


Acidosis - Causes, Prevention and Treatment

Geoff Duddy
Extension Officer (S&W)
Industry & Investment, NSW

Definition


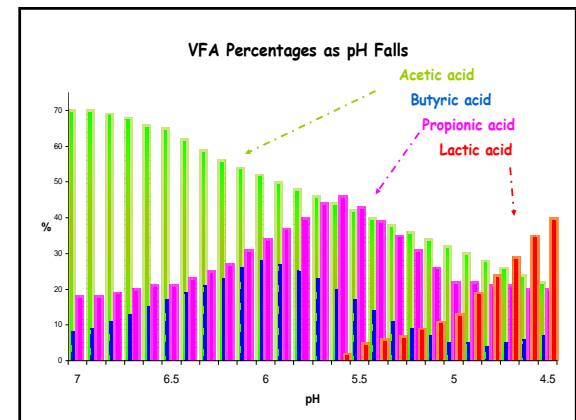
Known also as grain poisoning, grain overload, engorgement

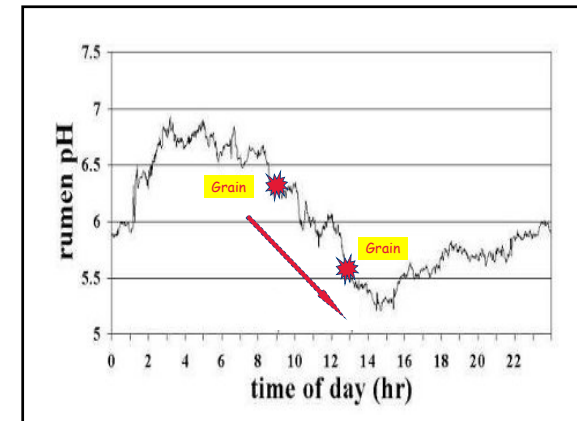
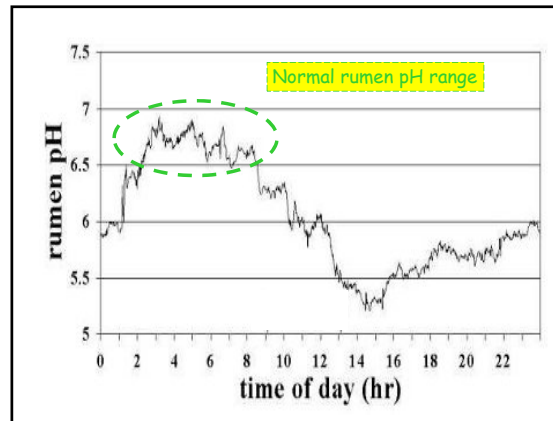
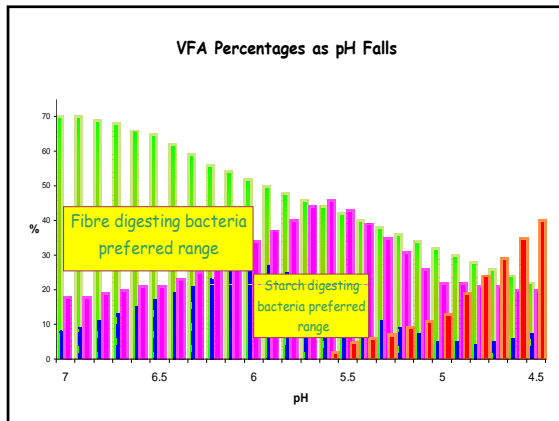



Definition

With rapid carbohydrate fermentation

- rumen acid percentages change
- increasingly more lactic acid is produced
- rumen and blood pH drops
- rumen buffering capacity is weakened
- fermentation efficiency drops



Causes

Acidosis is generally associated with

- feeding grains or
- pellets but may also occur when sheep consume
- by-product feeds (eg potatoes) that are low in fibre, high in starch



Causes

'Sugar' acidosis may also occur :

- on rapidly growing pastures high in sugar but low in effective fibre
- when feeding high quality, short chop acidic (pH values <4.5) silage



Clinical

Clinical acidosis symptoms usually develop within 6-8 hours.

Symptoms may include:

- dehydration,
- depression
- scouring,
- coma and death



Engorgement and acidosis leads to:

An inability to remove gas and foam



Pressure build up



Asphyxiation

Sub-Clinical

Sub-Clinical acidosis symptoms:

- dehydration,
- abdominal pain,
- scouring,
- lameness,
- abscess's,
- pneumonia



Sub-Clinical

- reduced fibre digestion
- reduced feed intake
- reduced feed conversion efficiency
- reduced efficiency overall

Sub-clinical acidosis is generally of greater economic importance



Sheep Characteristics

Sheep differ from cattle with feed passing quicker through the rumen
Sheep tend to have a higher incidence of gut issues

On pasture sheep spend half the time eating compared to cattle, but almost four times longer chewing



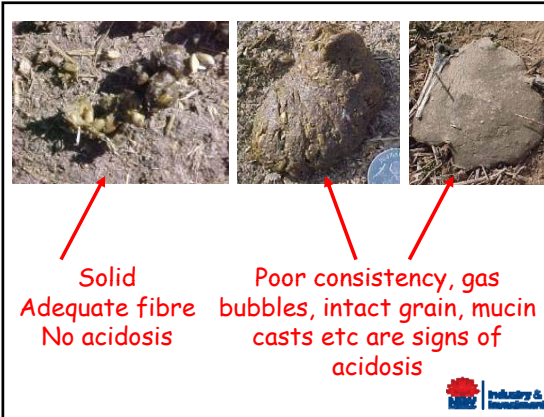
Indicators of ruminal acidosis

Chewing activity

- While resting 40 to 50% of a flock should be 'chewing cud'

Faeces (remember the 3 "C"s")

- Colour, Consistency and Content
 - dark green when graze fresh pasture,
 - brown-olive with increasing hay intake,
 - yellow-olive with increasing grain intake and
 - grey generally indicates acidosis



Indicators of ruminal acidosis

Feed characteristics

- acidosis risk greater when
 - pasture is lush, leafy and growing rapidly
 - feeding high quality, low pH silages
 - inadequate chop length (reduces chewing, rumination and saliva)
 - feeding processed grain
 - high starch, low fibre by-products



Indicators of ruminal acidosis

Laminitis/lameness



Indicators of ruminal acidosis

Laminitis/lameness

Due to increasing blood and pressure in extremities leading to blood vessel damage and swelling

Lamina damage (hooves), infection and increased temperature within affected feet

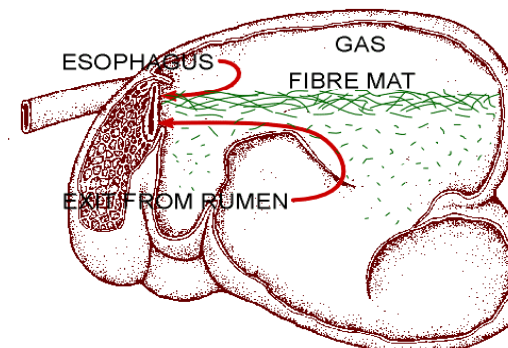


Prevention of ruminal acidosis

- Adequate and 'effective' fibre



Effective fibre = formation of a 'rumen mat'



Prevention of ruminal acidosis

- Gradual adaptation to starch-rich feeds
- Do not crack or grind grains for sheep
- Include one or more of following within a ration:



Feed Additives

Bentonite

- a clay that swells in size when in contact with rumen fluid
- binds acid ions and slows gut flow
- negative affect on protozoa which increases protein availability
- some palatability and digestibility concerns



Feed Additives

Bicarb of Soda

- an alkali
- naturally produced by lamb when chewing (in saliva)
- buffers against acid production
- add 1-2% on weight basis



Feed Additives

Acid Buf

- calcified seaweed
- honeycombed with large surface area that buffers for an extended period
- absorbs 3X more acids at pH 5 than bicarb of soda
- releases calcium and magnesium within the rumen
- add 1-2% on weight basis



Feed Additives

Limestone

- a calcium supplement
- has some buffering action in small intestine
- may reduce intake
- add 1-2% on weight basis



Feed Additives

Ionophores (eg: Bovatec)

- increases propionic acid = energy
- prevents coccidiosis
- improve feed conversion efficiencies
- may reduce intake
- included at 25-70g per tonne of feed



Feed Additives

Virginiamycin (Eskalin)

- an antibiotic
- prevents multiplication of lactic acid producing bugs
- require veterinary approval (S4)



Feed Additives

Yeasts

- may aid in the binding of 'bad' bacteria within the rumen, reducing the risk of acidosis and/or
- stimulate rumen bugs, increasing efficiency of digestion



Treatment of ruminal acidosis

- feeding hay to stimulate saliva flow
- antacids (magnesium hydroxide, magnesium oxide or sodium bicarbonate) at 1 g/kg body weight
- oral electrolyte solutions,
- use of light vegetable oil may help sheep to belch captured gases, reducing early stage losses



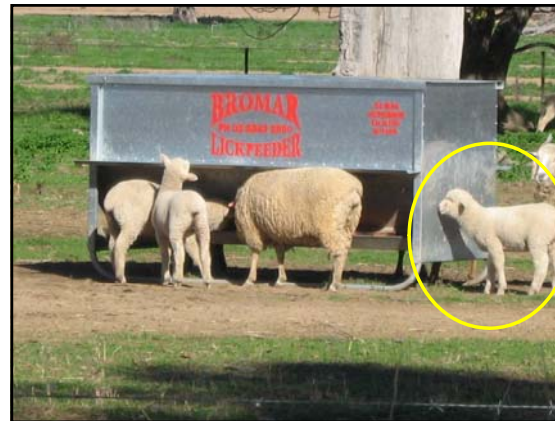
Treatment of ruminal acidosis

- antibiotics may reduce liver damage
- drench with a 1:8 dishwashing liquid/water solution (10 ml/kg)
- treat with activated charcoal (if available) - 1-4 g/kg with 1g/50 ml water
- Stale beer (rate unknown.....)



Pre-Training Lambs

There are benefits associated with 'pre-training' lambs while with their dam or experienced ewes to recognise grain and feeders prior to weaning

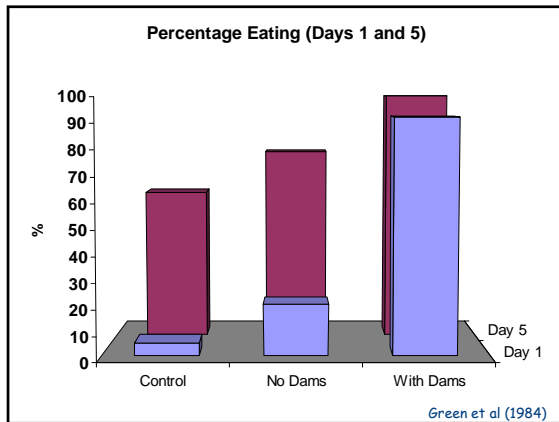


Pre-Training Lambs

Training lambs to recognise grain and feeders

- improves future recognition and intakes
- reduces shy feeders and
- may reduce acidosis risk





Pre-Training Lambs

Many store lambs may not have been imprinted and are being introduced to a feeding regime to which they are not accustomed.

This increases the risk of variable intake, engorgement and acidosis

