



Final cattle grazing event in a winter crop of kale. The cattle were grazed in this critical source area for 3-4 hours when soil conditions were relatively dry underfoot, then removed from the paddock to reduce risk of further damage to the soil.

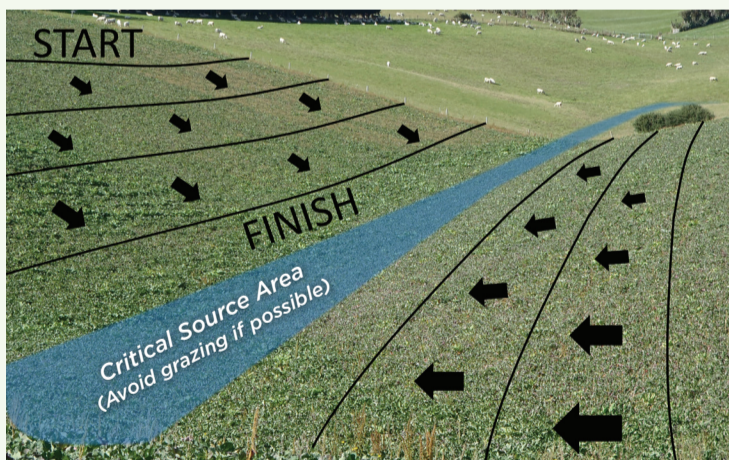
TEN TOP TIPS FOR WINTER GRAZING OF CROPS

Winter grazing of crops is a key source of sediment, nutrient and pathogen loss into waterways from farms. Reducing losses from winter crops can go a long way to reducing total farm losses. With a few simple steps, you can make a real difference now!

Soil is our greatest asset, holding on to more of it makes good economic sense. Damage to soil from poor grazing management of winter crops will impact on the future productivity of that paddock. Too much soil and nutrients in waterways impacts on their ecology and can kill freshwater species.

What can you do?

- 1 Exclude stock from waterways.** Create an ungrazed buffer zone of crop between the livestock and the waterway. 3-5 metres is a good starting point but this should increase with slope and instability of soil.
- 2 Leave an ungrazed buffer zone around either side of Critical Source Areas (CSAs).** These are parts of the paddock that can channel overland flow directly to waterways, like gullies, swales, very wet areas, spring heads, waterway crossings, stock camps and vehicle access routes.
- 3 Graze paddocks strategically.** On a sloping paddock, fence across the slope and start grazing at the top of the paddock, so the standing crop acts as a filter. Or, if there is a waterway present, start grazing at the opposite end of the paddock.



- 4 Make breaks "long and narrow"** – research shows that the crop will be utilised more efficiently by cattle.



- 5 Back fence.** Regularly backfence stock off grazed breaks to help minimise pugging damage and to reduce runoff risk.
- 6 Place troughs and supplementary feed in a dry central part of the paddock** well away from any waterways or CSAs.
- 7 Look after your stock.** Provide adequate feed, shelter and clean fresh drinking water. Doing this will also limit stock movement and help reduce damage to crop and soil.
- 8 Graze the buffer strips around CSAs when soil is not so wet** and risk of loss has reduced. Graze quickly and lightly if you can.
- 9 Plant a catch crop.** Where soil conditions and farm management allow, consider planting a fast growing crop in spring such as greenfeed oats. It can make a dramatic difference to reducing nitrogen losses.
- 10 Plan early.** When choosing paddocks for next year's winter feed crop, think about how you can improve your management of CSAs and waterways.

The Pastoral 21 research programme demonstrated that you can reduce losses of sediment and phosphorus (P) from winter crops by up to 80-90% through strategic grazing and careful management of Critical Source Areas (CSAs).



READ

B+LNZ Factsheets on good management practice for winter grazing. Email resources@beeflambnz.com or call 0800 233 352.



LISTEN

AgResearch soil scientist Ross Monaghan discusses winter grazing on a B+LNZ podcast: beeflambnz.podbean.com




DISCUSS

For more info, contact your Regional Council's land management advisor.

TOP TIPS TO SET YOU UP FOR NEXT WINTER

As you prepare crops for next winter, now is the time to take actions that will help you hold onto your soil and protect waterways during winter grazing.

First up, ask yourself – is winter cropping appropriate for my farm and catchment?

 **The Pastoral 21 research programme demonstrated that you can reduce losses of sediment and phosphorus (P) from winter crops by up to 80-90% through strategic grazing and careful management of Critical Source Areas (CSAs).**

Paddock choice and preparation is key

- Avoid paddocks with very heavy soils (prone to excessive pugging and increased overland flow).
- Select a paddock that is relatively flat, well-drained, with a deep soil profile.
- If the paddock is close to waterways make sure you leave appropriate buffer zones to minimise overland flow.
- Select paddocks with less critical source areas such as gullies, swales, or other natural drainage channels.
- Consider where sub surface drainage outlets are, especially in paddocks with mole or pipe drains.
- Use nutrient budgeting to inform your wintering decisions. Take particular note of nitrogen losses – winter crops can pose a high risk to N loss.
- Soil test your chosen paddocks, so your fertiliser decisions are well informed.
- Catch-crops, either sown with the main crop or after it has been grazed – increase feed availability and help keep nutrients in the soil profile.

Cultivation tips

- Leave uncultivated pasture buffer strips around waterways and critical source areas.
- Cultivate paddocks along the contour and maintain a coarse seed bed if possible.
- Use minimum tillage practices, especially on sloping land.

While it's summer – think about how you want to graze the crop

- Consider stock exclusion and light crop grazing options for critical source areas.
- Place supplementary feed in your crop paddocks when the soil is still dry to minimise heavy vehicle use during winter.
- Plan to start grazing at the end of the paddock away from waterways and at the top of a sloping paddock.
- Plan how you will allow stock to access clean reticulated water.



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Good Environmental Practice for Winter Crops



Wintering – Good environmental practice

Winter is a critical period for ensuring sufficient feeding levels to achieve livestock maintenance and production targets. Winter crops can contribute disproportionately to losses of nitrogen (N); phosphorus (P); sediment and bacteria such as E.coli from the farm or grazing system.

This guide provides solutions to minimise the environmental impacts of using winter crops and includes tips on managing the following:

Paddock selection | Overland flow | Cultivation | Strategic crop grazing

Successful wintering will also:

- Help to achieve body condition targets
- Be cost-effective
- Provide feed when grass supply is short
- Complement the overall farm system
- Be sustainable for people, livestock and the environment
- Help minimise contaminant loss to the environment and comply with local regulations
- Protect valuable topsoil.

Good management – cost effective wintering solutions

Good wintering practice doesn't need to cost more. By taking into account the areas of environmental risk on your farm, a suitable winter cropping and grazing plan can be put together which will decrease the environmental impact of wintering.

Your regional council will have specific rules relating to winter crops and break feeding. If you are keeping stock on the paddock after the crop is gone or are feeding additional supplement on the crop we advise that you seek advice from your regional council.



Critical source areas

Critical source areas (CSAs) are the parts of your farm that lose much higher levels of sediments and nutrients to water compared to the rest of the farm. Identifying CSAs and managing them will help you to prioritise your time and money to achieve the best reduction in your environmental footprint

What are critical source areas in crops?

Winter grazed forage crops are a major CSA on farm. They may also have a collection of CSAs within them. Managing these CSAs, and employing strategic grazing, can reduce phosphorus and sediment loss from crops by 80-90%. CSAs in crops include:



Streams and waterways

Particularly those with no stock exclusion or buffer zones. Sediment and phosphorus can reach waterways through direct deposition of poo, trampling of banks or overland flow



Low-lying parts of paddocks such as gullies and swales.

These areas can accumulate sediment and phosphorus which can move in overland flow.



Steep or eroding areas

Cropping steep areas increases the risk of sediment and nutrient loss.



Areas where stock congregate

Water troughs, feed bins, or gateways etc. often have a build-up of effluent and exposed soil.



Subsurface drains

These drains can give contaminants a direct route to waterways

Selecting crop paddocks

Many paddocks have challenging features which can increase the risk of contaminant loss, such as slopes or waterways. Paddock selection needs to consider the environmental risks and how these will be minimised. If the risks are too great or cannot be minimised, a different paddock should be considered.

If possible avoid paddocks with:

- Waterways near or in the paddock, especially if they are not fenced
- Gullies, swales or other natural drainage channels that run in times of high rain
- Soil types that are vulnerable to pugging and compaction particularly clays
- Significant artificial drainage such as mole and tile drains
- A lack of easy access to water troughs.



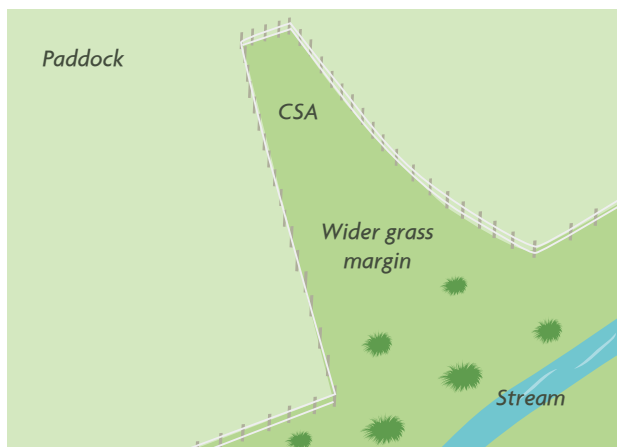
Crop paddocks that are steep and have waterways or CSAs will be harder to manage than those without them.

TIP

For more advice on crop paddock selection check out DairyNZ's crop paddock selection factsheet: dairynz.co.nz/crop-paddock-selection.

Filtering overland flow

Buffer zones or grass strips in and around critical source areas; especially gullies, swales and, next to waterways, act as filters by slowing overland flow to trap suspended contaminants. The buffer zone should be left uncultivated and ungrazed to operate effectively. The faster the water is flowing into a buffer zone, the wider the buffer zone will need to be to provide time for effective filtering. This is particularly important on sloping land.



Buffer zone fencing in a CSA.



Good use of grass buffers in crop paddocks.



Unmanaged CSAs without buffer zones can lead to loss of soil and nutrients.

Establishing crops

Where possible use direct drilling or minimum tillage when establishing crops.

Actions when cultivating

- When it is safe to do so, cultivate across slopes rather than up and down to slow down overland flow (Figure 1)
- Leave grass strips across slopes of cultivated paddocks to act as filters to trap sediment running off cultivated areas (Figure 1)
- Understand where water flows in a paddock during wet periods. Avoid cultivation in critical source areas (CSAs) such as seeps, gullies and dry streambeds, to minimise soil loss (Figure 2).

Benefits of improving cropping areas



Reducing soil disturbance and minimising overland flow will mean less sediment and nutrients entering waterways.



Reducing erosion of cropping areas minimises the risk of seed or crop loss at establishment and helps retain valuable topsoil

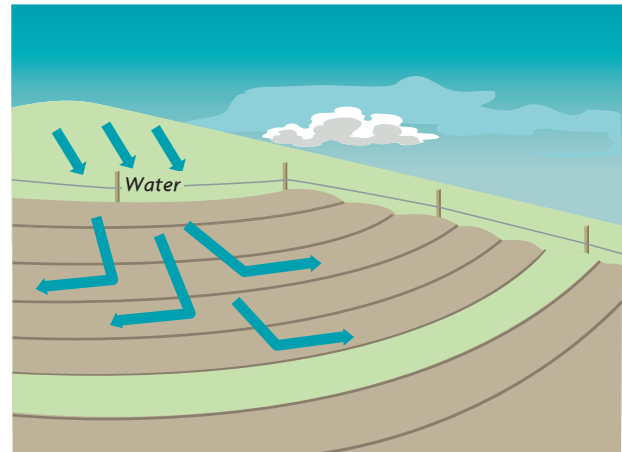


Figure 1. Cultivate across slopes where possible to reduce soil loss by redirecting water flows. Leaving grass strips will provide a filter and slow water movement.

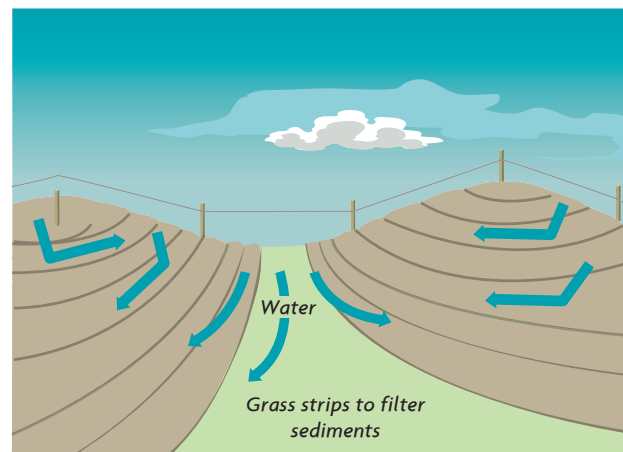


Figure 2. Leaving grass strips undisturbed in gully/swale areas helps to trap sediments.

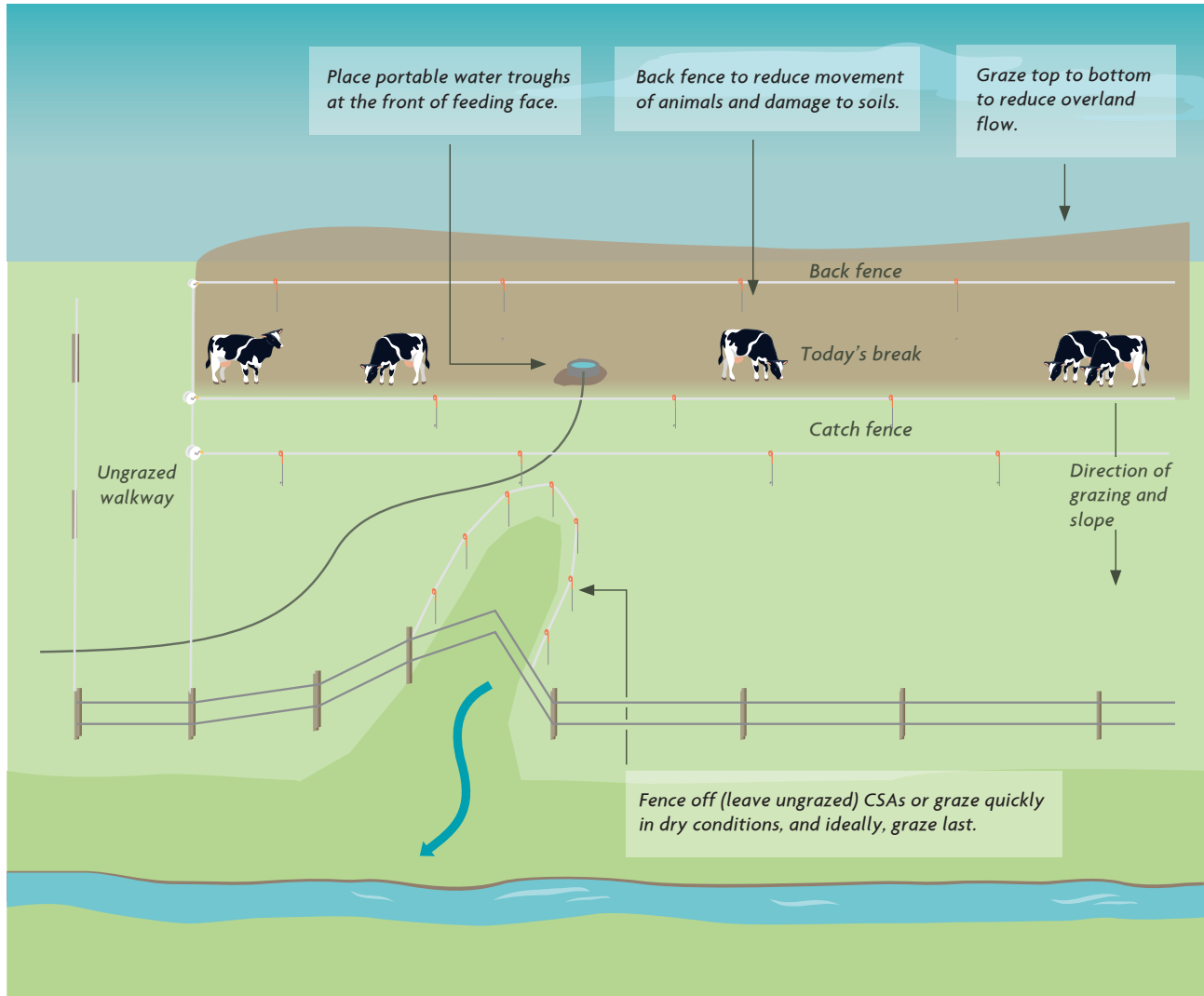


Grazing a CSA last, when conditions are drier, reduces nutrient and sediment loss.

Good practice winter crop grazing

Strategic winter crop grazing is a planned approach which helps to improve utilisation of crops, animal condition and environmental performance.

Key actions for good practice winter crop grazing



Benefits of good practice winter crop grazing



Strategic crop grazing and management of CSAs can reduce losses of sediment and phosphorus by 80-90%



Avoiding wet areas as much as possible is important for maintaining and improving general stock wellbeing



Good practice will retain more nutrients in your crop paddock reducing the need for additional fertiliser

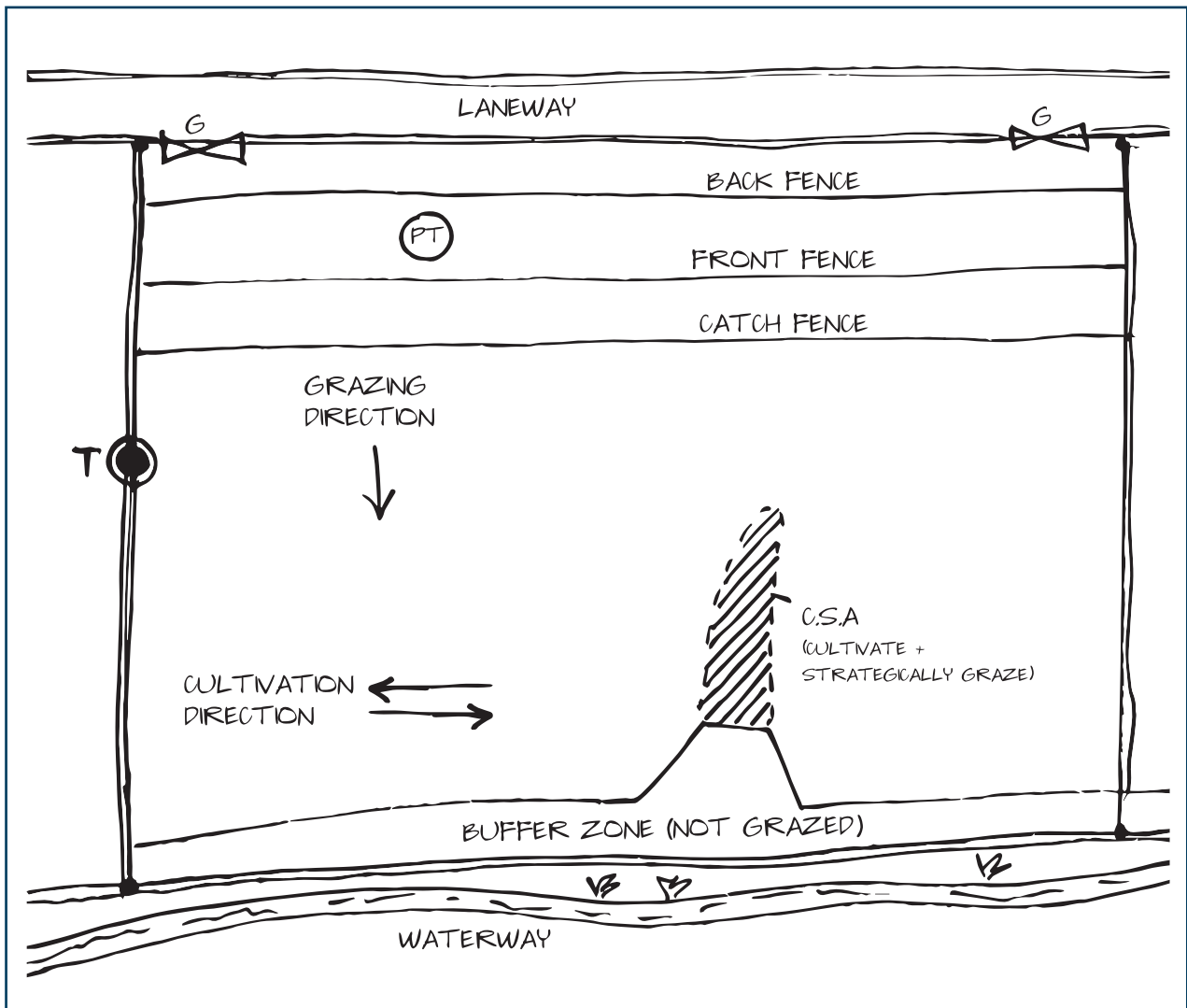


Winter cropping and grazing plan (example)

Farm name: CROPPING FARM

Paddock: 15

Date: 14TH OCTOBER



Step 1: Draw an outline of the paddock	Symbol or Complete (tick)
Paddock number	15
Note map direction (e.g. North arrow)	N
Mark on obvious features	✓

Step 2: Identify risk areas/ paddock features	Symbol or Complete (tick)
Critical source areas and slopes (not to be cultivated)	C.S.A
Waterways and wetlands	
Gateways	G
Troughs	T

Step 3: Plan	Symbol or Complete (tick)
Direction of cultivation	
Direction of grazing	
Buffer zones	✓
Critical source areas that are to be strategically grazed	
Portable troughs	PT
Back fence	✓
Front grazing fence	✓
Catch fence (tomorrow's grazing fence)	✓

Winter cropping and grazing plan template

Farm name: _____ Paddock: _____ Date: _____

Step 1: Draw an outline of the paddock

Symbol or Complete (tick)

Paddock number

Note map direction (e.g. North arrow)

Mark on obvious features

Step 2: Identify risk areas/ paddock features

Symbol or Complete (tick)

Critical source areas and slopes (not to be cultivated)

Waterways and wetlands

Gateways

Troughs

Step 3: Plan

Symbol or Complete (tick)

Direction of cultivation

Direction of grazing

Buffer zones

Critical source areas that are to be strategically grazed

Portable troughs

Back fence

Front grazing fence

Catch fence (tomorrow's grazing fence)