Wintering on crop and pasture

A guide for successful wintering in Southland and South Otago
This guide focuses on break fed wintering systems, which can occur on crops (typically on kale, fodder beet, swedes) and pasture (with significant amounts of supplement). These principles also apply in autumn when transitioning cows onto crop and when cows come home from winter grazing to crop.

**Successful wintering will:**

Be good for the the cows, the environment and the people involved by:

- supporting good animal health and welfare
- minimising contaminant loss to the environment
- complying with regional council regulations
- protecting valuable topsoil
- complementing the overall dairy farm system and the work of the team on farm.

This will result in cost effective wintering with cows achieving body condition score targets and be mutually beneficial for the herd owner and grazier.

This guide has been developed in collaboration with farmers and is intended to provide tips and options for farmers on how to identify winter grazing risks and how to manage them on a range of soil types, contours and situations. It covers both environmental and animal welfare risk management.

**Farmer tip**

“Communicating clear expectations with graziers and staff is important – on how you want your cows looked after and ensuring they are meeting environmental and animal welfare obligations.”

Note that it is important to check regional council regulations for the region where your cows will be grazed and use these to guide your wintering decisions.
**Environment**

*The impact of break fed wintering on the environment*

Research trials at Woodlands and Five Rivers in Southland show nitrogen losses from winter forage crops are much higher than those from pasture grazed during other times of year. A relatively small area of winter crop can make a disproportionately large contribution to nitrogen losses from the dairy farm or grazing system.

For example, shown in the graph below is the estimated nitrogen loss (Overseer™) on a Southland farm with heavy soils.

![Example Southland Farm (heavy soils)](image)

Research at Telford also showed a high phosphorus and soil loss from winter crop paddocks.

For example, shown in the graph below is the estimated phosphorus loss (Overseer™) on a Southland farm with heavy soils.

![Example Southland Farm (heavy soils)](image)

The amount of N and P loss will vary depending on soil type, climatic conditions and farm management practices.

While there is no significant trial data on winter break fed pasture (with significant amounts of supplement), it is likely that on heavy soils there will also be high losses of nitrogen, phosphorus, soil and *E. coli*.
Environment

The consequences of nitrogen, phosphorus, soil and E. coli losses

- Too much nitrogen in water can be toxic to aquatic life, contribute to excessive plant growth in rivers, lakes and estuaries and render drinking water unsafe.

- Too much phosphorus in water can contribute to excessive plant growth in rivers, lakes and estuaries.

- Excessive plant growth in rivers, lakes and estuaries can smother habitat for aquatic life, reduce oxygen levels and reduce recreational and aesthetic values.

- Too much soil (fine sediment) in water can fill up the small spaces between rocks and make the habitat unsuitable for fish and macroinvertebrates. It can smother spawning habitat, reduce whitebait migration, choke fish (in extreme cases) and cause sedimentation in lakes and estuaries which enhances other ecological stresses.

- High E. coli in the water can cause sickness such as vomiting and diarrhea if drunk. Bacteria can also accumulate in some types of shellfish, posing a risk if eaten.

Critical source area management is essential

What are critical source areas?

Critical source areas (CSAs) are low-lying parts of farms such as gullies and swales (swale – a shallow channel with gently sloping sides) where excess water congregates and flows - transporting soil, E. coli and phosphorous to waterways (including drains).

Farmer tip

“Critical source areas are parts of the farm where I see water flow when it rains heavily.”

The first step to reducing the loss of soil, nutrients and E. coli is to identify the CSAs on your farm. These areas need to be managed to reduce losses to ground and surface water. If CSAs have a tile drain underneath, contaminants have a direct route to waterways.

Buffer zones or grass strips in and around CSAs 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 and infiltration.
Reducing the impact of winter grazing on the environment

Reduce surface run off

P21 Project trial work at Telford Research Farm showed protection of CSAs and strategic grazing management reduced soil and phosphorous losses by 80 to 90 percent. This involved protecting CSAs in a winter crop paddock with an electric fence. These areas were grazed (quickly and lightly) in an on/off manner with cows under dry conditions to minimise any soil disturbance (and maintain their integrity to act as buffer zones). If the soil is undamaged in a buffer zone this will allow the water to soak in (infiltrate) and therefore decrease the amount of water available for overland flow.

To further minimise risk, significant CSAs should be left uncultivated and ungrazed to act as high performing buffer zones.

Reducing soil and phosphorous loss is significant – it saves topsoil and reduces the need to apply nutrients to replace those lost.

Catch Cropping

Research trials in Canterbury and Waikato have established that nitrogen (N) leaching can be reduced by planting an oat crop soon after grazing the kale or fodder beet rather than leaving the paddock fallow with bare soil until replanting in spring. The oats crop in this sequence is a ‘catch crop’, its purpose is to capture urinary N from the soil, while increasing overall crop yield when compared to a standard kale crop.

Catch cropping with a kale/oats combination can reduce N leaching losses by around 25% to 30% compared with the kale only system.

Read more in the Winter sequence cropping kale and oats resource at dairynz.co.nz/kale

Read more in the Reducing surface runoff from grazed winter forage crop paddocks resource at dairynz.co.nz/csa

Catch crop to soak up cows urinary N from the winter
Cow Lying Time
Cows need at least eight hours/day lying to ensure they remain healthy and comfortable. Correct lying times reduce the risk of lameness and stress, which leads to better animal welfare and body condition score. On a winter break fed paddock, cows need access to enough dry area to lie down and meet lying time requirements. CSAs tend to get wet and muddy, so they are not only an environmental risk but an animal welfare risk as well.

Weather has a major influence on cow lying behaviour. Studies show lying times are reduced during and shortly after prolonged wet weather events, as wet soils can be uncomfortable to lie on. If wet weather continues for prolonged periods, a cow’s lying time will reduce.

**Farmer tip**

“When I plan the direction I am going to feed the crop in, I consider the prevailing wind and any shelter available. I use the kale crop as part of the shelter when planning the direction to feed it.”

Have a plan B for periods of wet weather when the crop paddocks become very muddy. Options include:

- drier paddocks elsewhere on farm or drier parts in the paddock being grazed (save some crop near the shelter for prolonged periods of cold and wet weather)
- putting straw in the crop paddock for cows to lie on
- a stand-off facility will reduce treading damage, however, hard surfaces e.g. concrete yards, laneways etc for lying are no more preferable than wet muddy paddocks.

**Farmer tip**

“I always have a long feeding face (a minimum of 1 metre per cow) and plenty of bale feeders – this means the cows have access to feed and have somewhere dry to lie if the rest of the break is muddy and wet.”

“Making everything easier for the cows fell into place when I started using a portable water trough. The troughs were a bit of a pain for the first couple of years – but after I saw my neighbour roll hers out through the crop (so she didn’t have to roll it up in mud) it made it much easier. I also saw she had bent the ball cock so the trough only half filled – made it easier to tip out and move.”
**Feeding**

Cows are comfortable at colder temperatures compared to people. Their rumen generates a significant amount of heat which helps a cow in cold conditions. Their tolerance to winter conditions is improved if they are in good condition, healthy and well fed.

**Farmer tip**

“I split the herd into different mobs at drying off based on BCS. Any lighter cows are fed extra. In winter I find that cows can handle the cold, but when it is also windy and/or raining I have to feed them extra (an extra 2 to 3 kg DM per day).”

“I am always watching the weather forecast - two or three times a winter we will have rough weather come through for about three days. Before the rough weather hits I will feed the cows extra (especially supplement). That means when the weather hits they have full stomachs and are more settled. I find after the weather calms down I also need to feed them extra.”

**Stockmanship**

In winter, early identification of cows that need attention is particularly important. Less experienced people in the team will need coaching in stock behaviour and common illnesses.

**Farmer tip**

“At the start of the winter I get everyone together in the paddock and we move the cows together. We talk about any cows that hang back when the break is first moved and aren’t interested in eating – that’s a sure sign something’s wrong.”

“Even though I get my staff to do paddock checks I still do a check once a week.”

“A couple of times in the winter we redraft the mobs – in the first part of the winter it is on BCS and then later on calving date.”

“I always shift the cows twice a day, that means I get to check them twice.”

Preventing cows calving on crop paddocks is critical for both the cow and new born calf. Towards the end of winter cows will need to be drafted off crop paddocks based on calving date and early signs of getting ready to calve.
## Tips for successful wintering

### 1. Planning and Paddock Selection

Planning is the key to successful wintering, this will include paddock selection, taking into account:

- cropping history (and any weed and pest issues)
- soil type (and how wet it will get over the winter)
- slope of paddock, location of critical source areas and any waterways
- prevailing direction of the weather (to provide shelter for animals)
- ease of management over the winter (for both staff and cows).

**Farmer tip**

“I tend to start my thinking about how much feed I will need, what paddocks I will graze, how I am going to graze it and work back from there before I cultivate. I find if I do it that way around I can work out if there are any issues and if they are going to be too hard I will pick another paddock.”

“When I plan how much feed I need for winter – I add an extra 10% to cover extreme weather events.”

**Key actions for good practice winter crop grazing**

- Place bales away from waterways and critical source areas (CSAs).
- Place portable water troughs at the front of feeding face.
- Back fence to reduce movement of animals and damage to soils.
- Graze top to bottom to reduce overland flow.
- Fence off (leave ungrazed) CSAs or graze quickly in dry conditions, and ideally, graze last.
### Winter cropping and grazing plan (example)

**Farm name:** JONES LTD  
**Paddock:** IS  
**Date:** 14TH OCTOBER

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#### Step 1: Draw an outline of the paddock

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<tr>
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<td>Note map direction (e.g. North arrow)</td>
<td>N</td>
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<tr>
<td>Mark on obvious features</td>
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<tr>
<td>Direction prevailing wind</td>
<td>← SW</td>
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#### Step 2: Identify risk areas/paddock features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Symbol or Complete (tick)</th>
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<tbody>
<tr>
<td>Critical source areas and slopes (not to be cultivated)</td>
<td>CSA</td>
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<tr>
<td>Waterways and wetlands</td>
<td></td>
</tr>
<tr>
<td>Gateways</td>
<td>G</td>
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<tr>
<td>Troughs</td>
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#### Step 3: Plan

<table>
<thead>
<tr>
<th>Feature</th>
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<tbody>
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<tr>
<td>Direction of grazing</td>
<td>→</td>
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<td>Baleage placement</td>
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<td>Portable troughs</td>
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<tr>
<td>Back fence</td>
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<tr>
<td>Front grazing fence</td>
<td>✓</td>
</tr>
<tr>
<td>Catch fence (tomorrow’s grazing fence)</td>
<td>✓</td>
</tr>
</tbody>
</table>
**Winter cropping and grazing plan template**

Farm name: ___________________________  Paddock: _________  Date: _______________

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### 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
- Direction prevailing wind

### 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
- Baleage placement
- Portable troughs
- Back fence
- Front grazing fence
- Catch fence (tomorrow’s grazing fence)
2. Crop establishment

Cultivate across slopes rather than up and down. Up and down can speed up overland flow of water during heavy rainfall events. If the paddock is too steep to cultivate across the slope is is likely that it is not suitable for cropping and another paddock should be used.

**Farmer tip**

“I have to be clear on the direction I want the paddock cultivated – I want the contractors to cultivate across the slope. If they cultivate straight down, if we get a heavy down pour before the crop is well established, it will get washed out. And a whole heap of topsoil gets lost.”

“I use the paddock plan to show the contractor where I want cultivated, and where the critical source areas are that I don’t want cultivated. Sometimes I have found that even with giving them a plan they sometimes go too close on the gullies and swales. I now use a few electric fence standards to mark the edge of where I don’t want cultivated. This also keeps my contractor safe.”

“I lost 5% of my area from buffer strips and CSAs but they were low yielding areas anyway.”

Leaving grass buffer strips will provide a filter and slow down water movement, allowing it time to soak into the soil rather than running off.

3. Grazing

Setting up the winter paddocks early will save you valuable time over winter. This includes placing baleage in the paddock early before it gets too wet to move the bales without creating a mess.

Get together with the team before winter and use your paddock plan to set the winter paddock up. It’s also a good idea to talk about the risks during winter, such as planning where the tractors are allowed to go, and make sure everyone has been trained for the winter conditions.

If you are sending cows to grazing, ensure they are fit and healthy to transport. Check biosecurity requirements with the grazier such as having your animals in a separate mob to any others. Remember to update your NAIT records.

When grazing the paddock, collect and roll the baleage wrap as it is taken off the bales, store it in a shed until dry and it can be recycled.

**Farmer tip**

“I use electric fence standards to show them where I want bales of baleage placed in the paddock. I leave room close to the gate, so if crop yields are lower than budgeted, more supplements can be easily added.”

“I put the baleage in well before winter, I plan the amount of baleage assuming a good crop yield. That means there is enough baleage, if there is a bit extra baleage it doesn’t matter. Once I know the crop yield at the start of winter, I can match the mob size to the paddock.”

**Farmer tip**

“Having the paddock set up well saves a lot of time every day over winter. It makes it a lot easier if I have my crop paddock set up before the middle of May so it is all ready to go at the end of May when I am really busy with drying cows off.”

When the paddock is being sown in a winter forage crop for next winter or into new grass, you will need to ensure the risk of any run off or soil loss through overland flow is minimised by ensuring soil conditions are dry enough for cultivation.

**Farmer tip**

“I plan how I am going to transition cows onto crop – I either leave the first six metres of the paddock in pasture or work out how I am going to on off graze them for the first week so they don’t get too much crop before their rumens adapt.”

“I lift the first few rows of fodder beet and feed that to the milkers in late lactation to start transitioning.”

“No one knows my cows like me – I go to check them at grazing weekly.”