

# Nutrition and animal health: metabolic diseases

## Technical note 14

**Nutrition**  
**PLUS**

Amy Anstis and Dave Barber  
edited by Anne Chamberlain

Potential feed-related health problems in dairy cows include metabolic diseases (acidosis, ketosis, milk fever); disorders related to forage and grazing management (grass tetany, bloat, nitrate, prussic acid, plant poisoning); and ill-health/death from feed contamination (botulism, aflatoxins and ergot).

### Metabolic diseases

These diseases tend to be more prevalent in high-producing/early lactation milking cows. Refer to Technical note 10: *Dry cow feeding* and Technical note 11: *Transition/springer management*. Feeding management during this period can prevent/minimise metabolic disorders during lactation.

#### Acidosis

See Technical note 2: *Managing for healthy rumen function*, Technical note 19: *Slug feeding* and Technical note 7: *Feeding management*.

- Acidosis occurs when rumen pH declines, primarily due to the feeding of highly fermentable carbohydrates such as grain and molasses.
- Below a rumen pH 5.4, fibre-digesting bacteria die out, and lactic acid-producing bacteria increase, resulting in a rapid decline in rumen pH, and hence the clinical signs of acidosis.
- Acidosis can be caused by abrupt diet changes, insufficient effective fibre, and/or an excess in rumen-available carbohydrates (usually grain or molasses).
- Symptoms of acidosis can include cows not eating; less than 50% of herd chewing cud when resting; a drop in milk production and milk fat % (below 3.3% milk fat); sore hooves/laminitis; diarrhoea, foamy faeces and undigested grain in faeces.
- Prevent by balancing the diet for starch and effective fibre; avoid sudden feed changes; avoid slug feeding of grain and/or molasses; provide roughage with or immediately after feeding grain/molasses; feed buffers such as sodium bicarbonate or ionophores such as Rumensin®.



#### Laminitis

See 'Locomotion scoring of dairy cattle' (ZinPro 2007) for a scale of severity of lameness: <http://www.oz.availa4.com/locomotion/pdf/ZAN%20DCLS.pdf>

- Laminitis is a symptom of acidosis, but can also be associated with mastitis, metritis, hard surfaces, lack of/or excessive exercise on rough surfaces or wet weather.
- Symptoms include the cow bunching its feet together, arching its back and reluctance to move (photo above). Cows can become profoundly ill, lose their appetite and produce less milk. Hooves may loosen, distort and slough off.
- Prevent by feeding for stable rumen conditions (see acidosis); provide foot baths containing 2–5% copper sulphate particularly in wet conditions; provide essential minerals of zinc 40–60 ppm, selenium 0.3 ppm and biotin 10–20 mg daily.

#### Ketosis

Refer to DEEDI's 'Ketosis (acetonemia)'. Visit [www.deedi.qld.gov.au](http://www.deedi.qld.gov.au) (click on 'Queensland industries' > 'Agriculture' > 'Animals' > 'Dairy'. > 'Health management & diseases' > 'Ketosis').

- Ketosis occurs from the excessive use of body fat for energy. Primary risk factors are high production, early lactation; overfatness at calving—BCS >6 out of 8—(see Technical note 20: *Body condition scoring*); overfeeding in the dry period, then short period of starvation during calving; lowered energy intake; mastitis, retained placenta and milk fever.
- Symptoms include excessive loss of weight and condition; sweet smelling (acetone) breath; reduced intake; dullness, depression, staring expression; reduced milk production; constipation, mucous-covered faeces; lack of coordination, partial paralysis; highly excitable, licking, teeth grinding; shallow breathing.
- Prevent with balanced ration, particularly energy intake; maximise dry matter intake before, at and after calving; adapt dry cows to milking-cow diet by lead feeding; avoid overfat cows at calving (BCS >6 out of 8); lower potassium and calcium levels in the dry cow and springer diet; provide niacin as it may be effective if fed at 6 grams per day; feed Monensin the last month before calving.
- Treat promptly with slow intravenous or subcutaneous calcium borogluconate injection.
- Prevent by stimulating cow's calcium mobilisation before calving; feed a transition diet three weeks to calving, include anionic salts; avoid feeds high in potassium sodium and calcium in the springer diet; increase dietary calcium immediately after calving; avoid fat cows at calving; administer vitamin D injections 2–8 days before calving for cows with a history of milk fever.

## Contacts

Amy Anstis  
 DEEDI, UQ Gatton Campus  
 Phone: 07 5460 1384  
 Email: Amy.Anstis@deedi.qld.gov.au

## 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)

## Milk fever (hypocalcaemia)

Refer to DEEDI's 'Milk fever'. Visit [www.deedi.qld.gov.au](http://www.deedi.qld.gov.au) (click on 'Queensland industries' > 'Agriculture' > 'Animals' > 'Dairy' > 'Health management & diseases' > 'Milk fever').

- Milk fever usually occurs within 72 hours of calving and is caused by a low blood calcium level. Increased risk occurs with cold, wet conditions; poor nutrition prior to calving; age and breed.
- Symptoms include unsteady gait; cow lying down with head displaced to one side or into the flank (photo below); depression; dull eyes, staring, pupils dilated; dry muzzle; cold ears; groaning; slight muscle spasms; inability to rise; coma and, if left untreated, death.



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