



FACT SHEET

NOVEMBER 2019

WINTER FEED CROPS: MANAGEMENT BEFORE GRAZING

Grazing of winter feed crops can result in a loss of soil structure and reduced water infiltration, resulting in transportation of sediment, phosphorus (P) and pathogens (such as *E. coli*) in surface runoff. Areas that are prone to surface runoff and losing contaminants, such as gullies and swales, are known as critical source areas (CSAs). Poorly managed, winter grazing can also compromise the welfare of animals. Good wintering practices will ensure that animals are adequately and cost-effectively fed whilst impacts on their welfare and the environment are minimised. Achieving these goals does however require attention to some important planning considerations.

Key points

- Select paddocks for winter grazing that will minimise environmental losses and cater to the other needs of the animals, such as to lie at rest on firm ground.
- Reduce soil damage by placing water troughs and supplementary feed away from wet areas.
- Exclude stock from waterways and wet areas.
- For a healthy, productive crop, ensure adequate soil fertility and control weeds, pests and diseases.

Paddock selection and planning for winter

- Create a written or drawn plan for your winter grazing and share it to staff and contractors
- Often paddocks are selected for winter grazing when they need pasture renewal; however, there are a range of other factors to consider, that ultimately affect risk of run-off and contaminant loss—slope, soil type, stock class, drainage and proximity to water sources.
- Poor performing paddocks with high risk areas can always be renovated grass-to-grass, rather than through a cropping cycle. Visual soil assessments (VSA) may help to identify any soil structural issues.
- Choose paddocks where topography or vegetation provide shelter from inclement winter weather.
- Heavy soils often have a greater risk of structural damage and increased overland flow due to winter grazing. However, lighter soils may pose a risk of increased nitrogen (N) leaching.

It is important to consider your location and what water quality issues your region has to help determine where you sow your winter crops.

In general, flat, well-drained paddocks with deep soil profiles will have less risk of both overland flow and N leaching.

- In locations and catchments where N leaching reductions are sought, try to ensure crop paddocks are not located on light soil types that carry an increased risk of N leaching.
- In locations where P and sediment runoff are of greatest concern, try to ensure that crops are not located on poorly-drained soils and/or sloping land.
- Different regions and catchments will have different water quality pressures or targets. It is important to check with your local Regional Council or seek advice regarding local regulatory requirements and selection of winter crop paddocks in your area. Every farm is different, so expert advice is recommended.
- Appropriate paddock selection for winter cropping can be an effective way of minimising the risk of overland flow, sediment and P loss:
 - Select paddocks that are a greater distance from waterways to increase the chance of contaminants being filtered before reaching the water.
 - Avoiding paddocks that have extensive networks of mole and/or pipe drainage systems will minimise the risk of rapid contaminant movement to waterways directly through the artificial drainage system.
 - If sloping land is the only option available, it is important to identify critical source areas such as gullies that connect to waterways, and ideally these areas would be fenced off and left uncultivated and ungrazed.
 - The grazing of lighter stock (sheep) on steeper land is preferable to grazing heavier stock (cattle) or deer (deer are known to be attracted to wet areas resulting in considerable sediment and P loss).
- Consider how vulnerable soils are to pugging and compaction—are there better options elsewhere on the farm?
- To help ensure a healthy crop, consider the paddock's cropping history and whether it is prone to weeds, pests or disease, particularly those that could accumulate.
- Care is needed when selecting paddocks to be used for growing winter crops, such as brassicas or fodder beet, as they can be sensitive to the effects of residues from many commonly used agricultural chemicals. Read the labels of agricultural chemicals and seek advice if necessary to ensure they are suitable for your crop.
- Where possible, leave CSAs (areas that are prone to surface runoff and losing contaminants, such as gullies and swales) uncultivated and ungrazed with pasture cover left intact. If the CSA is cropped, only graze lightly and when soil conditions are suitably dry to prevent pugging and soil damage.

Stock management

- Fence off any permanently flowing waterways, ideally leaving an uncultivated and ungrazed, 5-10 m wide buffer zone alongside the stream to capture any runoff.
- Consider temporary or permanent fencing around gullies or critical source areas and exclude these areas from winter grazing as shown in Figure 1. Larger fenced off areas will reduce contaminants more than smaller areas. Try to keep stock at least 5-10 m from the centre of a gully where possible.
- Provide portable troughs for stock drinking water and keep these away from wet areas and critical source areas.
- Prepare to regularly inspect stock and take action if health problems are evident.
- If necessary, use a run off or otherwise provide access to temporary bedding to allow stock the opportunity to lie and rest on firm ground.
- To help eliminate unnecessary tractor movements on wet soils, place supplementary feed such as baleage into the paddock prior to the start of winter when soils are not too wet (Figure 2). Make sure supplementary feeding areas are well back from waterways and critical source areas.



Figure 1. A seasonally wet area of a paddock is fenced off to exclude stock. This has been left uncultivated and will be ungrazed.



Figure 2. Supplementary feed placed in a crop paddock prior to grazing when the soil is still dry. This minimises heavy vehicle use on wet soils in winter.

Crop establishment

- Correct fertiliser and liming applications need to be based on soil testing and crop requirements. Seek advice from your local fertiliser representative or a crop consultant. Prepare a nutrient budget to better understand how nutrients are lost from your current farming system.
- Leave swales and riparian strips uncultivated. Avoid cultivation in areas at risk of surface runoff. Locate and size buffer strips on a site-by-site basis. Consider

- landscape risk and locate buffers around gullies and swales where most runoff originates and flows from.
- Cultivate crops along the contour lines where practicable or adopt minimum tillage practices such as direct drilling, on sloping land, to slow runoff and reduce downslope soil loss.
- Consider the impacts of different cultivation and sowing techniques on nutrient and soil losses.
- Seek advice for appropriate crop husbandry practices —spraying out and seedbed preparation; crop selection; crop monitoring and treatment for weed and insect problems.



Figure 3. A winter feed crop paddock being cultivated and sown.

Additional information/References

Stewart, A & Charlton, D. 2003. Pasture and forage plants for New Zealand. Grassland Research and Practice Series No. 8, 2nd Ed. NZ Grassland Association and NZ Grassland Trust

www.pggwrightsonseeds.com/Crops/Crop-Management

NZ Fertiliser Association Fertiliser Handbooks to guide fertiliser use www.fertiliser.org.nz/Site/resources/booklets.aspx

Visual Soil Assessment. Volume 1. Field Guide for cropping and pastoral grazing on flat to rolling country. Shepherd TG. 2000. horizons.mw & Landcare Research, Palmerston North.

Visual Soil Assessment. Volume 2. Soil management guidelines for cropping and pastoral grazing on flat to rolling country. Shepherd TG, Ross CW, Basher LR, Sagar S. 2000. horizons.mw & Landcare Research, Palmerston North.

Available to download from our website www.beeflambnz.com:

- A guide to feed planning for sheep farmers

Acknowledgements

Beef + Lamb New Zealand would like to acknowledge AgResearch Ltd for their assistance with this fact sheet, which documents some of the findings made in the Pastoral21 research programme.

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