



What are the signs of ketosis in Cattle?



Fever

Weight loss

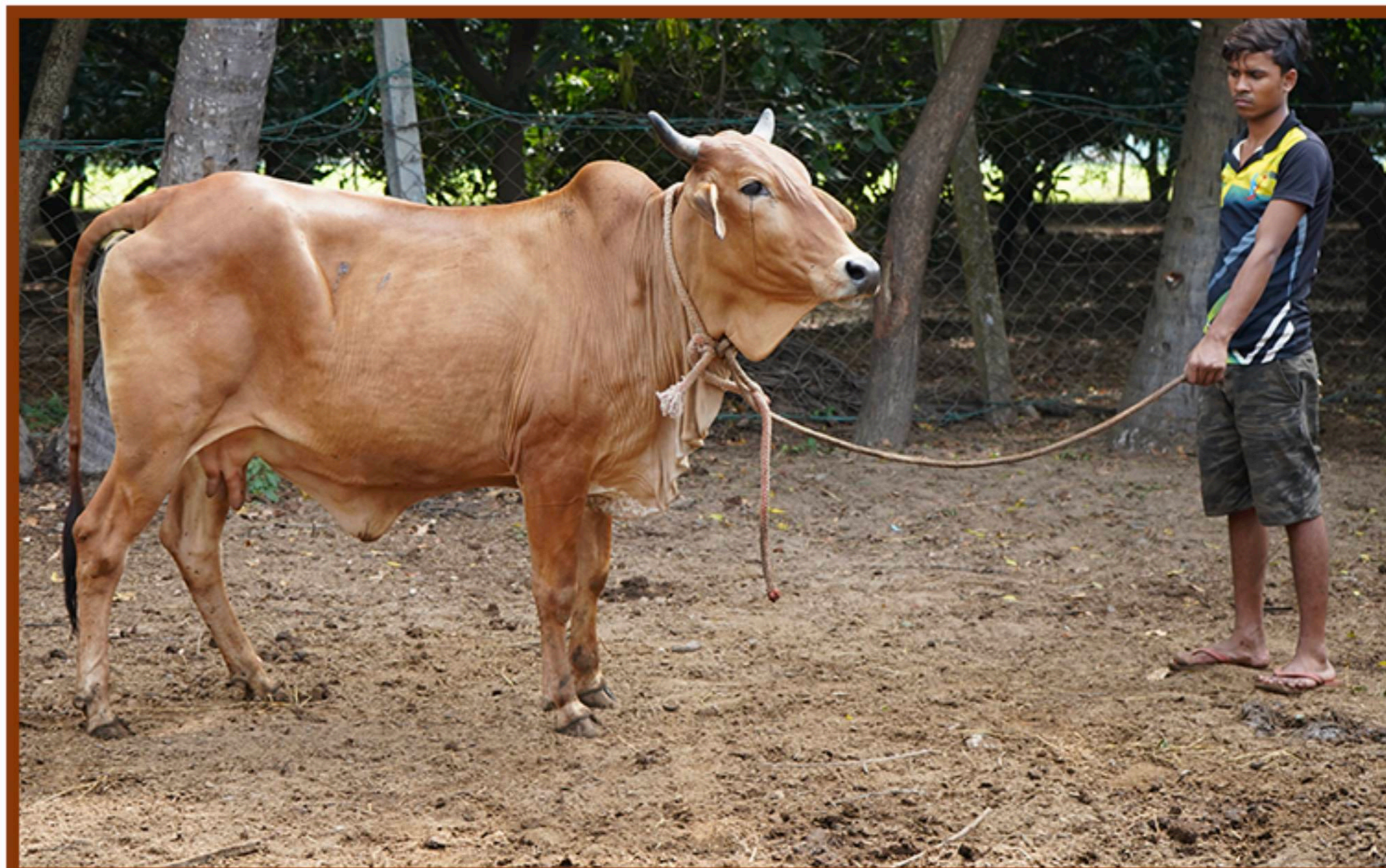
Nervous signs, circling, staggering and falling

Abnormal gait, humped back posture, head/muzzle pressing

Reduced milk yield

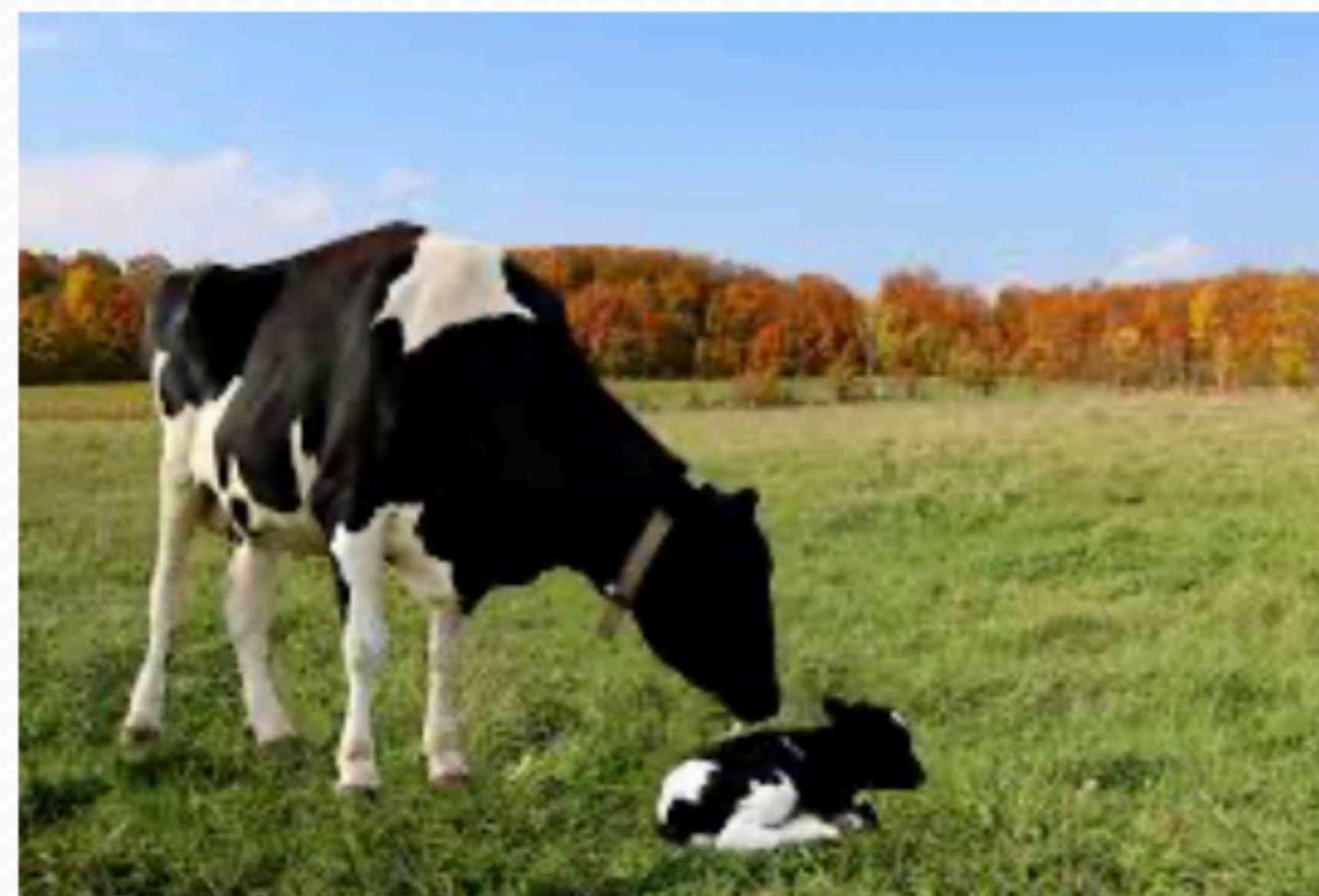
Treatment

- ▶ 25% IV injection of Glucose along with corticosteroids for gluco-neogenesis
- ▶ In severe cases intra peritoneal IV injection of glucose
 - ▶ Causes reduction in availability of free fatty acid for hepatic oxidation and increases the hepatic concentration of Citrate and alpha ketoglutarate
- ▶ Sodium propionate/ propylene glycol, Niacin and methionine analogue
- ▶ 0.5 – 1 lb propylene glycol or sodium propionate daily for 5-10days
- ▶ Niacin – anti lipolytic (12g Niacin/day)
- ▶ Methionine analogue



3. Grass Tetany

- ▶ **Deficiency of Magnesium (Mg)**
- ▶ **Occurs in cattle grazing on lush pastures**
- ▶ **Sometimes accompanied by hypocalcemia**
- ▶ **High levels of N and K combine to inhibit Mg absorption from field**
 - Common in pastures early in the spring (within first 2-3 weeks of grazing)**
 - Also happens when cows overgraze one field, then move to a new lush field**
 - Small grain pastures increase the incidence**
 - Many stressors can trigger grass tetany**



Clinical Signs

▶ Acute cases

- Caused by rapid drop in blood Mg levels
- Sudden deaths
- Drastic behavioral changes
- Run blindly, staggering, convulsions



▶ Less acute cases

- Incoordination
- Loss of appetite
- Muscle spasms
- Extreme salivation

▶ 6-10 hrs from first symptoms to death, if left untreated

▶ Little chance of recovery if not treated before the comatose state



Treatment

- ▶ **Treat immediately (Success is limited after 8-12 hrs)**
- ▶ **200 cc of Epsom Salts (Mg Sulfate) S/C injection**
 - 50 cc/site
 - Increases blood Mg levels with in 15 minutes
- ▶ **IV Mg/Ca solution must be administered slowly to prevent heart failure**
- ▶ **Oral administration to sick animals not effective because of increased time of absorption into the blood**
- ▶ **Remove from problem causing pasture**
 - Supplement 30g Mg for 7-14 days
- ▶ **Grass tetany cases will likely repeat**



Prevention and Control

- ▶ **Supplement Mg daily through high-risk period**
 - Feeding Mg after disease onset does not help
 - Start feeding 30 days prior to help build up blood Mg levels
 - Cows: 20 to 30g Mg/day
 - Calves: 4-8g Mg/day
- ▶ **High levels of K, P, Ca decrease Mg efficiency, so increase feeding rate to account for decreased absorption**



4. Sub Acute Ruminant Acidosis (SARA)

- ▶ SARA is characterized by periodic suboptimal rumen pH and it drastically drops by <4.8
- ▶ High concentrate / grain feeding causes rapid production of lactate with other organic acids which lowers the pH, increase the acidosis leads to microbial death and release of endotoxin, can develop into systemic metabolic acidosis
- ▶ Acidosis decrease the absorptive capacity of the ruminal epithelium due to damages in the rumen epithelium.
- ▶ Damages increases the potential for bacteria produce toxins, enter into the systemic circulation, causing liver abscesses, inflammatory response and laminitis, hypovolaemic shock and death
- ▶ Inability of cow to buffer the organic acid with salivary secretions

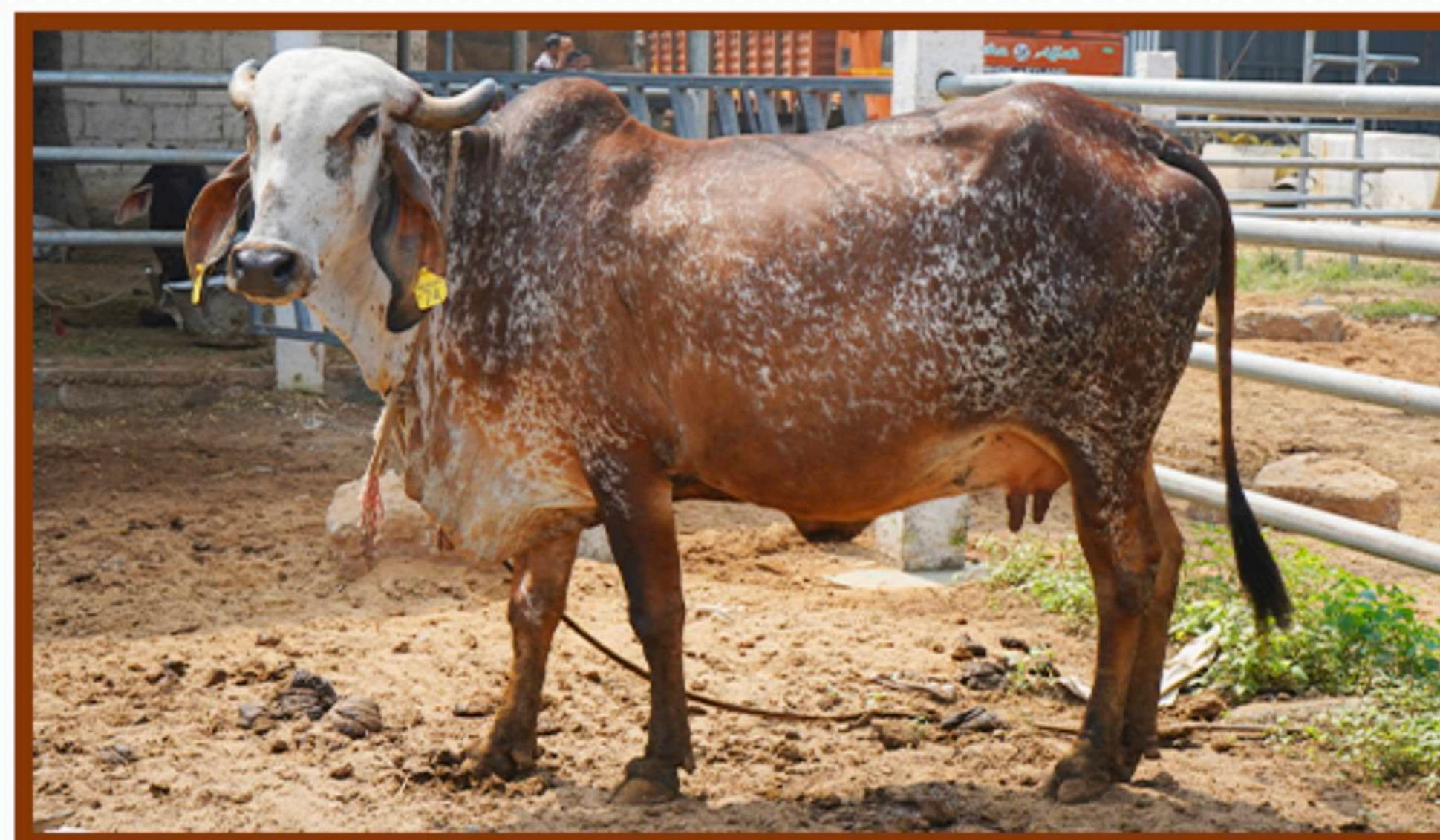
Laminitis

- ▶ **Acute acidosis/SARA. Death of rumen microbes and release of endotoxin**
- ▶ **Transfer of endotoxin from gastro intestinal tract to systemic circulation and damage to blood vessels.**
- ▶ **Lowering the availability of nutrients and O₂ to the foot tissue**
- ▶ **Breakdown and degeneration of foot tissue**
- ▶ **Separation of bone and soft tissues with bleeding, bruises signs and development of laminitis**



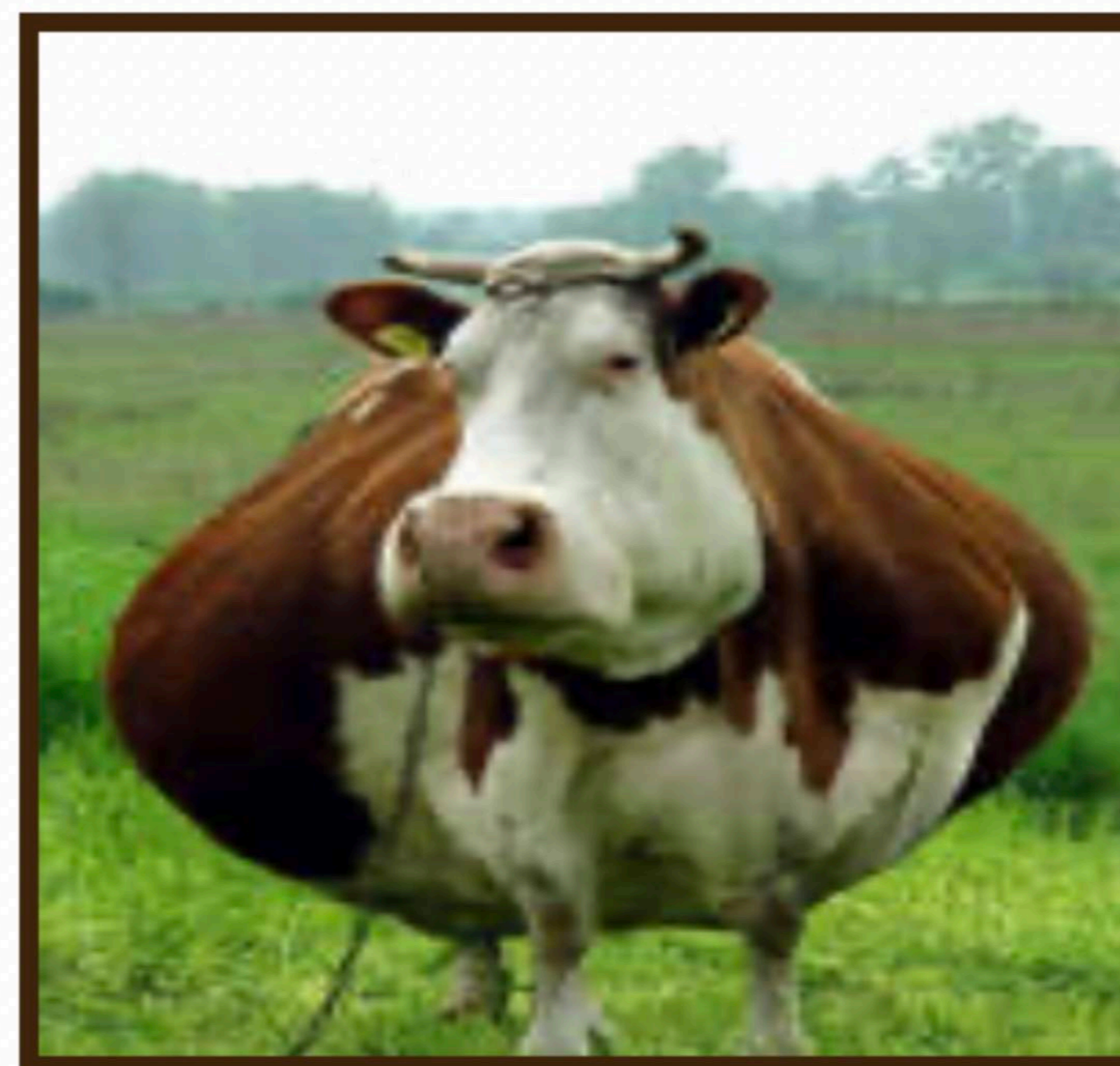
Prevention and Control

- ▶ Provide buffering agent: NaHCO_3 (80-120 g/day)
- ▶ Increase dietary fibre
- ▶ Chewing increases salivary production
- ▶ Alteration of particle size feed
- ▶ Enhancing retention time
- ▶ Electrolyte therapy
- ▶ Feeding Brewery yeast and starch extracted byproducts
- ▶ Feeding directly fed microbes (DFM) and probiotics



5. Fat Cow Syndrome

- ▶ Over fattening
- ▶ Excessive intake of unbalanced diet
- ▶ Feeding high concentrate diet and corn silage feeding
- ▶ Low milk production and prolonged calving interval
- ▶ Depression, anorexia, ketonuria, debilitation, weakness, nervous signs and decrease in production
- ▶ Pathological changes
- ▶ Leucopenia and decreased hepatic function
- ▶ **Prevention and Control:**
 - ▶ Avoid over feeding
 - ▶ Balanced feeding



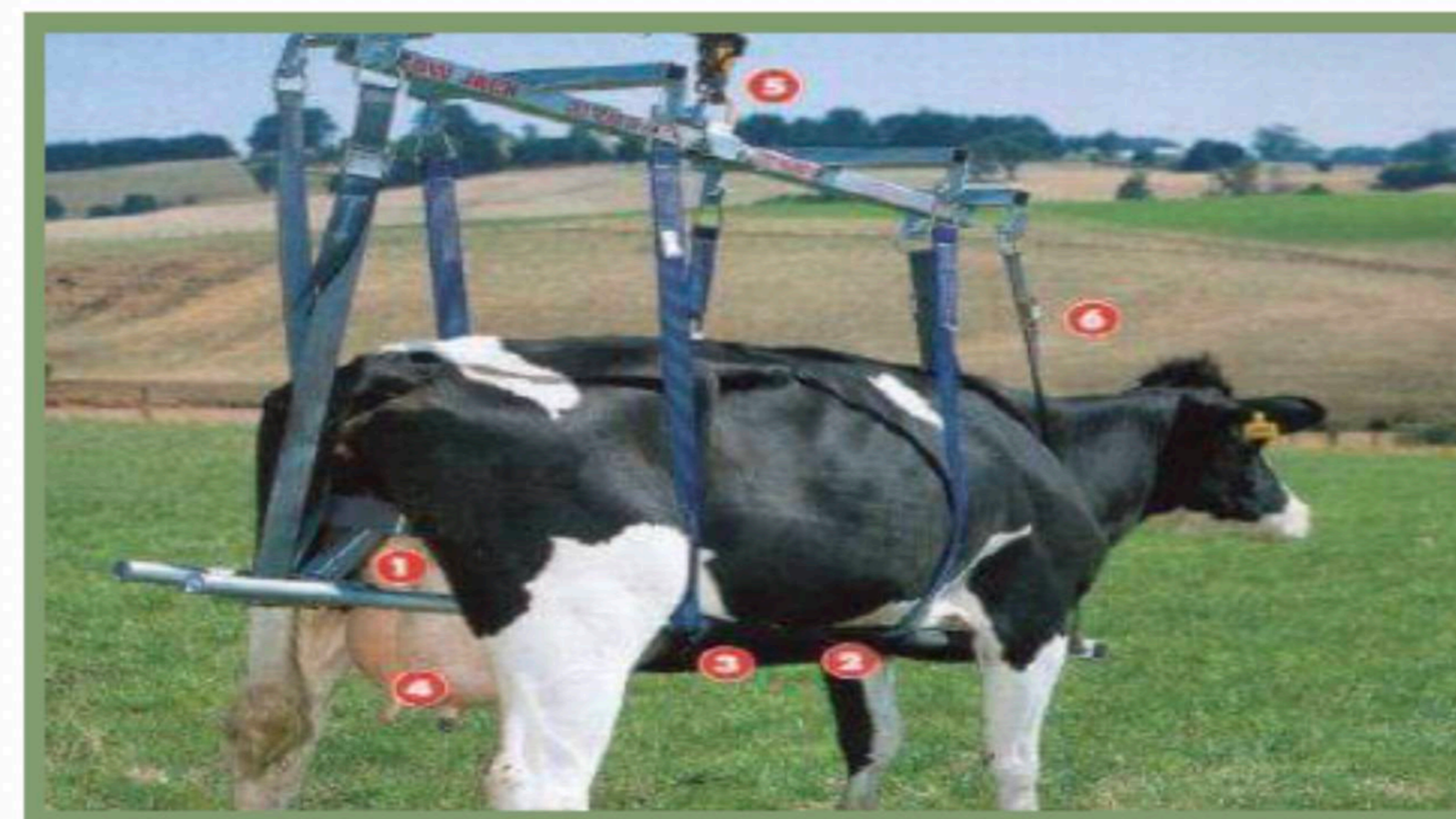
6. Downer Cow Syndrome

▶ Causes

- ▶ Sequelae to milk fever, ketosis and grass tetany etc.,
- ▶ 15-25 % of milk fever treated cows
- ▶ Morbidity 50-90 % and mortality 60 %

▶ Prevention and control

- ▶ Animals should be treated as soon as possible and not delayed for more than 1 hour.
- ▶ Provision of comfortable bedding materials
- ▶ Attempt should be made to roll the cow from side to side to minimize the extent of ischemic necrosis.
- ▶ Lift the cow by using body slings and frequent turning should be made at least once in 3 hours interval.
- ▶ Animals should be allowed to stand for 20-30 minutes with body slings, then lowered down. This should be repeated several times a day.
- ▶ Animals should be milked normally and the udder kept clean by washing with germicide soap before milking and post milking teat dips should be applied.
- ▶ Re-placement therapy with Calcium, Phosphorus, magnesium, Glucose containing preparations can be used parenterally with antibiotic coverage
- ▶ Physiotherapy by adopting muscle massage may be made to restore muscle activity of the limbs.



7. Post Parturient Haemoglobinurea

▶ Causes

- ▶ Hypophosphatemia, is characterized by intravascular haemolysis,
- ▶ haemoglobinuria and anemia during advanced pregnancy or within a month of parturition.

▶ Prevention and control

- ▶ Injection (I/V) of monobasic sodium phosphate or Sodium phosphate (60-80 g) in 300 ml of sterile distilled water
- ▶ Oral administration of the same dose with copper sulfate (3-5 g) and cobalt sulfate (100 mg) for a period of 7 days
- ▶ Antioxidants like vitamin A and E have also been helpful to reduce stress.
- ▶ Supportive therapy includes Liver tonics, Anti-inflammatory drug, Calcium borogluconate together with Magnesium and Phosphorous in organic combination and Dextrose
- ▶ Nicinamide, Folic acid, Vit. B₁₂ and B₆ Glycinated iron co vitamin E injection.



8. Left Displacement of Abomasum (LDA)

▶ Causes

- ▶ High concentrate feeding (Non fibrous carbohydrate 40 % Vs 20-24 %)
- ▶ High Concentrate to Forage ratio
- ▶ Low feed intake during peripartum
- ▶ Abomasal hypomotility associated with hypocalcemia and hypokalemia
- ▶ Inadequate particle size
- ▶ Increased NEFA concentration

▶ Prevention and control

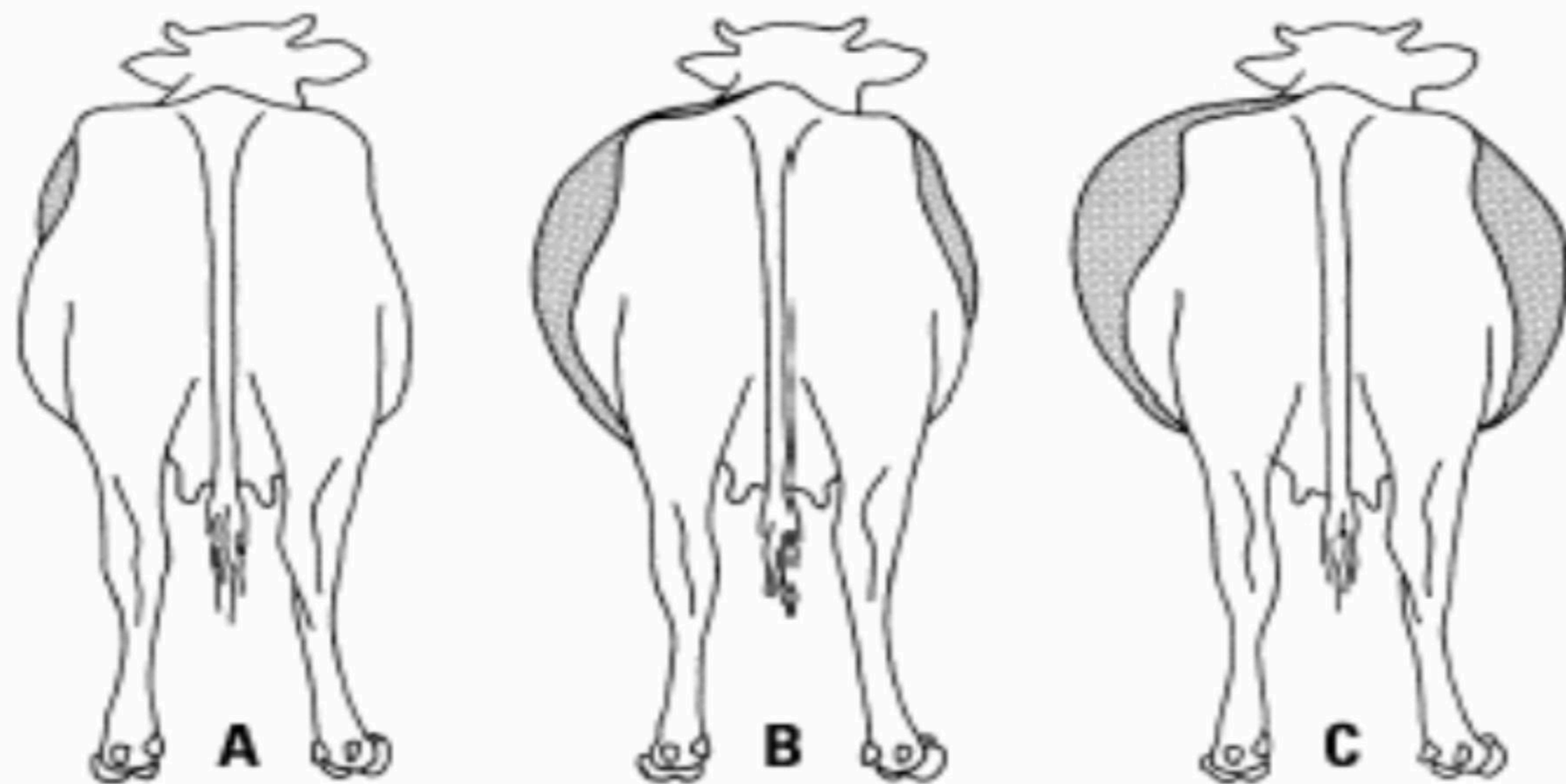
- ▶ Conservative and surgical treatment can be helpful
- ▶ Maintaining optimal dry cow and calving management,
- ▶ Avoiding rapid dietary changes, maintaining adequate roughage in the diet, avoiding post parturient hypocalcemia, avoiding endometritis/ metritis and minimizing and promptly treating concurrent disease and ketosis contribute to effective prophylaxis of LDA.
- ▶ LDA be decreased by ensuring a rapid increase in rumen volume after calving and by feeding a total mixed ration rather than feeding grain twice daily.



9. Bloat

▶ Causes

- ▶ Bloat is increased by filling up of gas in the rumen. Gas normally produced by fermentation and lost by eructation (belching). In bloat, belching will be stopped.
- ▶ Bloat occurs as gaseous bloat, which occurs when the gullet is obstructed often by foreign objects such as potatoes.
- ▶ The second type of bloat is frothy bloat, which happens as the result of a stable foam developing on top of the rumen liquid, which blocks the release of the gas. Legumes such as clover and alfalfa producing frothy bloat.
- ▶ Distended left abdomen is the most obvious sign, associated with pain, discomfort, and bellowing. Death can occur within 15 minutes after the development of bloat

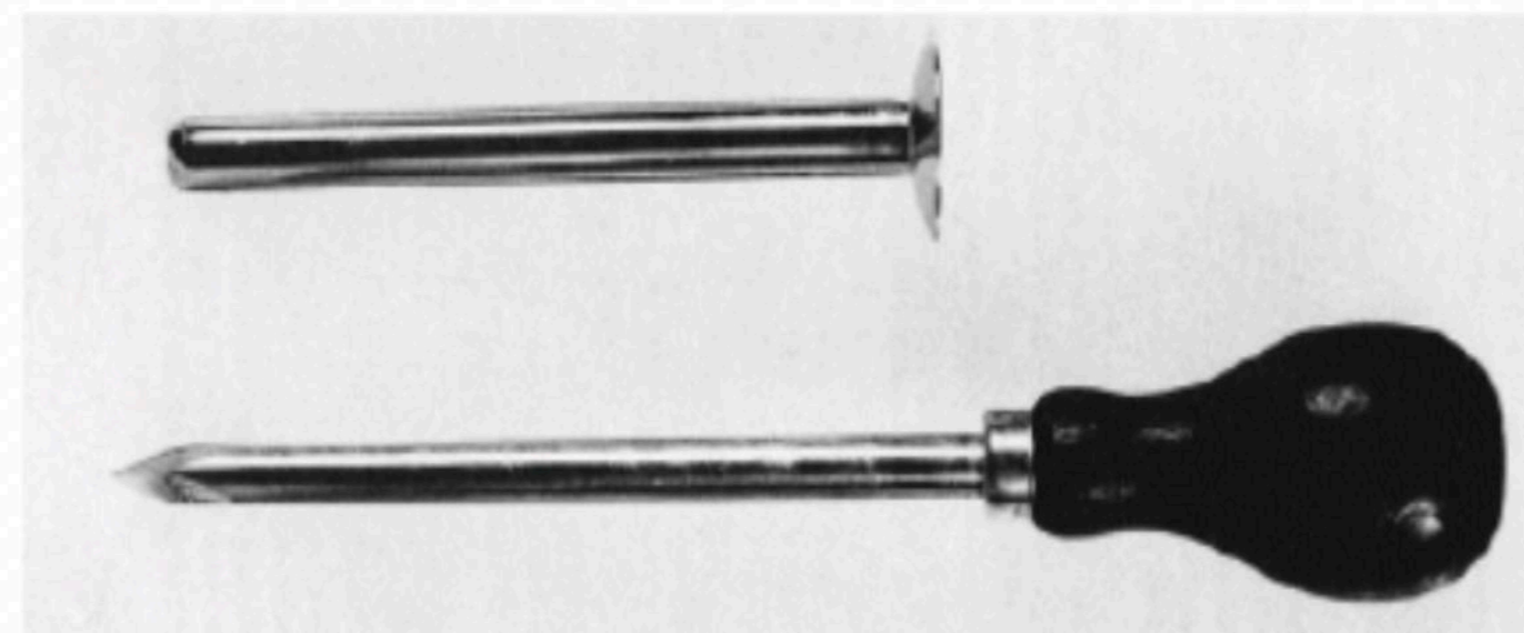
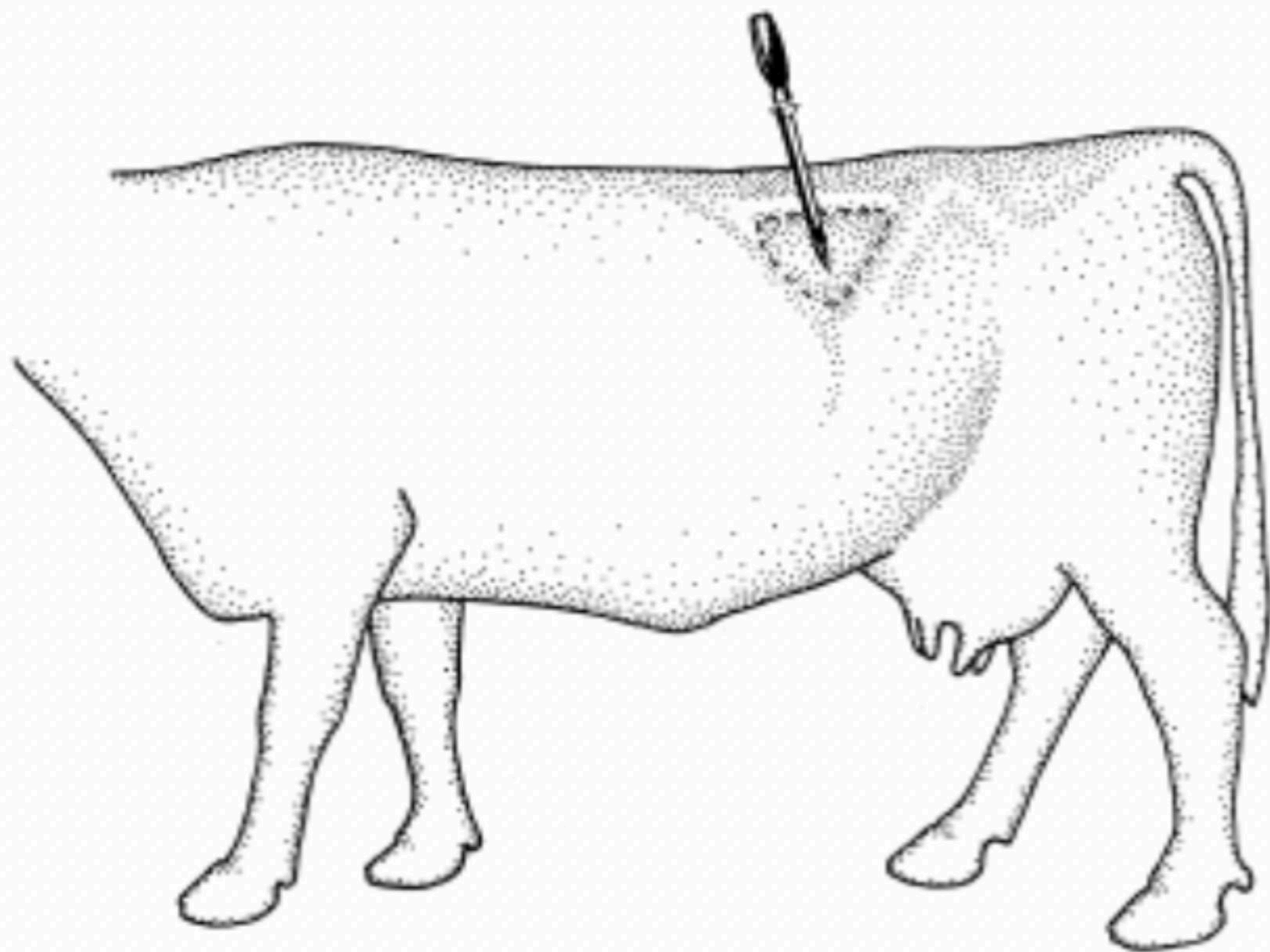


Three degrees of bloat: A - mild, B - moderate, C - severe

9.Bloat

▶ Prevention and control

- ▶ Passing a stomach tube is the best treatment for gassy bloat
- ▶ In a few cases a trocar and cannula punched through the side into the rumen
- ▶ For frothy bloat supplementation of antifoaming agents like dimethicone or polaxolene
- ▶ Possible legume forages should be removed

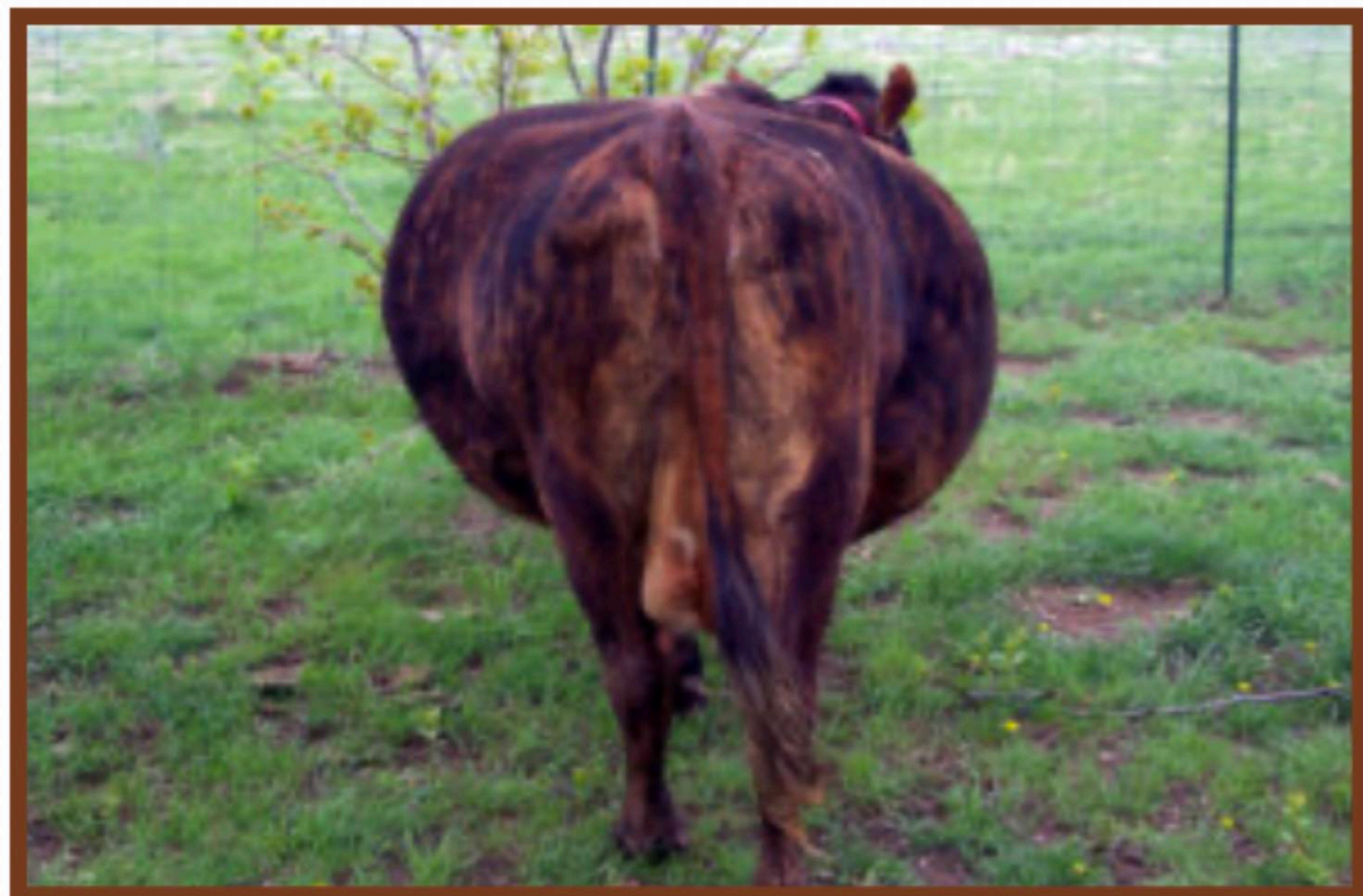


Insertion point for trocar and cannula - dotted triangle is the left paralumber fossa, where the hollow of the flank is found in a normal cow



Conclusion

- ▶ **Metabolic diseases will be prevented by adequate dietary supplementation of nutrients before and after parturition in dairy cattle**
- ▶ **Milk fever is reduced by limited supplementation of Ca during last month of pregnancy**
- ▶ **Scientific Balanced Feeding Technology decrease the incidence of ketosis, Grass tetany, SARA, Fatty liver, Downer cow syndrome, Post parturient Haemoglobinurea, LDA, bloat and RFM etc.,**





Thank you

