Confinement Feeding, Early Weaning and **Drought Management** LLS Workshop Series 2019 Part 2





Local Land Services



The

Importance of Fibre

Chewing

- breaks down large fibre particles
- promotes the production of saliva (sheep and cattle have between 25,000 to 40,000 jaw movements per day and produce between 6-16 litres and 100-190 litres of saliva daily)
- Saliva washes feed particles through the rumen and "buffers"

Physical "effective" fibre

 provides a 'tickle factor' which stimulates rumen contractions

Ruminants need 10+% '*effective*' fibre (aim for a minimum of 10% for sheep; 20% for cattle)



This floating mat

- <u>sorts</u> particles with long particles near the top of the mat regurgitated for cud chewing.
- <u>stabilizes</u> rumen fermentation by
 - trapping fine particles,
 - slowing their rate of breakdown
 - A rumen pH below 5.7 dramatically reduces dry matter intake
 - Low pH for extended periods can lead to chronic acidosis



Fibre

•stimulates cud chewing and saliva production (sheep and cattle have between 25,000 to 40,000 jaw movements per day)

- •saliva
 - aids in chewing and swallowing,
 - contains enzymes for breakdown of fat and starch and
 - is involved in N recycling to the rumen

Fibre

- reduces the rate of gut flow
- diverts P from urine to manure improving Ca:P balance in urine (reducing bladder stone risk)
- Increases B¹² absorption (needed for energy)
- Provides additional Vitamin D
- Improves Mg availability & absorption
- Increases milk fat

If 40% + are 'cud chewing' fibre level is ok

Inadequate fibre will lead to:

- rapid gut flow,
- a drop in rumen motility,
- changes to microbe number and percentages,
- a reduction in rumen efficiency
- the likelihood of grain poisoning

<u>but</u> we can feed grain alone As 70% of cereal grains when swallowed are intact. These act effectively as small sections of fibre until rechewed

Fibre

Monitor manure to check if fibre and rumen health ok

The <u>3</u> "<u>C's</u>"

- Colour
- Consistency and
- Content

Manure Score - Cattle



3 Thick pancake batter

- Ideal
- Similar to Score 2 but starts to form a normal 'pat'
- More than 1" thick with a slight centre divot



Target consistency Undigested grain may

indicate

fast gutflow
acidosis or
inadequatefi
bre



Grey, runny manure and evidence of gas bubbles or undigested starch (white patches) indicates excessive hindgut fermentation (acidosis)







Stock feed from under bale.

Issues with dust, grass seeds, waste etc



Access leads to selection for leaf and higher quality components waste and inefficiencies



Commercial dual species feeders – vertical bar widths too wide = waste and lambs entering feeder

Vertical bar systems should reduce waste and contamination







Shade - Sheep

Grazing trials (sheep) comparing shade versus noshade have shown no significant change in

- Grazing time
- Rumination time
- Time spent drinking
- Body temperature

Johnson & Strack (1992) Max 31-37°C, Min 12-21°C, Rel Humidity 13-28%

As wool is such a good insulator and sheep regulate most of their body temperature via panting/the nasal passage shade may not necessarily be needed <u>except</u> on extremely hot, humid days when there is little to no wind

Shade - Sheep

Appetite is reduced during extreme heat and can result in decreased

- daily weight gains and
- feed efficiency

Trial work has shown that sheep can reduce feed intake by 5% for every 10°C increase in temperature

Shade, while it may not always be needed, is however recommended

Shade - Cattle

Cattle prefer shade over water in hot conditions They lose heat through

- respiration (breathing)
- transference of heat into the air
- reducing feed intake and by sweating (inefficient) Their ability to get rid of heat depends on
 - air temperature / relative humidity,
 - wind / thermal radiation and
 - the energy level in the ration

Shade - Cattle

US (Texas) trial – shaded vs no shade Shaded calves spent

- more time lying down
- less time standing and bullying

and had higher

- feed intakes,
- average daily gains and
- final body weights

Trees provide adequate shade but beware of ringbarking!





Artificial shade can be used

 old car/truck tyres and wooden railway sleepers to climb on **Social Stress**

• PVC piping to mouth and butt

Goat trial – 'enriched' vs 'normal' feedlot under 2 stocking rates (6 and 11 m²/hd)

- **33%** drop in aggressive behaviour at feed trough at lower densities
- 36% fewer non-feeders
- 83% increase in daily gain (g/h/d)

Flint and Murray (2001)

Social Stress Lamb – 'enriched' vs 'normal' feedlot



- greater ADG's,
- a wooden platform with ramps giving access to a feeder,
 straw as bedding and forage &
- a further ramp for play
- heavier carcases,
- higher dressing percentages and lower pH

"Normal"

- greater stress,
- mobilized more body reserves and had
- lower levels of immunity

Balls, Scratching post/brush

Social Stress

Calf trial – 'enriched' vs 'control'

<u>Control</u> pen calves

- Rested for longer
- Ran and jumped less and were
- Less socially active

Bulens et al (2014)

Reducing social stress









Good quality water essential

Troughs preferred/recommended

Dams rapidly become contaminated and may become boggy

Creeks and waterways

Sheep may consume between 4-6 litres/day Cattle 60-100 litres daily

Intakes increase if:

- hot weather
- 'hot' or salty rations
- high roughage rations

Trough Access:

Sheep30cm plus 1cm per sheepCattleSpace for 10% at once300mm/10 headFlow rate 10 litres/head/hour

- Supply is critical
- System must be capable of supplying maximum quantity on demand
- Cooler water = greater heat loss
- Shaded troughs:
 - can be >6°C cooler and have
 - 36% lower evaporation rates

- Raise troughs ~30cm
- Position as far away from feed as practical
- Correct if quality a problem (pH, salt)
- Clean regularly

Salinity pH

- < 7000 ppm - 6.5 to 8.5 best - too acidic or alkaline may lead to digestive upsets, reduced intakes and production loss Pollutants - dust, feed, manure, algae etc

- consider shade

Temperature

Minimise erosion around troughs













Urea

- NPN converted to ammonia and used to produce microbial protein (significant protein source for lamb)
- need adequate energy in ration, may need to supplement with K and S dangerous

<u>Bentonite</u>

- a clay, swells to 6-7 times size in rumen slowing gut flow
 - binds acid ions, reduces protozoa (consume gut microbes)

Bicarb of Soda

- naturally produced by lamb when chewing
- buffers against acid production

<u>Salt</u>

a sodium supplement, increases water/ration intakes



Molasses/Vegetable Oils

- energy source, improves palatability and reduces dust.
- Sugars yield less microbial protein but can increase the extent of ruminal fermentation

Limestone/Dolomite

• Ca supplement, some buffering action in SI, Mg (dolomite)

Acid Buf

- Seaweed extract with 4 times buffering ability of bicarb and buffers for longer period within the rumen
- Releases Ca and Mg, can replace CaCO₃, bicarb and causmag

Electrolytes

Usually glucose, Na, K, bicarb, sometimes Mg



Acid Salts (NH₄Cl, CaCl², (NH₄)² SO₄ etc)

· Mobilises Ca from small intestine, acidifies urine, may help with prevention of bladder stones but bitter

lonophores (eg: Bovatec)

- A coccidiostat that depresses or inhibits the growth of high acid producing microbes and protozoa
- May improve feed conversion efficiency <u>but may reduce intake</u>
 25-70g per tonne of feed so usually as a pre-mix

Virginiamycin (Eskalin)

- An antibiotic, need veterinary approval (S4)
- Prevents multiplication of lactic acid producing bugs

Health Issues

Acidosis/Laminitis

- Known also as grain poisoning, grain overload, engorgement
- Caused by rapid starch fermentation
 - lactic acid is produced
 - rumen fluid pH drops
 - microbes die
 - dehydration etc

Acidosis/Laminitis

Signs may include dehydration, scouring, abdominal pain, lameness, recumbency and death

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
- antibiotics may reduce liver damage
- drench with a 1:8 dishwashing liquid/water solution (10 ml/kg)

Coccidiosis

- Caused by protozoan parasite present in all sheep
- Causes scouring (sometimes blood)
- Isolate and drench
- Avoid feeding lambs on the ground where there is heavy faecal contamination

- Nitrate is normally broken down to nitrite and then to ammonia.
- Nitrites are much more toxic, they are absorbed into the bloodstream changing haemoglobin to methaemoglobin (which cannot carry oxygen).

- Ruminants can tolerate fairly high levels of nitrate in their diet if
 - intake is spread over the whole of the feeding day and
 - if their diet is high in available carbohydrate (helps convert nitrite to ammonia)

- Signs and Symptoms:
 - Marked anaemia
 - Rapid/difficult breathing and high pulse rate
 - Bright-red (changing to brown) blood
 - Diarrhoea, abdominal pain
 - Salivation, purging, muscular spasms or paralysis

 Factors which cause nitrate to accumulate in the plant include:

drought;

- cloudy or cold weather;
- herbicide application (especially 2,4-D)
- wilting.

- The amount of nitrate in plant tissues also depends on:
 - plant species (oats and canola highest risk)
 - stage of maturity (higher in young plants)
 - part of the plant (most nitrate in bottom 3rd of stalk)
 - processing (silage can lose 40-50% of nitrates during fermentation)

1,000 ppm or less —	Nitrate level safe under all conditions
1,000-1,500 ppm —	Nitrate level safe for nonpregnant animals. For pregnant animals limit to 50% of total ration.
1,500-2,000 ppm —	Feed is safe if limited to 50% of total dry-matter intake
2,000-3,500 ppm —	Feed should be limited to 35%-40% total dry-matter intake
3,500-4,000 ppm —	Limit to 25% of dry-matter intake. Do not feed to pregnant animals.
Above 4,000 ppm —	Do not feed!

Pulpy Kidney

- Clostridial disease
- Can occur with sudden change in diet including change to grain
- Signs are generally
 - sudden death,
 - tremors/convulsions,
 - frothing at mouth and teeth grinding



Bladder stones

'Water' belly (bladder ruptured, urine filled stomach)

Ulcerated pizzle

Bladder Stones

- Known also as water belly or urinary calculi
- More common in wethers and rams
- Stones form in urinary tract leading to blockage, rupture and release of urine
- Symptoms include:
 - depression,
 - drop in feed intake,
 - a 'hunched' appearance,
 - swollen belly or penis

Bladder Stones

Prevent through

– calcium supplement/acid salts/fibre
– provision of quality water and
– addition up to 4% salt to diet

Pink Eye

- Caused by Mycoplasma and Chlamydia
- Exacerbated by crowded, dusty conditions and flies
- Avoid dusty feeds, poor quality hay and/or grain or pelleted rations with high 'fines'
- Remove affected lambs from feedlot
- Treatment cost/benefit is high

Pneumonia

- Commonly due to Pasteurella
- May be seen within 10-14 days of entering a feedlot (stress = reduced disease resistance)
- Humid and/or dry, dusty conditions and feeds increase risk
- Signs include
 - coughing,
 - nasal discharge,
 - ill-thrift and death

Prolapse

High risk if

- Ewe lambs
- Short docked tails
- Dusty conditions
- Over fat
- Inadequate fibre (constipation)

Resources

- Drought Feeding and Management of Sheep (AWI) https://www.wool.com/globalassets/start/on-farm-research-and-development/sheep-health-welfare-and-productivity/sheep-nutrition/awi-drought-resources/drought-feeding-and-management.pdf
- Feeding and Managing Sheep in Dry Times Bulletin 4697 (DAFWA) http://www.ruralrdc.com.au/WMS/Upload/Resources/FeedManSheep06.pdf
- Feedlotting Lambs Primefact 523 (NSW DPI) <u>http://www.dpi.nsw.gov.au/ data/assets/pdf_file/0020/193313/Feedlotting-lambs.pdf</u>
- Feed Cost Calculator (NSW DPI) http://www.dpi.nsw.gov.au/animals-and-livestock/nutrition/costs-and-nutritive-value/feed-cost-calculator
- Full Hand Feeding of Sheep Quantities (NSW DPI) http://www.dpi.nsw.gov.au/data/assets/pdf file/0016/104641/fullhand-feeding-of-sheep-quantities.pdf
- Lifetime Ewe Program and Phone App http://www.sheepcrc.org.au/education/producer-training/lifetime-ewe-management.php
- Managing Drought (NSW DPI) <u>http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/90329/Managing-drought-2014.pdf</u>
- Managing sheep in drought-lots A best practice guide (AWI) <u>https://www.wool.com/globalassets/start/on-farm-research-and-development/sheep-health-welfare-and-productivity/sheep-nutrition/awi-drought-resources/gd0458</u> managing-sheep-in-droughtlots.pdf
- National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems <u>http://www.mla.com.au/CustomControls/PaymentGateway/ViewFile.aspx?ftuTEsgMoCWQrzoAknrYopGVI33rCLqbJlux5iB</u> <u>n74DYardBJ7uTc+G/oo+xyaXV3EYMKKAfsht7d1Tnt3BqiA==</u>
- Opportunity and Drought Feedlots Making It Work (Littler, B) <u>https://cdn.csu.edu.au/____data/assets/pdf_file/0005/1371884/2014-GC-feedlotting-B-Littler.pdf</u>
- Stock Water A Limited Resource (AWI) https://www.wool.com/globalassets/start/on-farm-research-and-development/sheep-health-welfare-and-productivity/sheep-nutrition/awi-drought-resources/gd0387 stock water_rnd_final_low-res.pdf
- Supplementary feeding and feed budgeting of sheep <u>https://www.agric.wa.gov.au/feeding-nutrition/supplementary-feeding-and-feed-budgeting-sheep?page=0%2C0#smartpaging_toc_p0_s4_h3</u>



• Sheep CRC Feedlot Calculator <u>http://www.sheepcrc.org.au/resources/psm-software-feedlot-calculator.php</u>

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