beef+lamb new zealand

FACT SHEET

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WINTER FORAGE CROPS: MANAGEMENT AFTER GRAZING

Winter forage crop grazing can cause pugging, compaction and long term soil degradation if not managed properly. This may decrease paddock productivity and can allow nutrients and sediment to enter waterways. Careful management of paddocks after winter grazing can reduce damage to soil structure and loss in productivity, while reducing further environmental losses that could potentially affect water quality.

Key points

- Minimise excessive disturbance of wet soil by animals and machinery.
- Allow soils time to dry sufficiently before cultivating.
- In suitable conditions, sowing a catch crop can reduce nitrogen (N) leaching and increase feed production.

Post-grazing management to reduce environmental losses and preserve soil structure

- Reduce additional soil disturbance and damage to a paddock by removing stock immediately following the final grazing.
- Consider reducing the duration of grazing in vulnerable parts of a paddock, such as wet areas, gullies and swales as shown in Figure 1. If possible, consider not grazing these areas at all, if weather and soil conditions are unfavourable.

Figure 1: Final cattle grazing event in a winter crop of kale. The cattle were grazed in this area for 3-4 hours when the soil conditions were relatively dry underfoot, then removed from the paddock to reduce risk of further damage to the soil.

- Minimise movement of heavy vehicles on paddocks when soils are wet and vulnerable to damage.
- Vegetated (crop or grass) buffer strips around gullies and swales can reduce soil and nutrient losses caused by run-off from damaged soils.

Figure 2. Kale crop with soil pugging visible where it has been grazed. Soil needs to dry sufficiently before any subsequent cultivation.

Prepare paddock for next crop or return to pasture

- Allow soils time to dry out sufficiently before cultivating. Heavier soils will take longer to dry out especially in cold, damp conditions.
- If soils are cultivated or worked when they are too wet, it can cause long-term soil damage by breaking down soil structure.
- Soils need to be dry enough to cultivate, but retain enough moisture to allow good seed germination and growth.
- Choose the correct cultivation type depending on the soil conditions and what crop is to be sown. Consider direct drilling or low soil disturbance techniques. However, full cultivation and possibly deep ripping may be necessary to break any compacted layers that have formed due to animal treading and pugging. A useful tool to help determine the amount of soil damage is a Visual Soil Assessment (VSA).

- It is important not to over-work soils as this can lead to long-term damage.
- Soil fertility testing can indicate if there are any deficiencies that need to be addressed.
- Assess the weed, pest and disease status of paddocks and try to minimise these where possible using the appropriate pesticides or cultivation techniques.
- Ideally, forage cropping should be limited to two years or less to protect soil structure and reduce longer term damage. This will also reduce the build-up of pests and diseases.

Catch crops

Research suggests that a 'catch crop' (or sequence crop) can reduce N leaching during the fallow period after winter grazing. This is a short term crop, such as oats, sown to provide a protective ground cover and "mop-up" excess N that may otherwise leach out of the soil. It also has the additional benefit of providing extra feed. Research has shown a cereal catch crop can reduce N leaching by up to 40%, but this will depend on the location, the crop type and how quickly it is established after grazing.

- Catch cropping may be worth considering in locations where N leaching is an issue, and appropriate conditions exist to grow a crop that captures and utilises the nutrients that remain after grazing.
- Assess the paddock for suitability for catch cropping. Ideally, the paddock has free-draining soils but take into account topography and cropping history to reduce disease problems and a decline in soil structure.
- Ideally, the catch crop is sown after winter grazing as soon as the soil is dry enough to withstand further soil damage by heavy machinery. Heavier soils may not dry early enough to allow time for a catch crop.
- To ensure the following winter crop has adequate time to grow, use early sown catch crops that germinate and grow at lower temperatures, such as oats or ryecorn. This also allows the catch crop to start taking up N before it is leached from the soil.
- Careful consideration needs to be given to ensure that catch crops are a suitable option in dryland situations as they will remove moisture from the soil through transpiration and may reduce the available moisture for subsequent winter crops.
- Catch crops can be direct drilled or may need some ground preparation if the soil is compacted to allow for good germination. If the soil is compacted, broadcasting seed reduces germination. If the soil is too wet to work it may be best to wait or consider other options. Minimise soil disturbance and tractor movements as much as possible.
- Catch crops may be harvested and stored for use in the following winter.
- When grown in appropriate conditions, a catch crop grown in addition to a winter crop will increase overall feed production from a paddock.

Figure 3. A paddock being cultivated soon after winter grazing to allow for a catch crop of oats to be sown.

Additional information/References

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