Pasture digestibility

Good for profitability and for emissions

This fact sheet is part of the Profitable Dairying series - *Good business management reduces greenhouse gas emissions.*

The Australian dairy industry has committed to reducing greenhouse gas emissions intensity (emissions per litre of milk produced) by 30% by 2020.

Cows on quality feed with a good digestibility will produce less methane per litre of milk produced than cows on poor quality feed.

Feeding cows high quality feed is a win-win for farm profitability and managing emissions.

Feed the cows well

Enteric methane produced by methanogen bacteria in the rumen is the largest source of greenhouse gas emissions from dairy farms – around 55%. Approximately 6-10% of the energy consumed by cows is converted to methane released through burping.

The energy lost as enteric methane from a lactating dairy cow is equivalent to 25-40 grazing days per year, or up to 10% of gross energy intake.

Pasture digestibility has a major impact on methane production, being highest when pasture digestibility is low. Methane represents a major source of energy loss for the cow, and if methane loss could be minimised, milk production would likely increase, increasing farm profit.

Click here for more information.

Managing perennial ryegrass to maximize digestibility

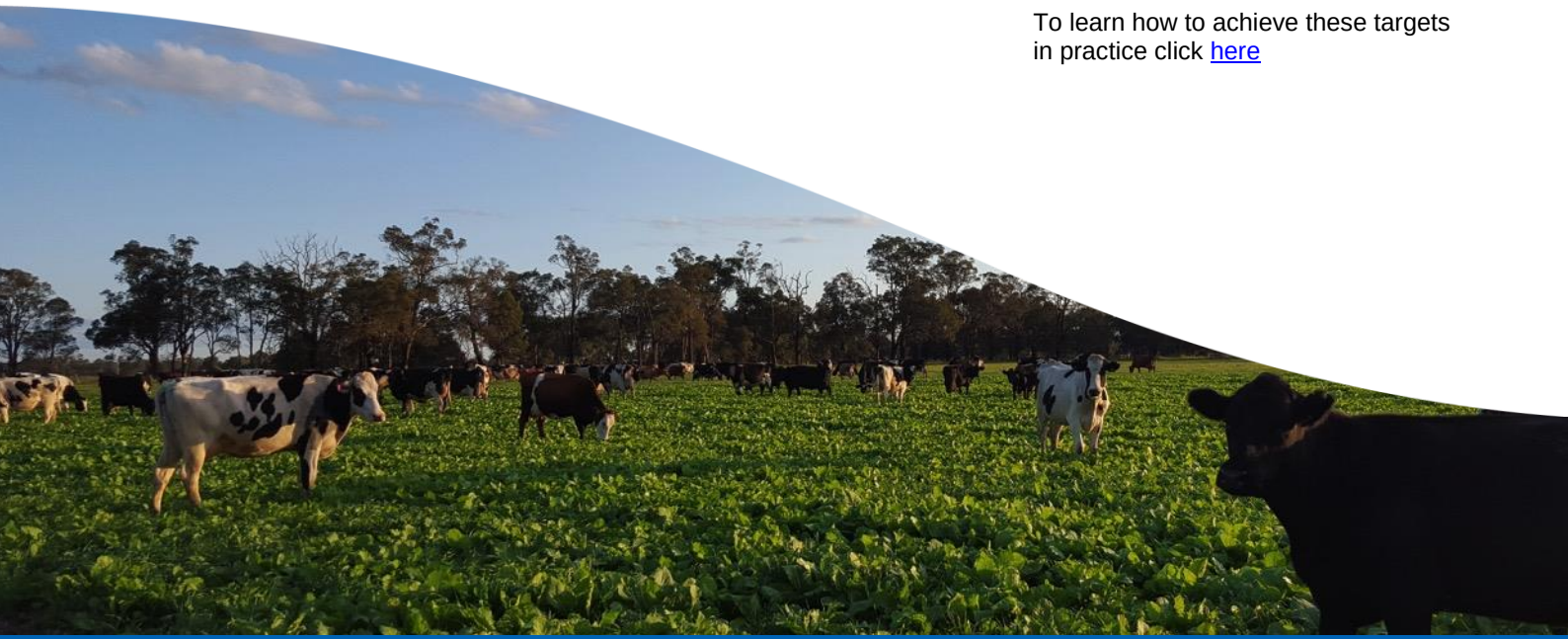
There are three targets for successful management of ryegrass pasture (as identified by the industry 3030 project):

- Graze between the 2nd and 3rd leaf stage.
- Leave a post grazing residual of 4-6cm between pasture clumps.
- Maintain a constant cover of green leaf all year.

To achieve these targets the four main areas of management that should be covered are:

1. Set rotation length in relation to Leaf Emergence Rate and monitor it
2. Choose paddocks to be grazed and assess their pre-grazing cover.
3. Adjust supplementation to achieve target rotation length and post-grazing residual.
4. Make dairy adjustments to the allocated grazing area in order to achieve the target pasture intake and post-grazing residuals

To learn how to achieve these targets in practice click here



Improving diet quality

Any strategy that improves diet quality will tend to reduce methane production per L of milk, such as:

- Improving pasture quality through grazing management
- Increasing the portion of C3 (temperate) species such as ryegrass or fescue in the diet compared to C4 (subtropical) grasses such as paspalum or kikuyu
- Adding grain to a forage diet.

Reducing energy lost as methane

The rumen microbes responsible for producing methane thrive on high-fibre diets. High fibre, low digestibility feeds – such as hay, mature pasture and C4 grasses – will result in greater methane emissions than forages and pasture with lower fibre and higher soluble carbohydrates – such as less mature pastures, cereal grains, C3 grasses and legumes.

Increasing the grain content of the diet is an option for reducing methane emissions, as grain increases soluble carbohydrate and proportionately reduces fibre intake and therefore the proportion of energy converted to methane. Grain feeding can also reduce nitrous oxide emissions (see section below on energy-to-protein ratio) however this strategy may increase off-farm transport emissions.

Higher digestibility increases both voluntary intake and the rate of passage through the digestive system, so that digestion is more energetically efficient and less energy is diverted to methane production.

Overall improvements in diet quality will lead to more milk per unit of feed and lower emissions per unit of milk solids.

Further reading:

Perennial ryegrass management II. Practical application of grazing principles

Managing diet and pasture to increase profit to reduce emissions

Dairy Climate Toollkit

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