

Intensive winter feeding

Minimising the environmental risk

Keeping our water clean

Winter is a critical time for animal welfare and water quality on all farms with livestock. On deer farms, animal welfare during winter is not normally an issue. Experienced deer farmers know the importance of feeding deer well and providing them with shelter during the colder months.

Maintaining water quality is the bigger challenge.

Mud is a fact of life on all deer farms in winter. This is particularly true in brassica and fodder beet crops, and sacrifice paddocks where deer are fed baleage and other supplements. During heavy or persistent rain, exposed

soil and dung gets picked up by surface water and flows as sediment to low points in the paddock. If this sediment reaches waterways it will cause pollution.

Sediment smothers stream beds and aquatic life. It also contains phosphorus (P), nitrogen (N) and harmful bacteria that are a risk to downstream water quality.

In some catchments, nitrates in groundwater are a public health issue, as well as being a waterway contaminant.

Nitrate leaching is not usually a major issue with deer but, on some soils, deer feeding during winter can contribute to groundwater nitrate levels.



Photo: Jane Chrystal

Good crop grazing practice at Arawata Deer Farm

Streams fenced off; wide buffer strip at the bottom of the slope; large breaks; break-feeding from the top of the hill; no back fencing

What can I do?

Each farm is different. The best ways to reduce sediment and nutrient loss on your farm will depend on the slope, the soil type, winter feed requirements, rainfall patterns and so on.

Here are some of the options:

- Know the rules relating to winter cropping, feed pads and sacrifice paddocks for your region
- Where possible, avoid feeding out in steep paddocks
- If growing fodder beet, consider lifting it and feeding it in a less sensitive area
- Select paddocks for intensive winter feeding that are well away from waterways and are free draining (if N is not an issue)
- Fence off a wide buffer area of ungrazed pasture or rank grass between intensive feeding areas and any waterways, swales, gullies and critical source areas
- If you graze any of these buffer areas, do it in fine weather and do it quickly. Better still, leave them until spring when the ground is drier and there is more growth to trap any sediment
- Have bales of straw or hay on hand to use as sediment filter barriers across swale and gully exit points
- Give deer bigger feeding breaks than you would give to cattle. Minimise back-fencing
- Fence crop breaks along the contours, not up/down the slope. Feed the break at the top of the paddock first, then work your way down the slope.
- If this is not practical, provide a large up/down break with a bigger buffer area at the bottom.
- Have a stand-off area, outside the crop itself, where deer can rest after they have fed
- Check that your sediment traps, ponds and artificial wetlands are working properly.

This *Deer Fact* outlines the different ways to reduce the risk of nutrients and sediment moving into surface and groundwater during winter feeding. When choosing what's best for your farm, it's important to comply with your regional council's water plan and other regulations, including rules relating to winter cropping and grazing management.

Plan your winter feeding system

Be well-prepared for winter. Plan well ahead. Refer to the *Deer Fact*, 'Planning for winter' (October 2020).

Budget for 10-15% more feed than you think you'll need, to provide for extreme and prolonged weather events with mud, cold, heavy or persistent rain, or snow.

Have a wintering plan that all staff understand. This will help reduce stress on people, the deer and the environment. Each farm is different and no one plan is right for all farms. It is good practice to include your wintering plan in your Farm Environment Plan. In many regions you are required to update these every year.

Have a "Plan B", such as a sacrifice paddock or an area to stand off stock (even a raceway could be used for a short period), when the soil is saturated.

Feeding-out areas

Selecting the paddock

Winter feeding-out areas need to be in paddocks where the risks of stream pollution and soil erosion can be managed during winter storms and during prolonged periods of wet weather.

Consider slope, soil type, stock class, drainage and the location of waterways before selecting a paddock. Paddocks due for pasture renewal are often selected. But is the risk of sediment run-off too great?

Consider water quality issues in the catchment:

- If N is an issue, avoid wintering on free-draining soils where nitrogen may leach into groundwater
- If P and sediment loss are the main issue, avoid paddocks where it will be difficult to prevent sediment flowing into waterways.

Critical source areas

CSAs are parts of the paddock – such as gullies, swales, very wet areas, spring heads, wallows, waterway crossings, eroded fence lines, stock camps and vehicle access routes – that can channel the overland flow of water, sediment

and nutrients to waterways. Anywhere run-off can flow is a potential risk area.

Identify these areas well in advance and do what's needed to reduce the risks they pose.

Avoid, if possible, paddocks with large or multiple CSAs that may pose too many environmental risks and be difficult to manage.

Sloping land

Flat, well-drained paddocks pose less risk than sloping land of the overland flow of run-off. But they may be more prone to N leaching.



Photo: Heather Templeton

Choose a winter feeding site well away from waterways or CSAs

If sloping or hill paddocks are being selected think carefully about:

- How wide the buffer strips need to be along waterways, gullies, swales and wet areas, to help filter contaminants. The steeper the paddock the wider the buffer strips need to be
- The rules for your region. Treat these as a minimum requirement for preventing run-off into waterways
- What animals will be grazing the paddock. If a paddock is too steep to get a tractor on, it might be too steep for wintering velvetting stags or mature wapiti/elk (see stock class below).

Soils and aspect

Is the paddock north or south facing? South-facing paddocks may be slower to dry out and therefore more prone to pugging.

Heavy soils: Heavy soils are at greater risk of pugging, compaction, structural damage and increased overland flow of run-off. Avoid wintering stock on these soils, or consider grazing them only with lighter classes of stock.

Light soils: Lighter soils may pose a risk of increased N leaching. Light – especially pumice – soils on slopes may be particularly prone to erosion, making them unsuitable for wintering heavier stock.

Free draining soils: These soils are usually more resilient than heavy soils to winter grazing and may be able to be re-grassed earlier. However, excessive leaching of N may be an issue on 'leaky' soils with a low water holding capacity.



Photo: Phil Stewart

Any place where run-off can flow is a potential risk area



Photo: Tony Pearce

These boys and their crop are in great condition

But on wet, water-logged, clay soils it might be a different story

Subsurface drainage: Avoid wintering in paddocks with subsurface drainage systems. Drains allow the rapid movement of nutrient-rich drain water to waterways. Also deer can cause havoc by digging up buried tile, Novaflo and mole drains to create wallows. If you do need to winter in such a paddock, consider fencing off the swales where the drains are located.

Stock class

The heavier the individual animal, the greater the risk of pugging, soil damage and erosion. Overall, deer are lighter than cattle and will cause fewer issues under the same soil and moisture conditions. However there are heavier classes of deer – especially velvetting stags and mature wapiti/elk – that are best not wintered on high-risk paddocks.

Public perceptions

Even the best wintering practices can be misunderstood by non-farming people with little practical experience of winter on a farm. Also wintering paddocks are easily detected by the drone and aerial surveillance flights undertaken by regional councils, MPI and members of the public.

As a farmer your priorities are the health and welfare of your deer, and protecting your soil and water. But it's also important to ask yourself, what does your wintering set-up look like? It may be technically perfect, but how would it appear to venison and velvet consumers if they saw a photo of it on social media?

For these reasons, when grazing winter feed beside a road, it makes sense to start away from the road and feed towards it, leaving an ungrazed break of crop until last.

Paddock set-up

Critical source areas and waterways

Fence-off buffer zones at least 10 metres wide around CSAs and waterways and springs to reduce the risk of run-off from the CSAs, winter crops and feeding-out areas causing stream pollution.

The steeper the slope, the wider the buffer zone needs to be for effective filtering and infiltration. Water flows more rapidly on steeper slopes, causes more erosion and carries more contaminants.

Consider having bales of straw or hay on hand to use as filter barriers across the exits of swales and gullies to mop up sediment and nutrients carried by run-off in heavy rain. Be careful not to leave them where they could be carried away by flood water.

Grazing management setup

Before putting up breaks, work out a grazing strategy. Damage to soils from poor management will reduce the future productivity of that paddock.

- Stock water. Do you need portable water troughs?
- Place water troughs and supplementary feeders in a dry part of the paddock (or run-off) well away from any waterways or CSAs
- To reduce the need to operate heavy machinery on paddocks once they are wet, place baleage in paddocks ahead of winter. Will you be able to access the area in winter if you need to top-up baleage during winter? Take care not to place bales in potential flood paths
- Consider feeding baleage away from crop feeding breaks. Is there a dry part of the crop paddock (or in a run-off) where this could be done?
- Deer are very responsive to well maintained and sited electric fences. Use a 4 or 5 wire system 1.4 – 1.5 m high for break-feeding deer on crops or pasture. Electric fencing can also be used to protect and isolate CSAs, or to direct stock away from exposed parts of the paddock.



Photo: Trevor Walton

"In addition to crop or pasture we always provide our deer with ad lib baleage in winter. A hungry deer, or one that isn't getting what it needs in its diet, will walk the fences and trash the paddock."

Benio, Southland, deer farmer Peter McIntyre

Grazing forage crops

Look after your stock. Provide them with adequate feed, shelter and clean fresh drinking water. Settled, happy deer are less prone to pacing which causes damage to the crop and soil.

- Deer can be safely given a break that will last them a week or more. They have restricted appetites in winter and will not gorge themselves. Some farmers successfully give deer the whole paddock
- For information on the health and nutrition of deer on winter crops refer to the *Deer Fact: 'Fodder crops for winter feed'*
- Avoid tight back-fencing of deer as it restricts their ability to move and can create significant stress, resulting in fence-pacing, crop trampling, and pugging

- On heli-cropped hill country keep the stock pressure low to minimise soil damage and erosion. Overstocking will increase the risk of soil damage that will compromise your ability to establish a successful perennial pasture once the crop has been grazed. Block rather than strip graze and plan to leave more residual than you would in an arable situation
- Consider splitting the mob into two or more groups to reduce grazing density. This requires vigilance and good management until routines are established. Mobs of young deer need to be well-separated at first, as they have an urge to form one group if they can see each other
- Provide access to a run-off, or areas in the crop paddock where there is shelter and free-draining soil or similar, where deer can comfortably rest. Bear in mind that a site that is sheltered from the west is not sheltered if the weather comes from the east – give the deer the ability to choose
- The above measures will ensure there is less soil damage and concentration of contaminants, as the deer will spend less time concentrated at the feeding face
- Keep track of the weather – be proactive ahead of forecast storms and wet, cold weather. Top up supplementary feed, shift stock to breaks or paddocks that are more sheltered and a low-risk for sediment loss
- To prevent soil erosion and damage in heli-cropped hill country, remove stock from the crop if heavy rain is expected
- When break-grazing, first graze the least risky parts of the paddock to minimise the period of run-off risk. That way, the remaining ungrazed crop acts as a filter. If there is a waterway in the paddock, start grazing at the far end of the paddock and work toward the waterway
- On a sloping paddock, fence across the slope and start grazing at the top. If this is not practical, run the fence up/down the slope and leave a wider buffer strip at the bottom of the slope
- Give large breaks, or block feed, in those paddocks where the hillsides get progressively steeper as you move downhill. With smaller breaks there is a greater risk that the crop will be pushed against the fence, animals jumping the fence and of topsoil being pushed downhill. If practical, leave the steeper areas until last when the ground is hopefully drier. Better still, don't crop them in the first place – leave them in rank grass, capturing sediment from run-off
- Shift moveable feeders at the same time you shift breaks. This helps reduce pugging around the feeders
- For buffer strips around CSAs and other sensitive areas to operate effectively, leave them uncultivated and ungrazed. If this is not possible, graze the buffer in fine weather and do it quickly, or leave it until spring
- The CSA itself should be the last area to be grazed in the paddock (if it needs to be grazed at all). Graze the area quickly to minimise soil damage, ideally at a time when soil moisture content is not too high.



Photo: Trevor Walton

"If it becomes really wet and the deer have nowhere to go, the welfare of the deer and the environment go hand in hand. If they wreck a paddock that you need for feed in spring, you are effectively increasing your stocking rate on what's left.

"An environmental issue becomes a welfare and production issue. Then it becomes financial."

Southland deer farmer Cam Nelson

More >>

Deer Code of Welfare: bit.ly/Deer-Welfare-Code

DINZ Deer Facts

Effective nutrient management on deer farms

Fence-pacing: Costs and solutions

Fodder crops for winter feed

Protecting waterways from wallow and feed pad run-off

DINZ website (www.deernz.org)

The NZ Deer Industry Environmental Management Code of Practice

Research

Using detainment bunds for mitigating diffuse-source phosphorus and soil losses: bit.ly/DetainBunds

Tools

SHMAK Stream Health Monitoring and Assessment Kit: bit.ly/SHMAK-stream

Videos

Best Environmental Practice on Canterbury Deer Farms – 5 videos, NZ Landcare Trust, bit.ly/DEER_ENV_VIDEOS



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