



Erosion

- Sloping banks of hill country streams are particularly vulnerable to erosion. Set permanent fencing far enough back that bank erosion by stock is prevented and to allow for changing directions in streams. ecan.govt.nz/publications/General/HillCountryStreams.pdf.
- Plant trees on slopes where there is the greatest risk of erosion. Consider using long-term productive species for areas with large weed burdens and minimal profitability.
- Adjust cultivation practices and timing to minimise soil erosion from wind and water.

Effluent

- Ensure the effluent system meets industry specific Code of Practice or equivalent standard.
- Have sufficient suitable storage available to enable farm effluent and wastewater to be stored when soil conditions are unsuitable for application.
- Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated.
- Apply effluent to pasture and crops at depths, rates and times to match plant requirements and minimise risk to waterbodies.

Biodiversity

- Manage or retire bogs, wetlands and swampy areas.
- Carrying out fencing to protect bush can stop stock damage to vegetation and also remove marginal land from grazing.
- Protecting native bush can help preserve streams and protect water quality. <http://ecan.govt.nz/advice/your-business/farming/Pages/native-bush-biodiversity.aspx>.
- Check your eligibility for local funding and grant schemes for biodiversity projects.
- Refer to the NZLT planting guide www.landcare.org.nz/files/file/1637/Opihi%20Planting%20Guide_final.pdf

Good Management Practices

Project website: www.landcare.org.nz/Regional-Focus/Christchurch-Office/North-Canterbury-Farming

NORTH CANTERBURY SUSTAINABLE FARM SYSTEMS

A well-managed farm business balances environmental management with economic and social drivers.



Ministry for Primary Industries
Manatū Ahu Matua



Sediment

- Direct run-off from bridges and races into paddocks and away from waterways.
- Exclude stock from waterways, drains, and wetlands in intensive grazing situations to prevent livestock damaging banks and defecating in water.
- Efforts to minimise soil damage and compaction can help reduce the amount of sediment loss and improve productivity.
- Prevent erosion and movement of sediment and runoff into waterways by use of conservation tillage, filter strips, sediment retention ponds, cut-out drains and planting critical source areas. Use the method that best suits your situation. www.landcare.org.nz/files/file/177/in-channel-sediment-traps-2002.pdf.
- Refer to the NZLT sediment trap fact sheet www.landcare.org.nz/files/file/1638/Opihi%20Sediment%20Trap%20Factsheet_final.pdf

Nitrogen

- Set nitrogen (N) application rates and timing to match crop growth cycles and soil moisture conditions, taking into account when all sources of nutrients are applied.
- Don't apply N when soils are below, 6degC, are at field capacity, or are severely compacted. Reduce Mineral N leaching through the use of minimum tillage.
- Ensure equipment used for N application is suitably calibrated and Spreadmark standards are used. Use GPS for precise application and recording (proof of placement).
- N leaching from urine can be reduced through appropriate paddock selection and grazing within specified time limits as part of an overall grazing regime.

Phosphorus

- Maintain optimum Olsen P levels by soil testing annually and monitoring phosphate trends.
- Ensure P application equipment is suitably calibrated and well-maintained. Application of superphosphate is not recommended when soils are near field capacity or if heavy rain is forecast for within the next 7 days.
- Maintain clear separation between paddocks, races and waterways when applying P. Use riparian areas as a buffer. The plants act as a filter, slowing down runoff and catching sediment and P.
- Apply the form of P fertiliser that is best suited for the purpose and timing of your application.





Winter Intensive Grazing

- When choosing paddocks to plant winter feed crops, look for areas at lower risk of pugging and compaction where possible, with no significant drains, or waterways.
- For intensive winter grazing, leave a vegetative strip not grazed from the edge of drain or waterway to capture P and sediment runoff.
- Graze from top to bottom of the paddock if it's sloping during the wettest period. Graze lower-lying areas and those closest to waterways last.
- As soon as possible, replant the grazed area in a crop/pasture that will use up the residual N in the soil.

Hot Spots

- Locate silage stacks at least 50m from surface water and ensure that any leachate is directed to pasture or the farm's effluent system.
- Recycle plastic waste from the farm including chemical containers and baleage/silage wrap. www.agrecovery.co.nz/programmes/chemical-disposal/.
- Locate any offal or rubbish pits where leachates cannot enter ground or surface water.
- Cover and fence offal pits to keep out vermin and animals.

Infrastructure

- Maintain stock races and direct run off away from waterways and into paddocks.
- Putting in troughs, where practical, can help attract stock away from streams.
- Ensure well-heads and springs are protected from contamination.
- The Dairy NZ Smart Water Use resources information focuses on using water as efficiently as possible and reducing water loss. <http://www.dairynz.co.nz/environment/water-use/smart-water-use/>

The sections included here are suggested and recommended practices for achieving optimum land management which reduces environmental risks and aids cost efficiency.

Because no two farms are identical – there is no 'one size fits all' approach to these practices.

The examples here are intended as 'food for thought.' They are ideas rather than rules and will not be relevant or practical for everyone.

NGĀI TAHU Farming



Cropping

- Adjusting cultivation practices, rotations and timing may minimise N loss and maximise residual nitrogen. Managing periods between cropping where soil is exposed can reduce the risk of erosion, overland flow, and leaching.
- Using a paddock history, conducting soil tests (including deep soil N tests) and using cropping calculators and Overseer will help you decide what type of fertiliser to apply and when before planting pasture and crops.
- For all cultivation adjacent to a waterway, leave a vegetative strip to prevent sediment and runoff going into water.
- Cultivate along contours if possible (rather than up and down the slope) where slopes are greater than 3° of steepness.
- Use placement tools e.g. GPS guidance, crop sensing, precision tools, where possible.

Irrigation

- Design, calibrate and operate irrigation systems to minimise the amount of water needed to meet production objectives. www.irrigationnz.co.nz/news-resources/irrigation-resources or www.dairynz.co.nz/environment/water-use/irrigation-efficiency
- Undertake tests to show that the system performs to desired specifications for: application depth; and application uniformity using bucket test or another commissioned test.
- Regularly assess soil moisture buried sensors, tapes, a hand held probe or scheduling service.
- Adjust return period and/or application depth adjusted according to evapotranspiration, soil moisture, crop requirements and rainfall. www.irrigationnz.co.nz/news-resources/irrigation-resources/ see Guidance on Water Management during the season. pdf
- Carry out daily checks for excessive runoff/ponding and ensure irrigator problems and issues are fixed. www.irrigationnz.co.nz/news-resources/irrigation-resources/ see Operation-and-Maintenance-Manual.pdf

Riparian Management

- Ensure riparian margins are sufficiently wide to adequately filter sediment from any run-off.
- Determine how your waterway behaves in full flow to avoid losing plants during floods. This will help you decide where to put fences and what to plant.
- Identify areas on your farm where runoff or erosion occur most frequently and have the greatest effect on water quality. This includes seeps, springs, swales, gullies, eroding banks, boggy areas, and wet soils. These should be prioritized for fencing and planting.
- Include weed management in yearly programme as it minimises workload and chemical required. Spray gorse and broom when it is not flowering, to protect bees.

