Feeding for reproduction in drought conditions

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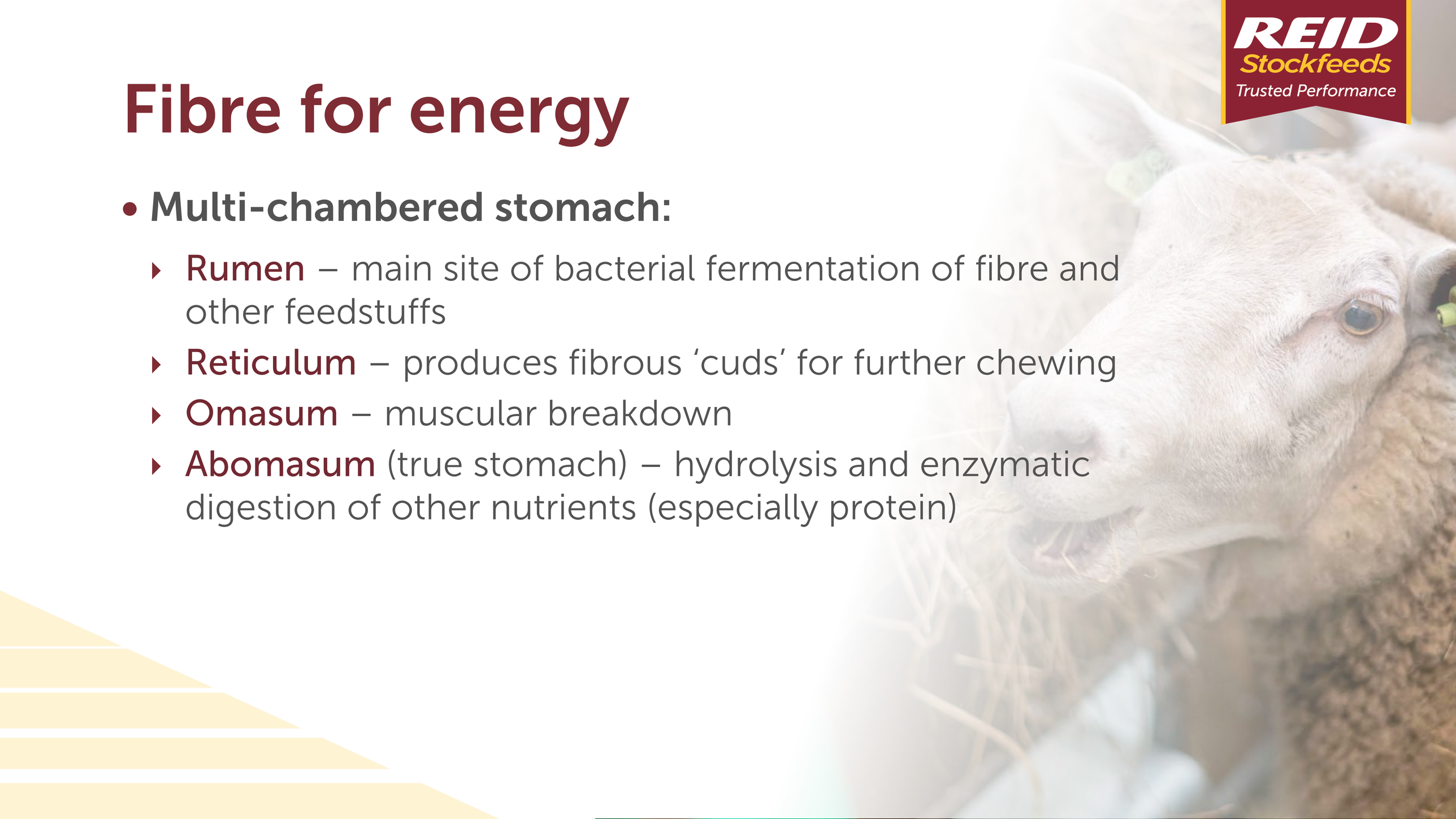
The drought……issues for ruminants

Fibre for energy

- Ruminants need fibre and a balanced diet
- Adapted to use micro-organisms stored in rumen to break down fibre into energy (VFA) as ‘symbiosis’
- Adapted to need fibre as main energy generator

Fibre for energy

- **Multi-chambered stomach:**
  - Rumen – main site of bacterial fermentation of fibre and other feedstuffs
  - Reticulum – produces fibrous ‘cuds’ for further chewing
  - Omasum – muscular breakdown
  - Abomasum (true stomach) – hydrolysis and enzymatic digestion of other nutrients (especially protein)



Energy importance

- The No. 1 consideration when formulating diets
- From sources that are high in digestible energy
- Fermented fibre produces volatile fatty acids used as absorbable energy
- BUT must be in balance with other nutrients

Energy

The first priority from feed

Maintenance: for sustaining adult life needs

- Body condition/reserves
- Metabolism
- Respiration
- Locomotion/essential behaviour (e.g. feeding)
- Immunity
- Repair/replacement (hooves, hair/wool)

Energy

The first priority from feed

Production energy

- Growth - youngstock
- Reproduction - production of viable eggs and sperm; sustaining pregnancy, growing foetus to term, lactation
- For sheep: wool growth

Energy for pregnancy

Cows

- **Dairy cows**
  - first 5 months need 1 MJ/day extra for each month
- **Last period of gestation**
  - calf foetus maximum growth extra 20 MJ/d needed

Energy for pregnancy
Cows

- **If insufficient energy?**
  - Loss of body condition score as cow tries to support foetus growth
  - Increased abortion rates – as cow's body prioritises survival over reproduction
  - Insufficient/poor quality colostrum
  - Poor volume/quality milk as insufficient body reserves
  - Weak calf, poor development, low immune status
  - Longer empty period
  - Poor conception
  - Poor immunity (higher SCC, mastitis etc)
  - Poor hoof/coat quality – increased lameness

Energy for pregnancy

Sheep

- **Carrying a single lamb**
  - needs 50% more energy
- **For twins**
  - needs 75% more energy

Energy for pregnancy
Sheep

- **If insufficient energy?**
  - Loss of body condition score as sheep tries to support foetus growth
  - Increased abortion rates
  - Poor lactation as insufficient body reserves – more lamb mortality, poor growth, more milk feeding needed
  - Weak lambs, poor development, low immune status
  - Longer empty period
  - Poor conception
  - Poor immunity
  - Decreased wool quantity/quality

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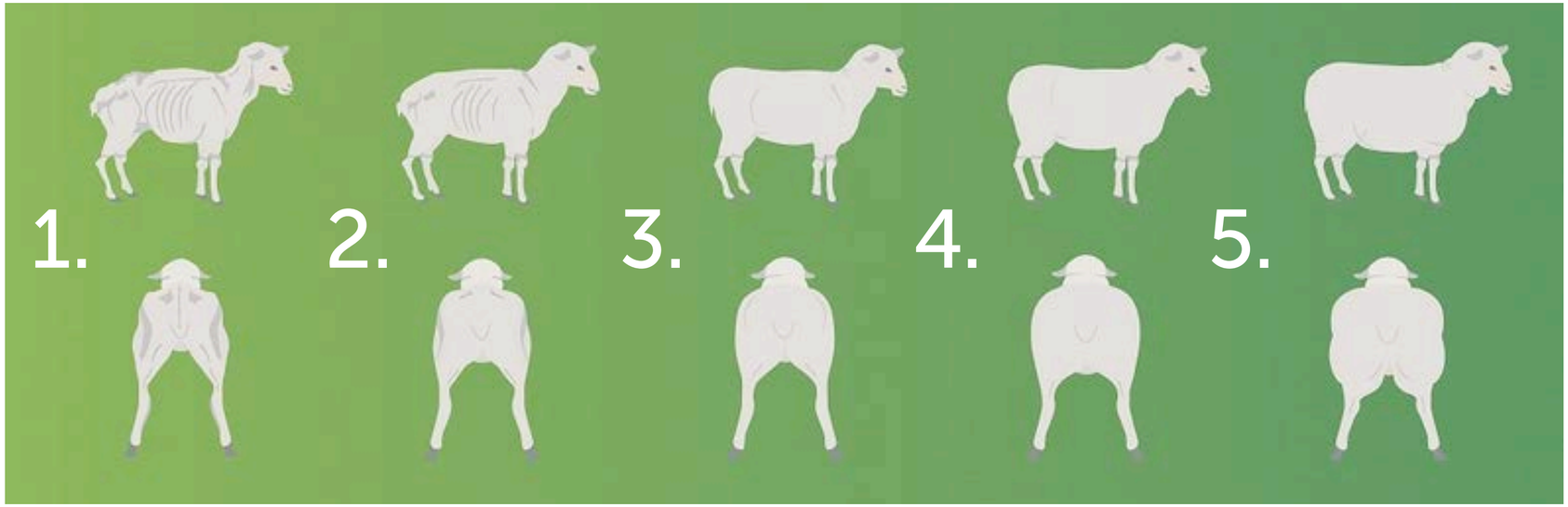
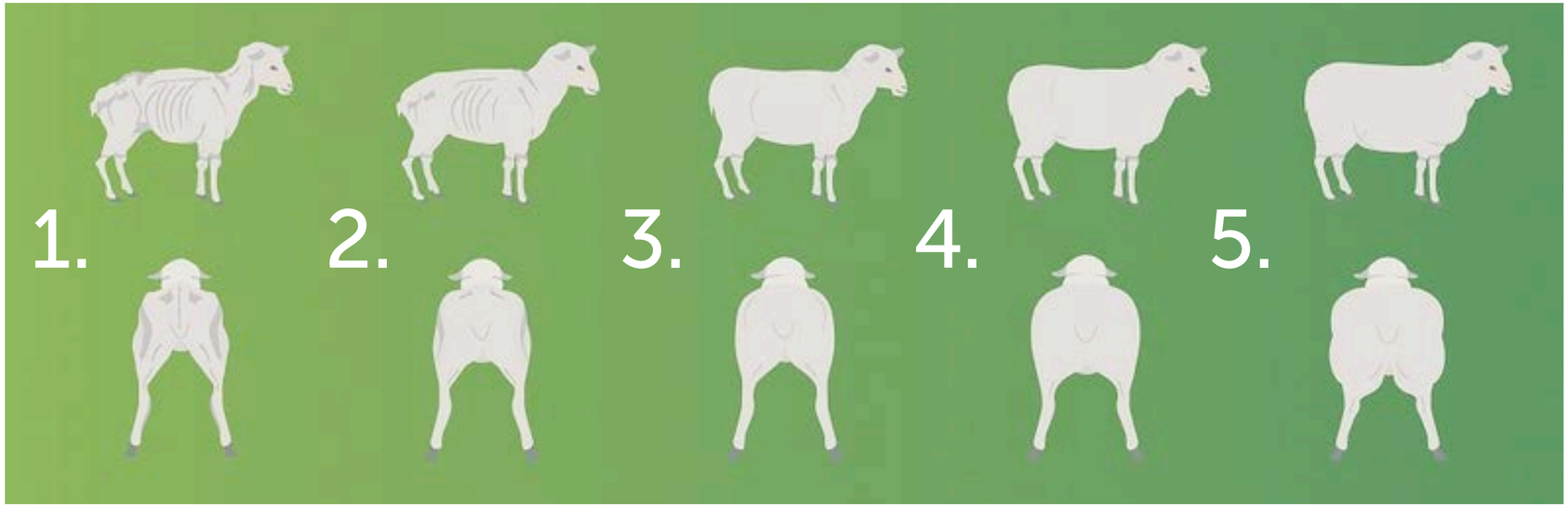
Grams (as Fed) of Ewe & Lamb to Feed/ Head/ Day Based on 50kg Liveweight				
Pasture/ Fodder Digestibility	Dry Feed		Green Feed	
	<65%		<65%	
	Singles	Twins	Singles	Twins
Dry Sheep	250	250		
Mid Pregnancy	375	500		
Late Pregnancy	1000	1250	375	625
Early Lactation	1000	1250	375	625

The cost of Body Condition Score (BCS) losses



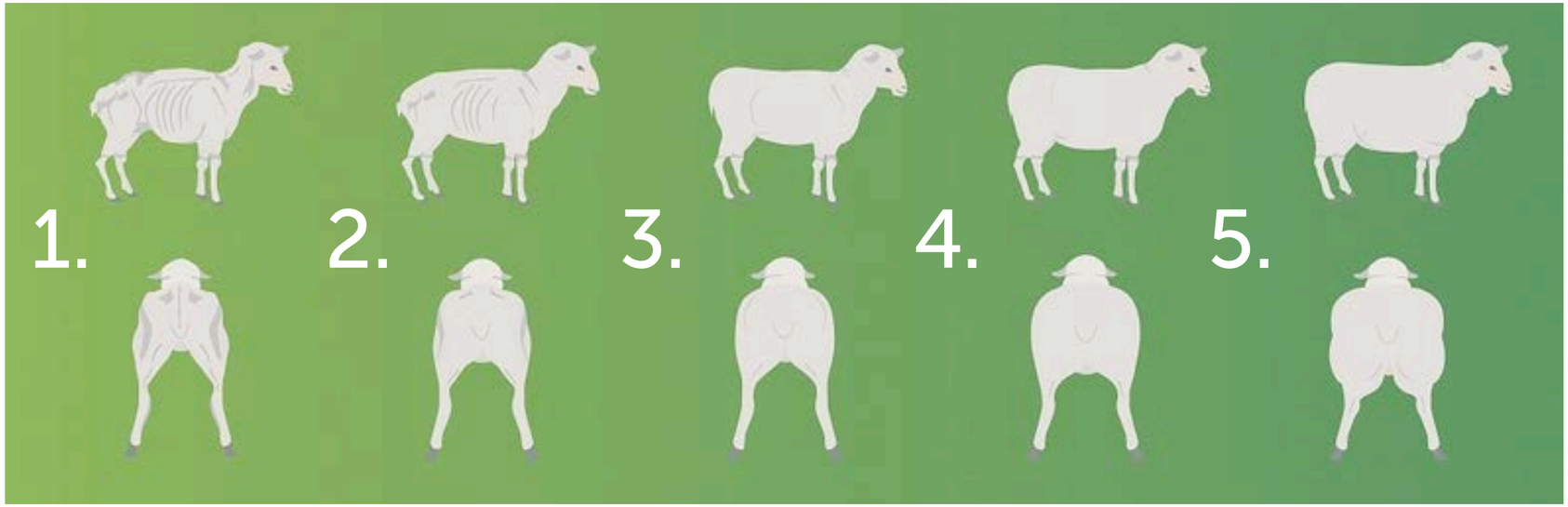
- It is ALWAYS more difficult and costly to regain BCS once lost

The cost of Body Condition Score (BCS) losses



- Maintaining BCS and supporting reproduction/lactation is key for future income from farm

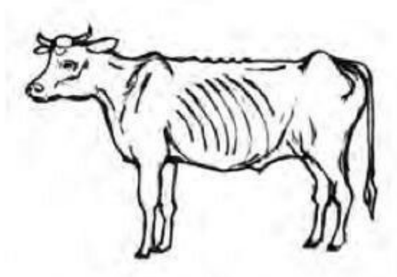
The cost of Body Condition Score (BCS) losses



- Loss of foetus/new borns
- Loss in milk production/quality
- Extra cost of rearing young stock (milk powder, housing)
- More labour (time and cost) for rearing young stock
- Higher vet bills

Body Condition Score (BCS)

Cattle



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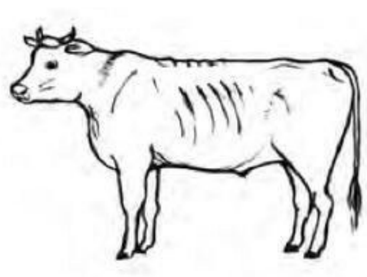

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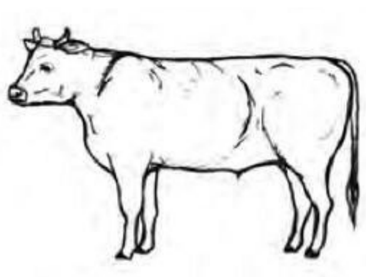

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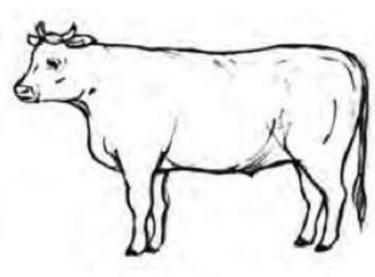

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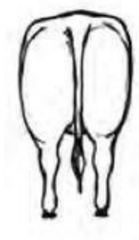

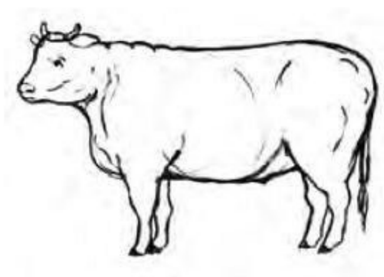

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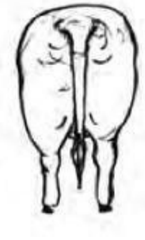
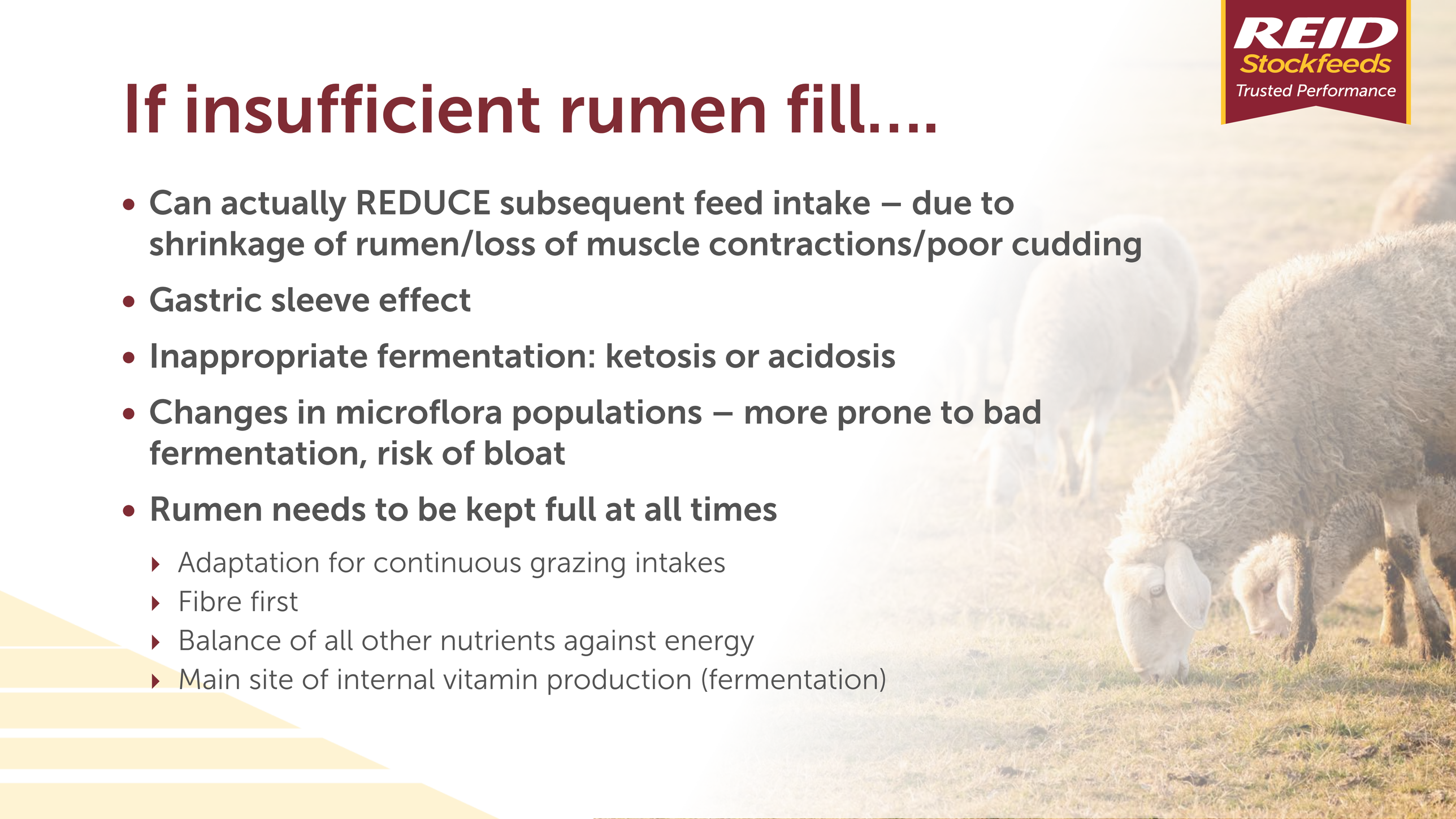


Prioritising energy

- **Sheep and cows need to keep rumen full of fibre to:**
  - Maintain rumen function
  - Keep energy production levels up
- **Sources of fibre**
  - Normally from pasture
  - Silage/baleage/haylege/hay/ straw
  - Fibrous feed materials
    - PKE
    - Byproducts - cereal and legume hulls

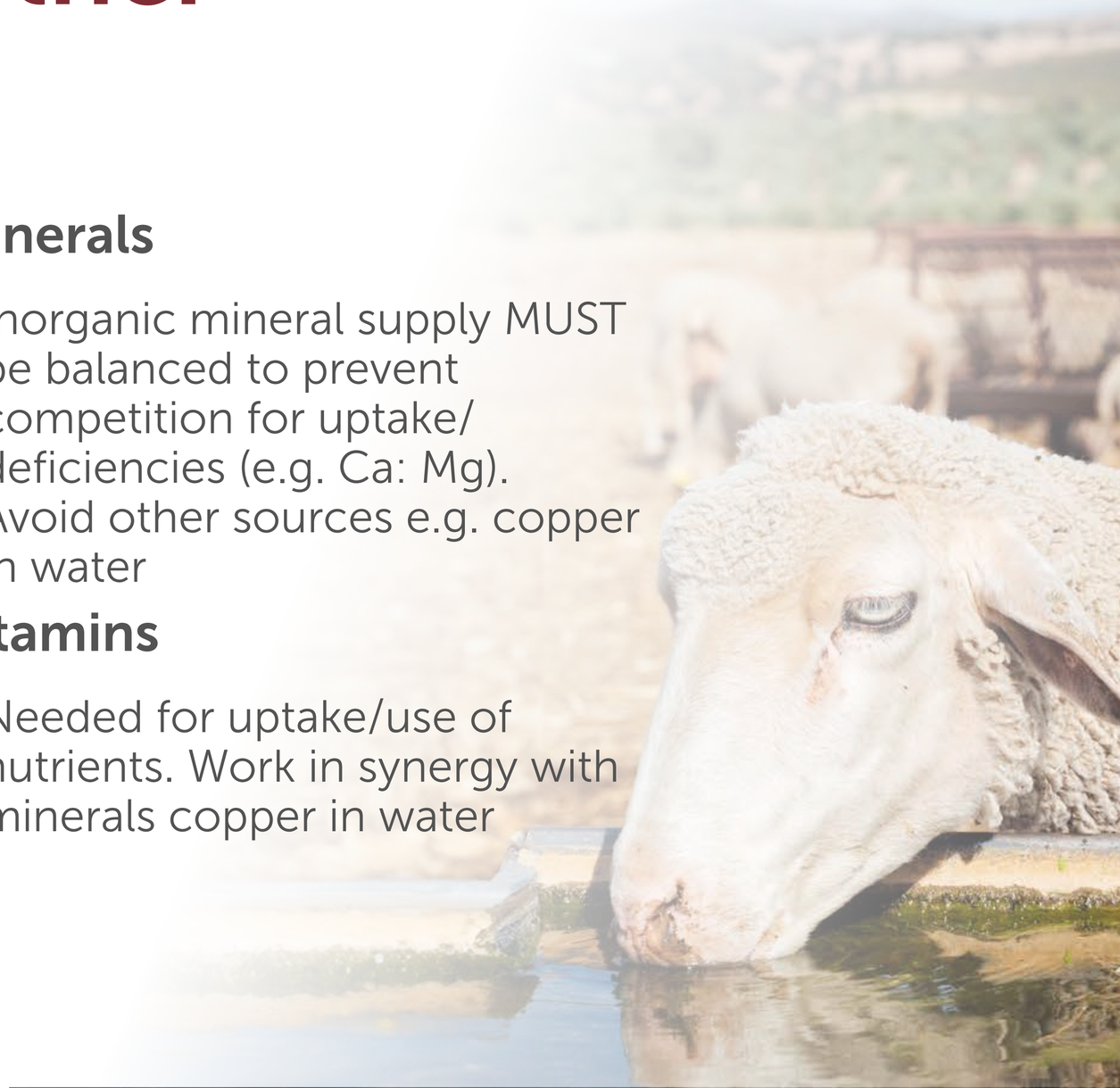
If insufficient rumen fill....

- **Can actually REDUCE subsequent feed intake – due to shrinkage of rumen/loss of muscle contractions/poor cudding**
- **Gastric sleeve effect**
- **Inappropriate fermentation: ketosis or acidosis**
- **Changes in microflora populations – more prone to bad fermentation, risk of bloat**
- **Rumen needs to be kept full at all times**
  - Adaptation for continuous grazing intakes
  - Fibre first
  - Balance of all other nutrients against energy
  - Main site of internal vitamin production (fermentation)



OK so what about other nutrients?

- **Energy: protein balance**
  - Too much protein = 'Atkins' diet = loss BCS, higher energy to process XS = high urine excretion
- **Fibre: carbohydrate balance (e.g. starch)**
  - Too much carb = acidosis
  - The 'beet' effect
- **Minerals**
  - Inorganic mineral supply MUST be balanced to prevent competition for uptake/ deficiencies (e.g. Ca: Mg). Avoid other sources e.g. copper in water
- **Vitamins**
  - Needed for uptake/use of nutrients. Work in synergy with minerals copper in water



The balanced feeding approach

- A balanced diet provides all feedstuffs and nutrients to meet requirements and sustain rumen function
- Essential to provide all nutrition in balance
- Fibre – main driver for energy production
- Preventing rumen imbalances
- Limiting metabolic costs and problems
- Long term gains and maintaining income on farm

Immediate issues to address in a drought

- Maintain or re-establish BCS
- ‘Recharge’ the nutrient reserves (liver, bone, tissue)
- Ensure enough energy and nutrients to feed both dam and foetus
- ‘Forward feeding’ for sufficient intake/reserves when transitioning (parturition/lactation)
- Enough milk production of good quality
- Prevent future financial losses and ensure farm viability
- Take time to consider ‘future proofing’ pasture/preserved forage

Thank you

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