

Good management practices for winter dairy grazing on arable cropping land

I. Identify the risks: Winter grazing risk assessment guide for arable farms

What type of wintering system do you have?

- Cows are owned and managed by the land owner or a sharemilker on the land
 - Mixed dairy/arable enterprise
 - Dairy farmer owns and manages a support block
- Cows are owned and managed by the dairy farmer on the land owner's land
 - Paddocks are leased to dairy farmer and supplements brought in by dairy farmer
 - Paddocks are leased to dairy farmer and supplements provided by arable farmer
- Cows are owned by the dairy farmer but managed by the land owner
 - All feed inputs and labour provided by the arable farmer
 - Feed inputs and grazing managed by arable farmer, but dairy farmer provides labour

Considerations for all growers intending to winter dairy cattle

- Paddock history and crop selection
 - What nutrients are left in the soil?
 - Are there any potential diseases present from previous crops?
 - Do I need to worry about residual herbicides?
 - Crop yield potential (kg DM)?
 - Are there crop options that are lower risk to soil damage?
- Environmental risk
 - How much winter rainfall do you expect?
 - What type of soil do you have and what is the water holding capacity?
 - What is the slope of the land?
 - Are there any waterways nearby?
- Mitigation strategy
 - Do you have a plan and the resources to mitigate excessive soil damage in case of bad weather?
 - If you have waterways nearby, do you have a mitigation strategy for preventing run-off leaving the paddock?
 - Do you have a strategy for reducing the risk of nutrient leaching after the grazing event?
- Following crop
 - What will be the cost of cultivation to get the soil suitable for sowing the following crop?
 - Will the next crop be able to utilise the nutrients left after grazing?
- Cow number and grazing intensity
 - How many cows can you support on the crop?
 - What will be the area grazed per day?
- Grazing time
 - How long is the paddock tied up and how soon can I sow another crop?
 - Does grazing time affect the risk of pugging?
- Opportunity cost
 - What other options do you have for land use?
 - Is this the best use of your equipment and labour resources?
- Profitability

- Is the current system profitable? Factor in opportunity cost and benefits and risks related to following crops and land use.

System-specific risks and considerations for the land owner

Cows are owned and managed by the land owner

- Location
 - Are the wintering paddocks located within a workable location to properly manage grazing and monitor animal welfare?
- Equipment and assets
 - Is it profitable for me to own and operate the equipment needed to manage both dairy and arable enterprises, or do I need to work with contractors to grow the crops?
- Restrictions
 - Will the wintering paddocks be regulated on the same block as the milking platform?
 - Water use
 - Nutrient limits, especially nitrogen
- Animal performance and health
 - Can body condition score targets be achieved?
 - What is the risk of lameness, mastitis, etc. over winter?

Cows are owned and managed by the dairy farmer on the land owner's land

- Lease agreement
 - Should you sell the crop based on kg DM/day or \$/cow/day and how is kg DM determined?
- Feeding out
 - How much tractor activity will there be on the paddock and what is the potential damage to the soil?
 - Can tractor traffic be limited to a dedicated area for feeding out?
 - Can bales be placed in the paddock before the cows arrive?
- Stubble and ungrazed crop
 - Do you have a plan for dealing with large amounts of stubble or ungrazed crop area?
 - Other animals to graze?
 - Cut and carry ability?
 - Seed crop?

Cows are owned by the dairy farmer but managed by the land owner

- Animal health
 - Do you have the ability to properly manage animal health and feeding?
 - Are you prepared to deal with animal emergencies?
 - Vet and/or veterinary supplies on hand
 - Cattle yards, crush, head bail, etc.
- Labour
 - Do you have the labour resources to manage the grazing as well as other crops or do you need to hire seasonal labour or pay the wages of dairy workers?
- Equipment
 - Do you have the equipment needed to manage grazing? eg. fencing supplies, water troughs, feeders

II. Managing the risks: Preventative and reactive management practices

Preventative strategies: Whole-farm planning

- Paddock awareness
 - Some paddocks may need to be avoided completely. If parts of the paddock are known to be high risk to nutrient loss, compaction and pugging, or sediment loss, manage grazing so that these areas are only grazed in dry conditions. This may mean that heavier soils are grazed early in the season before paddocks get very wet to and more resilient soils lighter are grazed later when wet weather is likely. On sloping land, beginning grazing at the top of the slope and working downhill can result in less sediment loss from overland flow of nutrients. When near waterways, a buffer zone of at least 3 meters is required.
- Crop rotation and cultivation
 - Continuously using the same paddocks as winter grazing paddocks year after year has very high risk to both soil physical damage and soil nutrient losses. Allow paddock soils to recover between grazing events. The recovery time between grazings will vary by soil type and soils more prone to compaction should have longer periods between winter forage crops. Compacted soils require more tillage to establish a seed bed for the following crops and intensive tillage increases the risk for damaging the soil during grazing. Minimise tillage if consecutively sowing winter grazed crops in the same paddock. To efficiently utilise nutrients remaining in the soil after grazing, the following crop should be sown as soon as the soil is dry enough and should be one that has a rooting depth that exploits below 30 cm where the nitrate is remaining. Selecting a suitable crop can act like a mop to take up nutrients left behind by grazing.
- Crop selection and management
 - Fertiliser requirements for many of the winter feed crops are relatively high to reach the high yield potentials. Fertiliser management, especially going into autumn, is important for potential losses in the winter when crop growth and nutrient demand is minimal and drainage events are more frequent. Another option is to graze winter-active crops (single-graze or multiple-graze) such as Italian ryegrass or certain cereals (e.g. forage oats, triticale) which offer more resilience to soil damage and leaching losses, partly due to lower yields. Higher yields can be expected with winter forage brassicas and fodder beet, so less area is required though higher risk can be expected with the increased grazing intensity needed to utilise them.

Reactive management: Managing grazing when soil is wet (>field capacity)

- Shift more than once per day
 - Poor weather results in higher demand for feed but lower utilisation. Offering smaller breaks twice a day increases utilisation efficiency and reduces the amount of feed trampling. When the soil gets wet, offer a new break before soil begins pugging.
- Increase amount of supplement fed
 - When utilisation is low and crop is being trampled as stressed and underfed animals search for feed, increasing the availability of supplemental feed may be a good option. Feeds need to be chosen to maintain rumen function (forage brassicas and fodder beet require supplements with high fibre content) and should not provide excess nitrogen (crude protein). Supplemental feeding also enables the manager to contain the area of soil compaction by reducing treading traffic. Feeding out should be managed to minimise the impacts of tractor traffic as well which may require placing bales in the paddock prior to winter in very wet climates.
- Back fencing and portable water troughs
 - If practical, use a back fence and transportable water troughs to ensure cows are contained and constantly moving onto fresh crop. This method reduces soil damage and compaction by eliminating the need to repeatedly walk back through previously grazed areas to access water.
- Split the mob
 - Splitting the mob into two or more groups reduces grazing pressure and potential soil compaction. Lower cow numbers reduces the amount of hoof traffic in the grazing area and traffic to and from the water trough. This also allows the mobs to be managed separately if needed to achieve target body condition.
- Lift root vegetables
 - Manually lifting or loosening root vegetables such as fodder beet and swedes before feeding can reduce the amount of energy and standing/compacting time spent by the cows in order to consume the feed.
- Stand off paddock or stand off pad
 - In very wet conditions when pugging and animal health are at high risk, animals can be moved off of the crop paddock and fed silage and supplemental feeds. Moving cows onto a sacrifice paddock of grass, a paddock with dense stubble, or even a feed pad takes pressure off of the bare soil in the winter crop and allows water to infiltrate the soil rather than pugging on the surface. This option may be more realistic when cows are owned and managed by the crop farmer.
- Use of DCD
 - Applying DCD immediately after grazing can be used to slow the degradation of nitrogen into a leachable form (nitrate). For the best results, farmers would need to apply the product either just before or within 7 days after grazing which would require multiple application events over the grazing period. While this is effective, more information is needed to understand potential risks to residues in milk if applied before grazing on crops grazed prior to lactation.