

# Managing for healthy rumen function

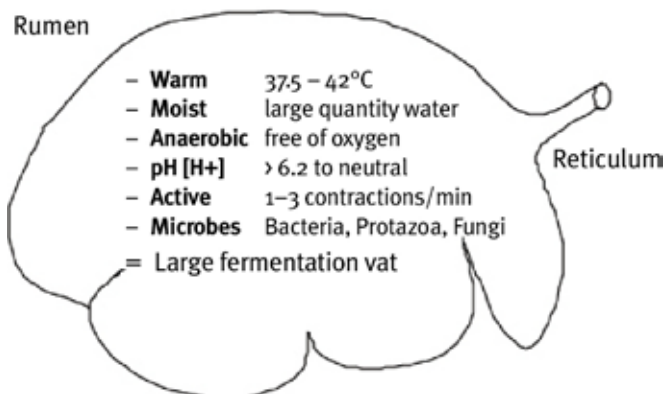
## Technical note 2

**Nutrition PLUS**

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### Maintaining rumen health

- pH measures the acidity or alkalinity of a liquid.
- pH 6.2 to 7.0 (neutral to slightly acid)—ideal for all rumen microbes.
- pH below 6.2—fibre-digesting bacteria slow down.
- pH below 5.4—fibre-digesting bacteria die out, lactic acid bacteria increase, and acidosis results.



### Cud chewing and rumination

- Cud chewing produces enough buffers in saliva to maintain rumen pH.
- Cows produce about 100 L of saliva a day, providing water to the rumen, plus some minerals and natural buffers (including sodium bicarbonate to help maintain a healthy rumen pH).
- A healthy rumen is dynamic and will contract 1–3 times a minute to keep contents well mixed.

### Clean, fresh water

- The moist rumen environment requires a large quantity of water. Cows will drink up to 100 L a day.
- Cows should have access to water in paddocks, feedout areas and at the dairy.
- Cows are particularly thirsty after milking, so provide water at both dairy exit and entry points.
- Water intake is affected by water cleanliness and salt/mineral content.



*If you wouldn't drink this, why should your cows?*

### Effective fibre

- The rumen requires longer feed particles (2–5 cm long) to stimulate cud chewing and rumination, to produce sufficient saliva and to reduce feed size for faster digestion.
- Provide adequate but not excess fibre—target 28–34% neutral detergent fibre (NDF) in the diet. (Refer to Technical note 4: *Factors affecting feed intake*).

### Consistent supply of nutrients

- For optimal rumen pH and rumen microbe growth and activity, provide a consistent and constant supply of nutrients.
- Minimise feed changes and avoid slug feeding (Refer to Technical note 19: *Slug feeding*). For example, minimise the time between grain feeding in the dairy and access to forage after milking.
- Adjusting the diet gradually. For example, if changing from ryegrass pasture to oats, make the change less abrupt by splitting into night and day grazings to build up the necessary microbe population. Rumen microbes can take up to 4–6 weeks to fully adjust to a change of feeds.

## Indicators of rumen health

### 1. Milk production and composition

- Tanker docket—plus individual cow and herd reports from herd recording—will show up any milk yield and composition variation. Any large variation in milk composition indicates an inconsistent diet. For example, a decline in milk fat below 3.3–3.5%, and a decline in milk protein by 0.25% units over 1–2 days may indicate rumen health problems. (Refer to Technical note 8: *Nutrition and milk protein %* and Technical note 9: *Nutrition and milk fat %*).
- Farms that regularly check and formulate diets generally have less variation in diet quality and milk composition.

### 2. Number of cows ruminating

- At least 50% of the herd chewing their cud when resting indicates good rumen health.

### 3. Manure composition

Check manure regularly for consistency and undigested feed.

- Normal manure = well formed pat with dimple in top.
- Thick, dry manure = too much fibre.
- Liquid manure = not enough fibre.
- Bubbly manure = hindgut fermentation of starch (an indication of acidosis).
- Mucous in manure = sloughing of lining of the intestines (an indication of acidosis).
- Grain in manure = passing too quickly through the rumen; possible lack of NDF; or grain not processed sufficiently for optimal digestion.



### 4. Body condition

(Refer to Technical Note 20: Body condition scoring)

- Body condition indicates overall herd nutrition, including healthy rumen function.
- Consistent body condition across the herd according to their stage of lactation indicates consistent feed management.
- Ideally, cows should calve at a body condition score (BCS) of 5–5.5 (on a 1–8 scale), drop no lower than 4–4.5 BCS at peak lactation, dry off at 5–5.5 BCS, and maintain that condition throughout the dry period.

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## Further information

- DEEDI website [www.deedi.qld.gov.au](http://www.deedi.qld.gov.au) for the Nutrition Plu\$ Technical Note series
- Protein Plu\$ checkbook (Published 2006 by DPI&F, Queensland)
- Feed Plu\$ CD v4.0 (Published 2008 by DPI&F Queensland)
- Condition magician booklet (Published 2003 by DPI Victoria)
- [www.dairyinfo.biz](http://www.dairyinfo.biz)

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