm efficiencies and fewer greenhouse gas emissions (mainly through producing the same or more product with fewer animals). • Improved nutrition though increasing feed efficiency, the ME of feed, and farm grown feed, will reduce total feed eaten and therefore emissions. • Improved animal health through managing animal issues such as lameness, Johne's disease, metabolic issues, and other animal sickness will reduce wastage and improve on-farm efficiencies. • Focus on reduced mastitis and somatic cell counts to improve production, reduce wastage, and increase on-farm efficiency. • Improving the reproduction efficiency of the herd will minimise wastage from later calving cows and not-in-calf cows. This can be done by focusing on 6-week in calf rate and the 'Fertility Focus Report' and will ultimately lead to reduced replacement rates and influence the timing of culling decisions. • Focus on achieving liveweight target of your young stock as this will reduce wastage through reducing empty heifers
DairyNZ website links	• Cow health

Tactic #4	Improve the management of on-farm effluent.

Key messages	Effluent can be a source of nutrient loss, contaminants entering waterways, and greenhouse gas emissions. However, it can also be a valuable resource that, when managed well, increases pasture production, and reduces fertiliser costs.
	• Consider developing an effluent management plan. This is a handy tool for bringing together all effluent needs on a farm, including regional rule requirements, location of waterways, buffer exclusions, and system maintenance schedules.
	• Spread effluent during appropriate soil conditions and at low-application rates to minimise nutrient loading, match plant requirements, and minimise ponding and runoff to waterways.
	  • This will also help reduce the N-surplus and therefore the nitrous oxide emitted from the soil.
	• Test effluent regularly so that nutrient concentrations are known, and application rates can be adjusted.
	• Use all effluent applications as a substitute for fertiliser applications, enabling reduced fertiliser on effluent application areas.
	• Practice deferred effluent irrigation and store effluent during inappropriate soil conditions.
	  • Avoid storing effluent in anaerobic conditions, as this will increase methane emitted. Options to reduce this include stirring, covering, or adding treatments like polyferric sulphate.
	• Ensure careful management of effluent from housing and stand-off pads due to volume created of both liquids and solids. Ensure that it doesn't lead to increased risk of nutrient loss and increased emissions from application and storage.

DairyNZ website links	• Effluent Systems

Tactic #5	Identify and manage critical source areas to minimise losses to waterways.

Key messages	Critical source areas are features in the landscape where water flows or accumulates, and there is a connection to waterways. This includes point source discharges such as tile or mole drains.
	• Identify critical source areas on your farm and their connection to waterways.
	• Develop actions that reduce or mitigate contaminant loss through critical source areas, such as:
	  • Excluding stock from critical source areas during times of high contamination risk.
	  • Minimising effluent or fertiliser to critical source areas during high-risk periods.
	  • Retiring and planting areas to filter contaminants.
	• Ensure stock crossings are bunded to prevent runoff and move gates and tracks away from waterways (see also Tactic #6).

DairyNZ website links	• Critical source areas • Efficient Tracks • Crossings • Fencing waterways • Reduce sediment loss • Riparian planting • E. coli loss

Tactic #6	Consider how cultivation and grazing can be managed to minimise erosion and contaminant loss to waterways
Key messages	Reduced erosion leads to improved grass growth and milk production. It enhances water quality and if planting is undertaken for erosion control, it can also provide shade and shelter for stock. • Think about the suitability of each paddock for cultivation and assess the risk of soil erosion before work is undertaken, e.g., topography and soil type, proximity to waterways, and erosion susceptibility. • Plan crop rotations and re-sowing to minimise the time that soils are bare, especially during the high-risk winter months. • Use catch-crops to reduce contaminant loss to water and improve soil. • Consider direct drilling, strip-tillage, or non-invasive tillage to reduce risk of contaminant loss. • Manage or retire and plant erosion-prone land to minimise soil losses. • Plan and prepare a winter grazing plan to minimise soil damage and erosion during the winter months. Select appropriate paddocks for intensive winter grazing that are away from waterways, 10° or less slope and are not vulnerable to pugging or erosion. • Graze pastures and crops from top to bottom or strategically, to minimise sediment and contaminant loss to critical source areas and waterways.
DairyNZ website links	• Reduce sediment loss • Erosion • Considering a catch crop • Winter grazing plan

Tactic #7	Look for opportunities to use water efficiently in the dairy shed and for irrigation.
Key messages	• Look for practical ways to reduce dairy shed water use, which then minimises effluent volumes and contaminant losses. • Monitor stock water use so that leaks and losses are identified early, and this doesn't create waterway contamination. • Annually test the depth and rate of irrigation so that the system is running efficiently, and so that leaching and run-off are minimised. • Evaluate the scheduling of irrigation and use technology to inform decisions, like soil moisture monitoring devices. • Carry out regular maintenance of the irrigation system to minimise the amount of water applied, meet plant demand, and prevent losses to waterways.
DairyNZ website links	• Water Use • Irrigation

Tactic #8	Keep stock out of waterways.
Key messages	Stock access to waterways can damage banks and streambeds and result in discharges of dung, urine, and sediment directly to water. • The Government's Stock Exclusion Regulations require that dairy cattle must be excluded from all wetlands, lakes, and waterways greater than 1m wide, with a minimum 3m setback. • Stock must use a bridge or culvert if they cross a waterway more than twice a month. NOTE: Regional council rules may be stricter so make sure you're familiar with the requirements in your area.
DairyNZ website links	• Stock exclusion rules • Fencing waterways • Crossings

Tactic #9	Look at opportunities to plant or restore on-farm vegetation and enhance biodiversity.
Key messages	Planting or restoring indigenous and exotic vegetation on a farm can help improve erosion control, waterways, biodiversity, livestock shade and shelter, and soil health. • Some types of vegetation may be eligible for earning carbon credits through the ETS, provided they meet certain requirements. New plantings may also result in reduced on-farm greenhouse gas emissions if there is land use change. • Look at opportunities to protect and plant riparian areas with native species and restore natural wetlands. This improves waterways by filtering contaminants, preventing waterway weeds, lowering temperatures, providing habitat, and reducing the impact of flooding. • Consider a planting plan for your farm, which identifies the priority sites for planting. Your regional council or local catchment group may offer support for some types of on-farm planting and restoration. • Migration is a key part of the life cycle of some New Zealand fish species, like whitebait and eels. Instream infrastructure like culverts, weirs, and dams, can delay or prevent their movements, which leads to a reduction in this aquatic life. • Be aware of how any structures on your farm might affect the passage of fish through your waterways and consider getting advice from your regional council on how to fix these.
DairyNZ website links	• Riparian planting • Wetlands • Biodiversity • Carbon offsets • Fish passage