

TechNote 31

Manage winter pastures and crops correctly

IN THIS TECHNOTE

- 31.1 Manage pastures appropriately during winter
- 31.2 Use crops and supplements efficiently during winter
- 31.3 Manage fodder beet feeding appropriately
- 31.4 Manage swede feeding appropriately
- 31.5 Manage kale feeding appropriately
- 31.6 Checklist for winter crop feeding
- 31.7 Further reading

Winter feed management will vary depending on the region and farm system. Key factors that influence these management decisions should be determined by a feed budget and include:

- Pasture cover targets
- Growth rates
- Nitrogen use
- Supplements available
- Wintering off
- Crops
- Animal requirements
- Environment (soil type, slope, climate)
- Infrastructure (ie. barns, feed pads)

These factors will determine the winter management plan including stocking rate, diet and rotation length.

31.1 Manage pastures appropriately during winter

In winter, pastures can be grazed to post-grazing residual of 1300 kg DM/ha (or approx. 6 clicks on the Rising Plate Meter) once, without any lasting negative impact on pasture production provided that pastures are given time to recover i.e. not grazed before the 3-leaf stage at the subsequent grazing. Avoid pugging damage as it will reduce subsequent pasture growth.

31.2 Use crops and supplements efficiently during winter

In regions where there is limited pasture growth, winter crops are an economical option for feeding cows to gain body condition score (BCS). Swedes, kale and fodder beet are the most common of the winter crops being used with oats and annual ryegrass also used.

All forage crops require controlled transitioning for successful feeding management and to minimise the nutritional risks. It is important to consider supplement type and quality in relation to its purpose. For example fodder beet requires fibre as a supplement (can be low energy) while feeding supplements for BCS gain requires high quality, high energy supplements to be used.

When feeding supplements during winter, care needs to be taken to minimise wastage and ensure good utilisation.

31.3 Manage fodder beet feeding appropriately

Fodder beet is a high energy, low protein feed that requires careful management. Due to the high sugar content there is high risk of acidosis when feeding fodder beet.

31.3.1 Transition onto fodder beet carefully

Some good guidelines when transitioning onto fodder beet are:

- Have accurate yield and dry matter (DM) measurements, especially in the area to be allocated during transitioning - see Estimating Fodder Beet Crop Yield.
- Transition cows carefully by slowly introducing cows to fodder beet. Decrease the proportion of pasture/silage and increase the amount of fodder beet in the diet over 14-21 days.
- Start mature cows with 1-2kg DM fodder beet per cow per day and only increase by 1kg DM every second day to the required allocation. Do not continue to increase the allocation if all cows are not eating beet or bulbs are being left on previous days' breaks. Start heifers and rising yearlings on 1kg DM fodder beet per cow per day and only increase by 0.5kg DM every second or third day once all animals are eating.
- Rising two-year-old heifers and rising one-year-old calves tend to be slower to start eating the bulbs and will sometimes benefit from splitting bulbs (e.g. using a tractor wheel) to get them onto the crop.
- If transitioning onto unrestricted (ad libitum) fodder beet – do this over at least 21 days. After transitioning to 7-8 kg DM fodder beet hold this allocation for 7 days and then slowly increase the break line a little each day until the cows leave fodder beet behind to achieve ad libitum intake. These cows still require 2-3kg DM/day of a good quality fibre source (silage, straw, hay).
- Work out your break size accurately – measure the rows, yield and width of your paddocks. Remember cows can graze under the fence by up to 1 m so include this area in the allocation.
- Offer a wide enough face of fodder beet so that all animals in the mob can access the crop at the same time. In paddocks without a grass headland to provide additional space at the start of transitioning or very high yielding crops, harvesting the beets in the headland and using these for the first few days of transitioning is an option.
- Using a time based approach (i.e. a set amount of time on crop) is not recommended as a tactic for transition because cows can consume 1kgDM every 15-20mins (3-4kgDM/hr) directly after the fodder beet break is opened.
- Have good electricity on fences and have a second fence very close to the feeding fence in case of break out.
- Feed supplement prior to putting cows on crop to ensure a good gut fill. Long chop baleage, silage or hay fed at least 3 hours before beets are offered is best.

- Check cows frequently. Individual cows transition differently, so even with well-planned transitioning acidosis can occur.
- Farmers need to be looking for: cows that separate themselves from the mob, are not eating, dehydrated, scouring, 'not doing well', bloating, milk fever like symptoms, down cows or sudden death and contact their vet immediately.

31.3.2 Allocate fodder beet accurately

- Use the DairyNZ Winter Crop Allocation calculator to determine the feed requirements.
- Twice daily shifting of a long narrow break, feeding under the wire is considered best practice as this allows roots and plant tops to be consumed by all cows and minimises crop wastage.
- Break size is critical – given the range in crop varieties, it is best to analyse for DM rather than using book values. 1% DM difference equates to 1-2t DM/ha yield difference. Be careful if you need to switch between different varieties as these contain different DM %.
- The crude protein percentage of the crop may not meet cow requirements and it may be necessary to increase the percentage of pasture silage in the total diet.
- The phosphorous level in some crops is very low. This can result in metabolic issues, especially around calving time. Supply additional phosphorus using DiCalcium Phosphate (DCP) supplement.



Fodder beet best practice management is to have the yield and DM % accurately measured

31.4 Manage swede feeding appropriately

Swedes have a low tolerance to drought and perform best in cooler moist environments. Therefore, they provide high quality feed during periods of winter pasture deficits. Swedes are susceptible to club root (soil borne) and dry rot (air borne) and are therefore a first year cropping option only. Swedes must never be established as a second crop after any other brassica crop. Swedes are usually sown from mid-November to end of December to produce large amounts of high quality feed which is carried over for winter grazing. There are 2 main types of swedes

- Early maturing cultivars: yellow-fleshed soft bulbs with lower DM and less disease tolerance
- Late maturing cultivars: higher DM, are harder and keep better into late winter.

31.4.1 Be aware of health issues associated with feeding swedes

Similar to other winter brassicas there are health risks associated with feeding Swedes.

The primary factors to be aware of are:

- Glucosinolates
- High nitrates
- Trace minerals

Glucosinolates

Glucosinolate toxicity is most common when cows are grazing mature swede (and other brassica) crops late in the growing season, when glucosinolate levels are very high in the new leaves and the flower heads.

During digestion, the glucosinolates are broken into isothiocyanate, nitriles and thiocyanates. These can, individually or in combination cause;

- Reduced feed intake in young stock and adult cattle
- Goitre in new born calves
- Photosensitivity in all stock.

Do not feed brassicas in their reproductive growth phase, recognisable when new growth, flowers and seed heads develop.

All cultivars of swedes can cause liver damage. The severity is influenced by multiple factors including temperature, cultivar, reproductive development, amount of leaf, feeding management. Some good guidelines to follow to prevent health issues are:

- Do not feed HT® swedes on the milking platform in late August/early September when many of the factors that lead to ill-health can rapidly combine, causing brassica toxicity.
- Do not feed swede crops in their reproductive growth phase, i.e. when the stem elongates, new growth appears and the swede plant develops flowers and a seed head.
- Be cautious when grazing animals on swede crops in autumn, before the first frosts.
- Be cautious at any time during the season when grazing a swede crop with a high leaf to bulb ratio as cows may preferentially graze leaf.
- Observe the physical characteristics of the crop being fed, monitor the health of cows and limit the allocation if ill-health is observed.

High nitrates

The nitrates in the plant are converted to nitrites and ammonia by the microbes in the rumen. These nitrites are absorbed into the bloodstream which lowers the blood's ability to carry oxygen to tissues. Clinical signs of nitrate poisoning are sudden deaths, cows appearing uncoordinated and anoxia (tissues deprived of oxygen). Periods of rapid growth after dry spells or frosting as well as recent application of nitrogenous fertiliser, can increase concentration of nitrates in the plant.

Reduce the risk of nitrate poisoning by gradual adaptation of the cows to the crop and ensuring enough roughage is available to cows before feeding the breaks to reduce the risk of gorging.

Trace minerals

- Swedes (and kale) contain low levels of copper and if fed for prolonged periods can result in copper deficiency. High levels of iron and sulphur can further reduce copper uptake.
- Swedes (and kale) also contain low levels of iodine and can contain high levels of goitrogens which block uptake of iodine resulting in iodine deficiency.

31.5 Manage Kale feeding appropriately

Kale is normally used as a winter feed crop. It has a deep root system with good drought tolerance.

It also has good tolerance to most insect pests and can be used as a second brassica crop, especially after swedes, because of its tolerance to club root and dry rot. Kale is usually sown in November and December to produce large amounts of high quality feed which is carried over for winter grazing.

31.5.1 Identify different Kale types

- **Short cultivars** - lower potential yields of around 12 tonnes/ha but of good quality with high leaf:stem ratio - suitable for lambs, sheep and young cattle
- **Intermediate** - good potential yields of up to 15 tonnesDM/ha often with a balanced leaf:stem ratio
- **Giant cultivars** - potentially highest yielding of up to 17 tonnesDM/ha but often with a large portion of total yield in the stem (lower leaf:stem ratio) which is lower in quality.

Good yields of kale can be achieved under good growing conditions but will vary depending on soil type, fertility and available moisture.

Kale grown on light, infertile soils or when water stressed may have lower yields of 6-8 tonnes/ha regardless of cultivar.

Water logged/compacted soils can also severely reduce yield potential.

31.5.2 Be aware of health issues when feeding kale

Similar to other winter brassicas there are health risks associated with feeding kale.

The primary factors to be aware of are:

- SMCOs (S-methylcysteine sulphoxide) also known as red water
- High nitrates (refer to swede section above)
- Trace minerals (refer to swede section above)

SMCOs (Red water)

Red water is caused by S-methylcystein sulphoxides SMCO's found in kale. Excessive use of nitrogen and sulphur fertilisers can increase the concentration of SMCOs in plants. Cow's urine is discoloured from typical yellow to dark pink/red colour. Other clinical signs include weakness, diarrhoea, decreased appetite and poor performance.

To reduce the risk of red water, avoid feeding cows flowering brassica crops as flower heads have the greatest concentration of SMCOs in the plant. Ensure animals have adequate levels of selenium before going onto crops. Selenium is an essential element in the enzyme (glutathione peroxidase) that helps prevent red water.

31.6 Checklist for winter crop feeding

- Have goals for wintering been written down?
- Has a feed budget been completed?
- How much does BCS need to increase to meet target? _____

In October to November consider:

- 1. Select a paddock based on shape.
- 2. Make contractor/staff aware of the planting direction.
- 3. Consider transitioning when selecting crop type.

In late February:

- 4. BCS your animals and create autumn feed plan, to minimise range of BCS going into winter

In April

- 5. Create a transition feed budget – do you have enough supplement/pasture?

In May/June

- 6. Use BCS to set up mobs for wintering.
- 7. Get an accurate crop yield for transitioning crop allocation.
- 8. Use crop allocation calculator to work out requirements to hit transitioning requirements.
- 9. Consider crop utilisation when setting up paddocks; especially with fodder beet.
- 10. Plan for cow status when transitioning, considering
 - a. Drying off time before transport
 - b. Preparation for transport
 - c. Extent of diet change.
- 11. Plan for transitioning naïve animals and let staff or grazier know what the plan is.
- 12. Manage mob structure over transitioning.
- Last but not least, has this plan been explained to the whole team? A suggestion is to have laminated instructions for each mob given to all members of the team.

31.6 Further reading

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