

# How do I ...

## remove excess mature reproductive pasture?

<b>The issue:</b>	Dry reproductive tillers remaining at the autumn break reduce subsequent growth of perennial grasses and annual legumes.
<b>The impact:</b>	Failure to remove the mature, reproductive growth reduces potential production from summer-active species and slows autumn pasture recovery of winter-active species.
<b>The opportunity:</b>	Removing the reproductive stems by grazing or through interventions such as slashing takes advantage of summer rainfall and sets up potential summer and autumn pasture production.

The four grasses (phalaris, cocksfoot, tall fescue and perennial ryegrass) produce reproductive tillers each year.

This is an important survival mechanism for these grasses as the action of stem elongation supports a plant's survival mechanisms over summer. However, in summer-active grass species, the emergence of reproductive tillers can reduce the production of new, high quality vegetative growth.

Common to all grasses is the need to remove excessive reproductive tillers by the autumn break. Failure to remove the mature, reproductive tillers will retard new growth, reducing grass and sub-clover regrowth and resulting in feed of lower nutritive value.

The amount of biomass accumulated in good springs can make removal challenging, and in wet summers this feed can reduce in quality. This fact sheet provides information on the issues and how to manage this challenge.



A roadside area in autumn provides an example of cut phalaris with new growth (left) and uncut phalaris (right) with its excessive bulk dry feed.

## What are the downsides to having excessive mature reproductive feed?

Being left with a bulk of mature reproductive growth has implications.

Dry material leads to shading, which:

- reduces light interception needed for production of carbohydrates by photosynthesis and therefore decreases growth
- reduces tiller density, as tiller production depends on light reaching the base of the plant – for example, leaving mature dry feed on a tall fescue stand reduced tiller densities of up to 40%<sup>1</sup>
- thins out the pasture by reducing tiller density, which makes the pasture susceptible to annual weed invasion<sup>2</sup>
- prevents small tillers becoming photosynthetically independent, leading to tiller death
- reduces hard seed breakdown of annual clovers, reducing germination
- reduces pasture quality and palatability
- leaches toxins which are allelopathic, which prevents growth or germination of other species
- reduces pasture production of summer active species in summer moist environments.



Leaf material collected from two adjacent phalaris plants of equal crown size. Green material on the left was collected four weeks after the autumn break from a plant where reproductive seed heads remained. Green material on the right was collected at the same time, but from a plant where reproductive seed heads had been removed before the autumn break.

## The deterioration of feed quality over summer

Removing mature reproductive growth is not easy. The dry feed loses quality rapidly, particularly in wet summers, and stock prefer to eat green pick.

The loss of feed quality (digestible dry matter – DM) occurs as plants transfer energy from other plant parts into the maturing seed. Subsequent loss of quality occurs due to plant degradation. Rainfall also reduces feed value through leaching of carbohydrates and nutrients and the speeding up of breakdown by microorganisms.

Different parts of the plant (stem, leaf sheath, leaf blade and seed head) have different starting nutritive values, with stems being the lowest digestibility (65%) and leaves and seed heads about 80%.

Digestibility of leaf blades and leaf sheaths has been shown to decline rapidly to 50–70% over a period of 17 days post-flowering. Stem and seed head digestibility decreases occur over a longer period (about five weeks) before remaining steady, with stems declining to 25% and seed heads about 50–70%.<sup>3</sup> This gives some indication of why, when given the opportunity,

stock will selectively eat seed heads and leaf and ignore stems.

The window for utilising feed while it still has moderate feed quality is therefore, about three weeks after flowering. Delaying the use of pasture beyond this time results in loss of feed value and reduces animal intake and production.

By January, dry mature feed may contain as little as 4–6% crude protein, digestibility of 50–55% and a low energy content of 7–8 megajoules of metabolisable energy per kilogram of dry matter (MJ ME/kg DM).

Rainfall stimulates fresh growth and green pick, and stock will graze this rather than the unpalatable mature pasture.

The reluctance of sheep and cattle to graze is not only due to feed quality and palatability but the physical issue of putting their heads into dry, sharp, stalky feed. For example, tall fescue stalks can become sharp and wire-like and are difficult for stock to eat.

## Summer pasture management targets

The amount of dry feed left after spring is mainly driven by spring growth (or lack of) and, therefore, spring rainfall will determine how difficult dry feed removal will be. The important summer pasture targets when removing dry feed are to leave:

- 70% ground cover on flat country and 90% on hill country to protect against soil erosion during summer thunderstorms and wind erosion
- 1,000kg of loose DM/ha on the ground at the autumn break<sup>4</sup> (approximately two handfuls of litter scraped off a 0.1m<sup>2</sup> area) to allow hard seed breakdown and optimise germination of annual clovers.

Grazing pressure can then be adjusted, depending on how much herbage mass remains at the end of the growing season. Remove stock from paddocks when the ground cover falls below targets, or litter targets are reached.

## How do I manage mature feed in late spring?

There are three key strategies for successful management of dry spring feed, given the rapid decline in feed quality. They are:

1. Maximise spring utilisation
2. Prioritise paddocks
3. Reduce excessive spring growth and number of paddocks for clean-up.

### Maximise utilisation of spring feed

Strategies to maximise utilisation of spring growth, especially before feed quality declines, include:

- match animal feed demand (numbers and feed requirements) to increased pasture growth, for example, spring lambing or calving
- bring in additional stock on agistment, but only if numbers can be maintained without expensive supplementary feeding
- conserve the spring surplus with silage/hay cutting. Storage of fodder reserves in good years to get through tough seasons or to use as additional fibre in stock containment are practical risk mitigation strategies.

### Prioritise paddocks

Herbage mass is unlikely to be controlled in all paddocks and rather than lose control of all paddocks, decisions need to be made on which paddocks to concentrate grazing on and which paddocks to forego grazing. Ungrazed paddocks can be utilised during winter when other paddocks are rested. Priority paddocks for grazing are those with:

- high-growth pastures
- capacity for lambing, calving or high animal production

- summer active species (in wetter environments)
- good clover composition or, conversely, paddocks where you are trying to improve clover content
- small areas, where it is easier to control grazing
- water supply or quality issues late in summer.

Lower priority paddocks are those which have:

- hill country, as ground cover targets need to be maintained at least 90% and are likely to have native grasses which can be strengthened under late spring and summer spelling
- spray-topped or hay-frozen pastures, where the application of herbicide temporarily conserves feed quality for up to four weeks following spray application. This delays their requirement for initial grazing, so other unsprayed paddocks can be grazed while feed quality is still high.

### Reduce excessive spring growth

Strategies to reduce the amount of spring feed can also help reduce excess spring herbage mass and lower the number of paddocks for clean-up. Strategies include:

- sowing spring fodder crops in preparation for autumn pasture or crop establishment
- avoiding fertilising pastures in early spring, except hay paddocks
- applying gibberellic acid in winter to shift some spring growth into winter
- spray-topping weeds to reduce biomass by 20%.



## Tactics for removal of mature feed

The more fragile material like leaves contain less fibrous material and can degrade unaided and blow away. However, removal of the stemmy mature feed will need intervention. Returning this dry feed to the ground through dung, trampling or slashing will speed up the decomposition process.

In years of big spring surpluses, slashing or burning are tactics which can be used to remove litter, but the preference is always to try and utilise the feed that is grown.

## Grazing approaches

Once feed quality becomes poor and palatability low, sheep will prefer to graze new regrowth rather than eat stems and, therefore, grazing methods which minimise selective grazing should be practised. Grazing methods which reduce selectivity involve using high stock numbers (at least 100 DSE/ha) in short intensive grazing periods of three to seven days.

## Stock selection

Considerations in utilising livestock for mature feed removal include:

- using cattle in preference to sheep as they do a better job of litter removal and are less selective grazers
- using dry or non-lactating stock
- avoiding grazing weaners on paddocks with high content of annual grasses or weeds with sharp seed heads due to poor tolerance and likely ill-thrift
- grazing the paddock with cattle first to break through trash, followed by sheep.

## Supplementation

While there may be 'plenty' of feed for stock, it will be poor quality, both in protein and energy. When cleaning up the dry feed remember it is of low feed value and weight/condition loss in animals should be expected.

If only dry feed is on offer and very little green plant material, feeding of a protein and energy source such as lupins provides nitrogen to support gut bacteria of livestock, allowing improved breakdown of fibrous feed. This increases the total amount an animal can eat in a day. As feed consumption is increased, this can increase energy intake and reduce weight loss.

Figures 1 and 2 (generated from GrazFeed) demonstrate the effect green pick (protein and energy) has on intake and weight gain. The trend is the same for both sheep and cattle. A 50kg Merino wether with access to dry feed (3,000kg DM/ha) of 50% digestibility will eat 0.9kg DM/day but this is increased to 1.4kg DM/day when green pick of 300kg DM/ha is available. The addition of the green pick allows weight gain (43g/hd/day) as opposed to weight loss (5g/hd/day (Figure 2)). In cattle, weight cannot be maintained with access to dry feed (3,000kg DM/ha) of 50% digestibility, even with 300kg DM/ha of green feed, because they cannot graze as low.

Supplementation decisions are rarely made based on utilising dry feed but on achieving animal production targets and animal type. Monitoring live weight or condition allows adjustment of feed sources or rations.



Stock grazing green pick.

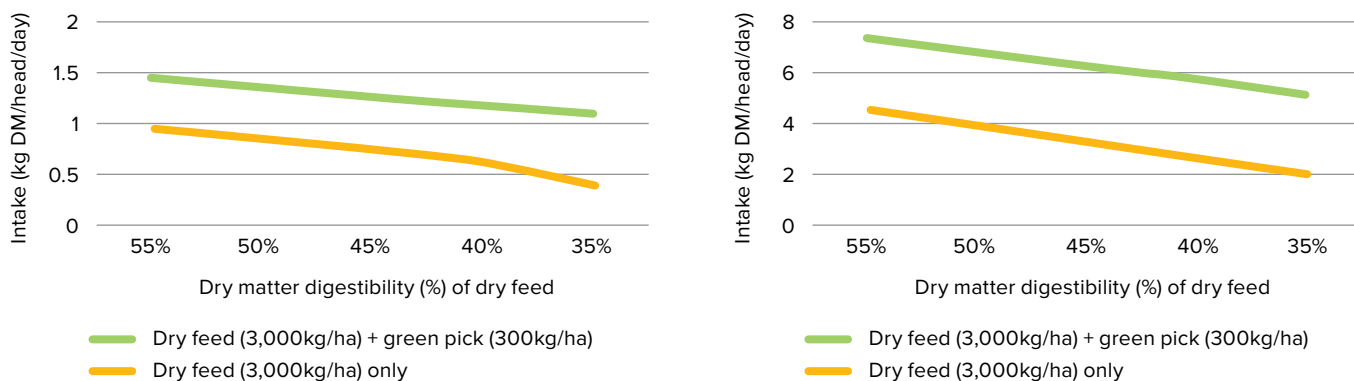


Figure 1. Intake (kg DM/ha/day) of Merino wether (50kg) (left) and early pregnant cow (500kg) (right) grazing dry feed (3,000kg DM/ha) of different DM digestibility % with and without green pick (300kg DM/ha).

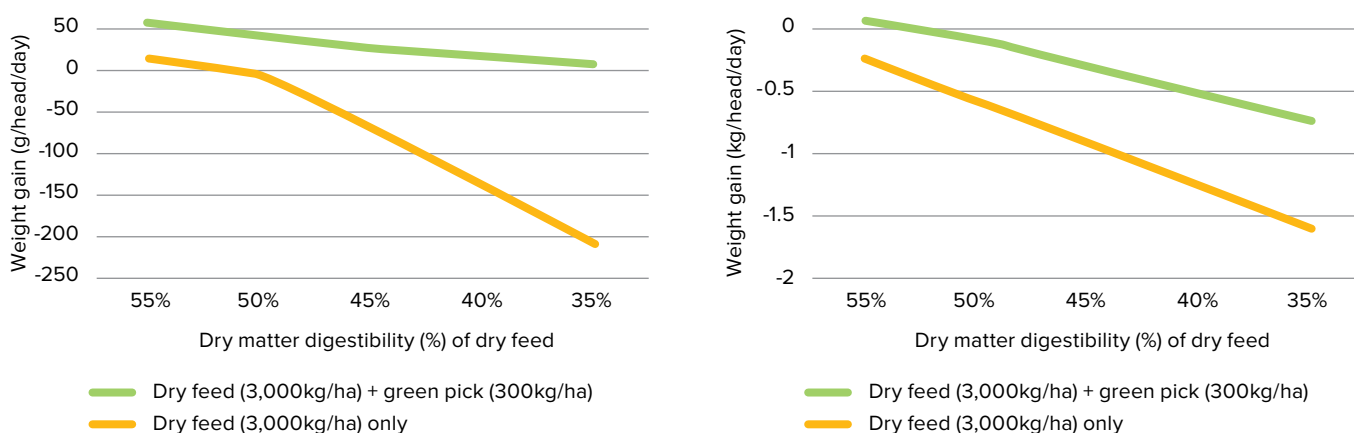


Figure 2. Weight gain of Merino wether (50kg) (left) and early pregnant cow (500kg) (right) grazing dry feed (3,000kg DM/ha) of different DM digestibility % with and without green pick (300kg DM/ha).

Some considerations for supplementation to improve utilisation of dry, low quality feed are:

- benefits with high protein supplements occur when crude protein levels of dry feed falls below 6%
- approximately 300kg green DM with dry mature feed (2,000–3,000kg DM/ha) provides enough protein to maintain intake for a dry sheep to avoid weight loss
- urea is not protein but is a source of nitrogen for gut bacteria which help create protein. Urea can be difficult to feed and is toxic so is less suitable to growing stock. Feeding rates are normally about 10g/day for an adult sheep.

### Access to good quality water

Dry feed will likely contain less than 10% moisture and access to water will be essential for grazing livestock.

### Machinery interventions

Slashing is best done early in the season to promote further summer production or, alternatively, late in the season if the pasture cannot be utilised.

Slashing which removes dry tillers and promotes green leaf results in higher pasture quality. A perennial ryegrass pasture cut in December had an extra 3.1 MJ ME/kg DM and 9.3% more crude protein than uncut.

Considerations include:

- cost and time
- fire risk if slashing dry feed
- unsuitable in rocky or steep sloping paddocks
- slashed feed can lie over pasture and prevent new growth.

Some producers use a technique of slashing phalaris while leaving strips in lambing paddocks for shelter. Similar strategies have been used in creation of hedge rows with tall wheat grass.<sup>4</sup>

### Burning

Burning can be used once fire restrictions have been removed but is disadvantageous as the organic carbon and nitrogen from feed is not returned to the soil but lost as gases (carbon dioxide and nitrous oxide). However, alkalinity and potassium are quickly returned to soil.



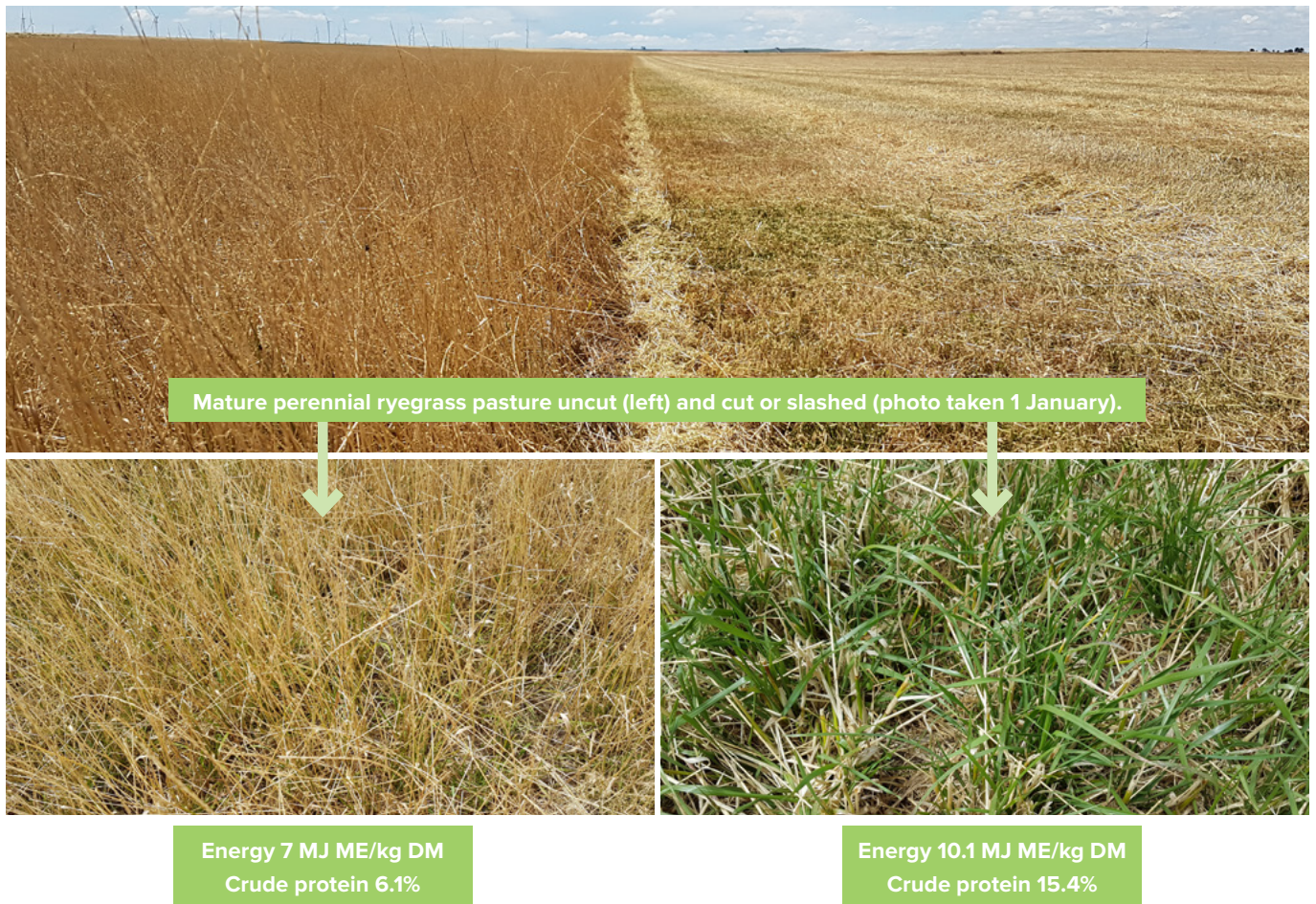


Figure 3. Uncut perennial ryegrass pasture (left) shows reduced green growth and excessive dry material compared to cut area (on right). Photo and feed test both taken on 1 January.

## References and more information

1. Vecellio, LC, Jung GA, Harpster HW, Shaffer JA, Engle CE and Everhart JR (1995) Endophyte-free tall fescue cultivars grazed by sheep: Forage quality and sward characteristics. *Agronomy Journal* 87, 1169-1175
2. Korte CJ, Watkin BR and Harris W (1982) Use of residual leaf area index and light interception as criteria for spring-grazing management of a ryegrass-dominant pasture. *New Zealand Journal of Agricultural Research* 25, 309-319
3. Leury BJ, Siever-Kelly C, Simpson RJ, Gatford KL, Ciavarella TA and Dove H (1999) Spray-topping annual grass pasture with glyphosate to delay loss of feeding value during summer. I. Effects on pasture yield and nutritive value. *Australian Journal of Agricultural Research* 50, 453-464
4. Evergraze (2008) Perennial grass hedges provide shelter at lambing. Online (verified April, 2022) [EverGraze-Action-hedges-A4.pdf](#)

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