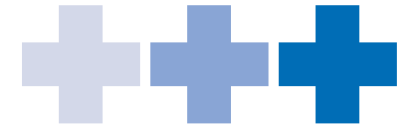




GRAZING MANAGEMENT - Annual Ryegrass TECHNICAL PRINCIPLES & PRACTICES



What are some key options to make more profit per cow through better grazing management?

To achieve an increase in Dairy Operating Profit (or EBIT) of \$100 per cow per year means making around 30 cents more profit per cow per day. Some options:

- Replacing 1.5 kg of grain in a cow's daily diet with around 1.8 kg dry matter of annual ryegrass through better grazing management will give around 30 cents more profit per cow per day.
- Growing an extra tonne dry matter of annual ryegrass per hectare costs around \$120. Based on a conversion efficiency of 1.4 litres for every kg dry matter, this equates to 1400 litres more milk or around \$840 per year or a net benefit of \$720.

Pasture utilisation - a key farm profit driver

- Pasture utilisation is a term used to describe the proportion of pasture dry matter grown over a given time that is consumed by grazing animals or conserved as silage or hay.
- Pasture utilisation is a key driver of profitability for grazing and PMR farms.
- For temperate pastures like annual ryegrass offering 2500 kg dry matter and grazing to a residue of 1000 kg DM (or 5cm) is a good benchmark.
- Achieving high pasture utilisation enables your pasture establishment costs and annual maintenance costs incurred to be spread over more tonnes dry matter, thereby reducing your pasture cost.
- High pasture utilisation is possible across all cow types, production systems and supplementary feeding levels, provided stocking rate is adequate to create enough feed demand per hectare.
- Pasture utilisation varies widely between regions and between farms in the same region.

Growth and utilisation of pastures

There are several factors which influence the growth potential of a given pasture and the proportion of the pasture grown that is utilised.

Figure 1. Factors influencing growth and utilisation of pastures





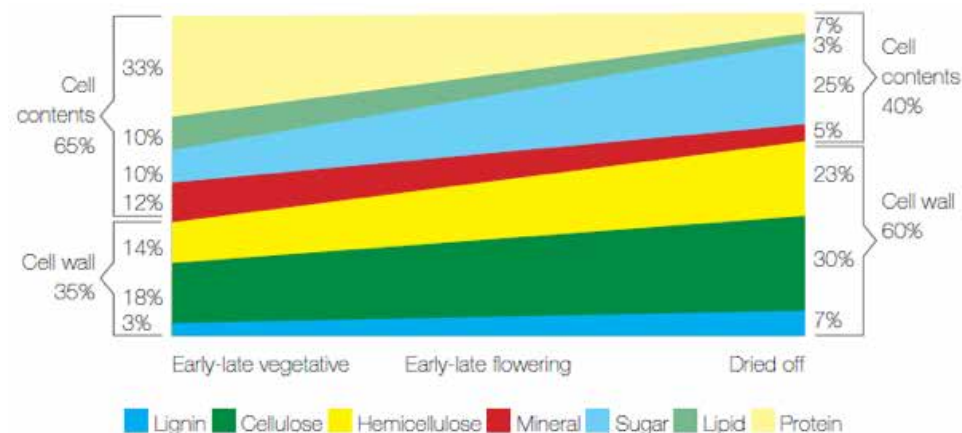
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Pasture nutritional quality & cow intake potential decline with plant maturity

- As a pasture sward matures and the proportion of cell wall to cell contents increases, its nutritional quality (energy, protein and mineral contents) and cow intake potential decline. A good indicator of the pasture's stage of maturity is its fibre (Neutral Detergent Fibre - NDF) content. (NDF = Lignin + cellulose + hemicellulose).
- A good annual ryegrass pasture is 11-12 MJ Metabolisable Energy/kg DM, 20-25% Crude protein and 40-45% NDF.

Figure 2. Changes in nutritional components of a ryegrass sward with plant maturity



Grazing management

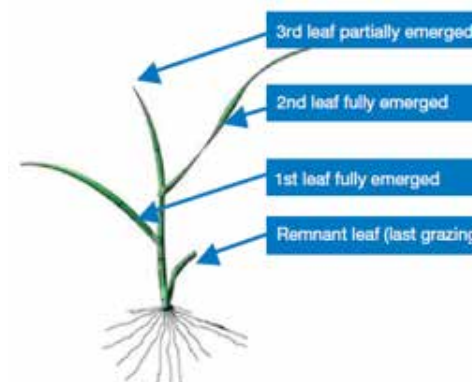
Monitoring of average pasture cover and pre and post grazing pasture covers over the farm regularly (e.g. via a weekly walk) is essential for achieving maximum pasture growth and utilisation. This is done using a rising plate meter or an automatic ATV-mounted pasture meter.

4 Things to avoid

1. Avoid over-grazing paddocks	It depletes the plant's reserves and leaves less leaf for photosynthesis, thereby retarding pasture regrowth. It also impacts on pasture density and persistence.
2. Avoid under-grazing paddocks	This will increase the rate of pasture loss by decay, thereby decreasing pasture growth.
3. Avoid grazing a paddock too soon	Grazing before ryegrass plants have grown the minimum number of leaves per tiller to replenish their carbon reserves (2 leaves) will decrease pasture growth and plant survival.
4. Avoid grazing a paddock too late	Grazing after the desired pre-grazing leaf stage / height / pasture cover has passed will increase decay of older leaves and decrease pasture growth, while also lowering its nutritional quality, impacting on feed intake and milk production (as per over-grazing). It will also make it difficult to graze down to the target post-grazing residual.

Grazing recommendations for annual ryegrass pastures

- Graze at 2 1/2 to 3 leaves / tiller, and prior to canopy closure or when sward is starting to lodge
- Post-grazing residual: 5 cm (1,000 kg DM/ha)





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Setting rotations and allocating pasture

Allocate pasture based on current pasture growth rate rather than grazing paddocks at set intervals. Making small adjustments to paddock grazing intensity or frequency based on growth rate or leaf emergence rate (LER, the number of days taken to grow each leaf) can result in substantial improvements in pasture quantity and quality.

Recommended steps:

Set grazing interval	Set grazing interval using the current LER in each paddock. For example, if LER is 8 days/leaf and grazing at 2.5 leaves is desired, then grazing interval should be 20 days (8 X 2.5).
Determine grazing area per day and order of paddocks	Determine maximum area that should be grazed each day, and order of paddocks to be grazed based on leaf stage and pasture cover.
Calculate tonnes pasture DM to be harvested per day	Calculate total kgs pasture DM that cows must harvest each day to maintain the grazing interval set.
Make adjustments to pasture area allocated if necessary	Make daily adjustments to pasture area allocated if: <ul style="list-style-type: none"> • post-grazing residual is higher or lower than target • daily milk yield falls for no obvious reason • excessive wastage of supplementary / complementary feeds is occurring

If post-grazing residuals are too high, follower cows (e.g. dry cows or young stock) or topping should be considered.

Cows should not have access to a paddock or section of paddock for more than 2 days.

When strip-grazing a large paddock for more than 2 days, a back fence should be used to stop cows re-grazing the 2-day growth.

Pasture availability and quality – a key driver of cow intake and productivity

There are several factors that determine how much pasture cows will eat and hence pasture they will be able to utilise. These include:

- Grazing time available per day – this is influenced by time spent each day walking, being milked, eating on a feed pad.
- Pasture allowance and density - offering a generous amount of pasture allows the cow to select a higher quality diet, increasing the rate of digestion and intake. However, more pasture is wasted.
- Pasture nutrient value / digestibility - the more fibre (NDF) the pasture contains, the less pasture cows will tend to eat.
- Pasture palatability.
- Quantity and nutritional quality of supplements fed - the more grain in the dairy, the less pasture she will want to eat.
- Nutrient imbalances - when a diet is imbalanced, particularly for protein, intake is reduced.
- Cows' genetic potential for milk production, which drives appetite.
- Cows' liveweight and age, stage of lactation, stage of pregnancy, body condition and health status.
- Drinking water access and quality.



Using supplementary feeds to manage pasture

- The types and feeding levels of supplementary feeds should be adjusted as pasture growth rates fluctuate to avoid over or under grazing and to maintain required daily nutrient intakes for target milk production when pasture quality changes.
- Feeds may be fed in the dairy at milking and/or in the paddock. However a feed pad, and the ability to prepare partial mixed rations (PMRs) using a mixer wagon, will provide greater flexibility with pasture management, while reducing feed wastage.

Signals that high pasture growth and utilisation is being achieved

Cow signals

- Milk production per cow doesn't change after 3 to 4 days when supplementation is changed
- Herd body condition profile (avg. BCS, % cows < BCS 4.5 and >5.5) is on target
- First calvers' body condition is on target and their milk production is >85% that of older cows
- The diet is balanced

Pasture signals

- There is little plant mortality between grazing
- Post grazing residuals are on target (5cm)

Financial signals

- Milk income over feed costs
- Total feed costs (pasture and supplements) are not more than 50% of total income

i Further Information & Support

- 'Successful Dairy Production in the Sub-Tropics'. 2013. Dairy Australia & QDAFF
- 'Managing Pastures'. Fulkerson, Blacklock and Nelson. 1997. NSW Agriculture