

Feeding low fibre forage during hot weather

Feeding Cool Cows – Fact Sheet 2

KEY POINTS

Cows offered fresh chicory under hot environmental conditions had greater milk production than cows offered pasture silage.

The lower fibre concentration in chicory compared to pasture silage appears to reduce the heat load of cows under heat stress conditions.

Use of chicory on a portion of the farm in summer provides an extra option for farmers with grazing dairy herds to mitigate production loss from heat stress.

As the frequency of heatwaves in Australia increases, management strategies are required to deal with heat stress in grazing dairy cows. Interventions such as providing shade, sprinklers, fans and adjusting milking times can help to mitigate the effects of heat stress. Nutritional manipulation of the diet is another possible tactic to implement.

The process of forage fermentation within a cow's rumen creates internal heat, and this contributes to the total heat load on a cow. Feeding dairy cows forages with a high fibre concentration (greater than 45 per cent Neutral Detergent Fibre) may limit feed intake and can increase the heat load the cow experiences. In a hot environment it is then more difficult for a cow to off load heat and cool down. Feeding cows a forage with a lower fibre concentration during periods of heat stress can reduce the overall heat load the animal experiences. This helps to minimise losses or even maintain milk yield.

On Australian dairy farms where pasture is the dominant source of feed, pasture silage is commonly used to supplement cows over the summer months to maintain feed intake and production. However the average Australian ryegrass pasture silage is high in fibre (45 to 50 per cent Neutral Detergent Fibre (NDF)) and may be detrimental to a cow's milk production in extreme heat situations – alternative sources of forage options should be considered.

Factsheet one 'Hot weather reduces quality of irrigated dairy forages' showed the impact of heat on three different irrigated forages (perennial ryegrass, tall fescue and lucerne) commonly grown on dairy farms in Australia; as temperatures increased the nutritive value of these forages declined.

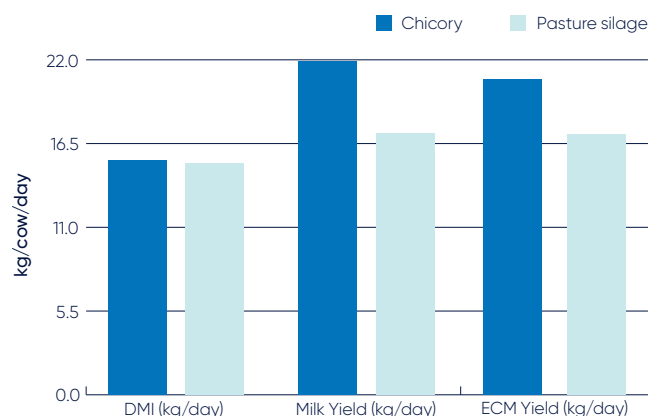
Chicory versus pasture silage

As part of the DairyFeedbase Feeding Cool Cows project feeding fresh chicory was compared to feeding pasture silage as a forage source during a heat event.

Chicory and pasture silage were fed to lactating dairy cows for several weeks. During this time, cows were exposed to periods of heat stress conditions, with no relief overnight. All cows were also fed 5 kg DM/cow/day of concentrate mix of wheat and barley.

Results showed that while the dry matter intake of cows fed chicory or pasture silage was the same, the cows consuming chicory produced 4.7 kg more milk (equivalent to 3.6 kg more energy corrected milk) during the experiment (see Figure 1).

Figure 1 Differences in dry matter intake (DMI), milk yield and energy corrected milk yield for animals fed chicory or pasture silage.



While cows consumed the same amount of each feed type, the lower fibre/NDF concentration of the chicory (34 per cent NDF) meant cows were able to consume more energy from the chicory when compared to a typical pasture silage (48 per cent NDF).

Importantly, the body temperature of cows consuming chicory was lower during the whole experiment and increased less during the heat stress period when compared with the body temperature of cows eating pasture silage. Lower NDF forages generate less heat during fermentation in the rumen than higher NDF forages. This keeps the cow's internal body temperature lower and helps the cow to maintain feed intake and milk production during periods of heat stress.

Even small increases in cow body temperature can have negative impacts that extend beyond the easily observed reduction in feed intake and milk yield, such as reduced immune function and fertility.

Therefore, feeding cows a low fibre forage during summer, and helping cows stay cooler from the inside, may not only improve summer milk yield, but may also have wider reaching benefits for your herd.

Key outcomes for farmers and advisors

- Summer diets need to contain highly digestible, low NDF and high energy, sources of forage. Chicory is a good option for a low NDF, high energy forage.
- Milk yield was higher when chicory (low fibre) was offered compared to pasture silage (high fibre).
- Sowing a portion of the farm to chicory (or another low fibre forage) for use in the summer grazing rotation may be an option to consider in consultation with your nutritionist, agronomist or farm consultant.
- Where chicory is not an option strive to make high quality pasture silage by following the principles of good silage conservation as outlined in the *Dairy Australia Top Fodder* program and the *Successful Silage* manual.
- When looking at nutritional changes to help manage heat stress in your herd remember that this is just one component in a variety of management strategies such as shade, sprinklers and adjusted milking times.

Further reading

Understanding Chicory Best Practice Management

'Dairy Cows Offered Fresh Chicory Instead of Ensiled Pasture during an Acute Heat Challenge Produced More Milk and Had Lower Body Temperatures.'

2023 by Williams et al.

MORE INFORMATION

Read more about managing heat stress in cows here [Cool Cows | Dairy Australia](#).

