METABOLIC DISORDERS

Poor nutrition and feeding management can cause health problems referred to as —metabolic disorders. Although these are not diseases, they still can cause severe health problems. Proper feeding management can prevent these and ensure your cattle are growing to their best potential.

Acidosis

Acidosis is when the rumen microbes shift and produce lactic acid. There 2 types of acidosis – **acute** (severe) and **subacut**e. Acidosis causes loss of appetite, decreased rumen activity, rumen ulceration, liver abscess, founder and even sudden death. Acidosis is usually caused by a sudden change

Acute acidosis (also knon to as 'grain overload') usually occurs when cattle eat too much highly digestible starch or sugar, usually through grains. Acute acidosis can more commonly occur in the feedlot sector but there have been cases in cow-calf herds associated with infrequent supplementation programs and extensive grazing systems using cereal crops. Show cattle are at risk for acidosis with excess grain supplementation and possible disruptions in feeding times or consistency. When acute acidosis occurs, rapid starch fermentation causes rumen pH to drop severely and remains low for an extended period of time. Many rumen microbes die off when rumen pH gets too low. However, some lactic acid-producing microbes can thrive in an acidic environment. This can cause pH to spiral downward, resulting in acute acidosis. Animals with acute acidosis are often noticeably sick, and an intervention is required to reduce symptoms and prevent further injury or death.

Symptoms of acute acidosis include:

- Off feed
- Little or no rumination
- Increased heart rate
- Increased breathing rate
- Diarrhoea
- Lethargy
- Staggers
- Death
- Survivors are likely to become "poor doers"

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Subacute acidosis is first observed as erratic intake of feed and possibly mild bloat, followed by scouring. Often, subacute acidosis is cyclical. Cattle will intake excess starch, go off feed, recover, and then overeat, starting the cycle all over again. Acidosis, sometimes referred to as —grain overload, usually results from introducing grain too rapidly or at too high off a rate into the diet of animals coming from forage diets. The types of microbes that ferment forages are different from those that ferment grains. It normally requires 2 to 3 weeks to allow for the shift in microbial populations of the rumen and a safe transition from forage to grain diets. Slowly introducing grains into rations and managing feed intake is key to avoiding acidosis. For feeding show cattle, starting low and slow is the best strategy. It is far easier to start early and build slower than having to feed harder in a short amount of time to get your project in show condition and risking their rumen and foot health.

Symptoms of **Subacute Acidosis** include:

- Reduced feed intake
- Lower feed efficiency
- Weight loss or reduced gain
- Low body condition score
- Laminitis
- Liver Abscesses
- Dehydration
- Increased temperature
- Grain in manure and diarrhea
- Reproductive and calving problems in the cow herd
- Sore feet, laminitis, and foot abscesses

To prevent acidosis, start grain feeding slowly. Be consistent in the amount of feed fed by weighing the feed. Make feeding changes gradually. Do not give extra feed to make up for the missed meal. Avoid dust and fines (very small particles) and limit feeds such as molasses that are rapidly fermented. Feeding grass hay will provide some measure of protection. Feed one of the more effective ionophore feed additives – like rumensin can help decrease the risk of acidosis and have the added benefit of increased feed efficiency. Because of the lost time and condition on cattle, it is important to prevent acidosis.

Treatment

Treatment involves an oral administration of antacid or buffering compounds such as sodium bicarbonate, together with intravenous administration of electrolyte solutions. This counters the acid effects and prevents further dehydration. Getting cattle back on feed following severe acidosis is just like starting on feed initially. Give lots of hay and little concentrate. For the management of acute acidosis, consult your veterinarian and ruminant nutritionist.

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Founder/ Laminitis

Eating too much grain, which would be expected to cause severe acidosis, frequently causes a condition known as founder or laminitis. Foundered animal will be slow, stagger and possibly bloat. These cattle can die. Laminitis is a symptom of subclinical acidosis. Laminitis will present as sore/lame cattle 2-3 months AFTER the subacute acidosis event. Cattle hooves grow rapidly and there is an increased blood flow to the hooves that causes them to become tender. This cripples the animal and severely reduces feeding performance. Cattle will be stiff and sore. They can develop sole hemorrhages and yellowish discoloration of the sole double soles, heel erosion. Hoof trimming is the primary method to treat with laminitis resulting from subacute acidosis for breeding cattle. Fat cattle on feed are often managed with extra bedding and soft footing where possible.

Bloat

There are two main types of bloat – free grass and frothy bloat. Free grass bloat

Frothy bloat is common on legume pastures such alfalfa and clovers. It is caused by the trapping of gases in the rumen digesta resulting a foam. The protein in lush legume pasture are rapidly digestible allowing for rapid

Bloat occurs when gas accumulates and the animal is not able to belch it out. Signs of bloat are swelling high on the upper left side behind the ribs and in front of the hip bone. A popping-out away from the general contour of the body, which looks like a basketball high on the left side, is a definite sign of serious bloat.

To treat minor bloat, keep calves on their feet and walking, or drench with BloatEze or mineral oil. With acute bloat, calves also can froth at the mouth, fight for breath and go down in convulsions. Severe bloat need rapid medical attention. A severely bloated animal may die a few minutes after it falls. As soon as you see acute bloat symptoms, call a veterinarian and administer the following treatments.

- Keep the animal walking, preferably uphill, with the head held up.
- A large stomach tube or 1/2-inch-diameter water hose can be passed through the esophagus (be careful not to enter the trachea).
- As the last resort (with acute bloat only), your veterinarian may puncture the animal‘s distended rumen. The wound is hard to heal because of infection from the rumen contents.

The best preventive measure is to avoid feeds and management practices that encourage bloat. These include too many fines and dust, too much molasses, too much very high protein forage such as alfalfa or excellent grass hay and lack of any long-stemmed forage in the diet. A little dry hay that encourages cattle to salivate helps prevent bloat. Rumensin® mixed in rations is more effective in preventing minor bloat than other forms of ionophores.

Urinary calculi

Kidney stones, water belly or urinary calculi can sometimes affect steers but they usually are not a problem in heifers. The condition is caused by mineral imbalances and/or diets that are too alkaline. The problem is often observed in animals fed diets high in phosphorus within adequate calcium supplementation. Diets should contain 1.5 to 3.0 times as much calcium as phosphorus.

Compaction/Impaction

Abomasal Impaction develops in beef cows during cold winter months when cattle have decreased water intake and are fed poor-quality feeds such as excess straw. Impaction can often occur when utilizing alternate forage sources, particularly during times of feed scarcity such as low-quality straws and hay. These feeds are typically low in energy and protein while high in indigestible fibres. Cows may even impact when choosing to ingest excess amount of bedding. Cattle that have limited water access also are at risk. As such, cows that rely on snow through the winter must monitored often have adequate quality feed.Impaction with sand can occur if cattle are fed hay or silage on sandy soils, or root crops that are sandy or dirty. This is a risk when stubble grazing and for producers with sandy yard sites.

Ruminal Impaction can also occur from cattle eating silage plastics or net wrap. Keeping feed bunks and yards clean and service bale shredders regularly.

Signs of Compaction are:

- Off feed
- Little manure output
- Hard manure
- Distended abdomen
- Pain and belly kicking
- Weight loss
- Weakness

METABOLIC RISKS ON YOUR FARM

1. What feeds do you offer your cattle? Cows, Show cattle etc.

2. What risks are there with your feeding program?

3. What products or processes do you have on your farm to manage the risks of your feeding program?

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Additional Resources

Lameness in Beef Cattle- Beef Cattle Research Council - https://www.beefresearch.ca/topics/lameness/#:~:text=Laminitis%20is%20a%20condition%20where,pass%20through%20the%20rumen%20wall.

Dietary Abomasal Impaction in Cattle- Merch Veterinay Manual-

https://www.merckvetmanual.com/digestive-system/diseases-of-the-abomasum/dietary-abomasal-impaction-in-cattle

Acidosis in Beef Cattle - Beef Cattle Research Council -- https://www.beefresearch.ca/topics/acidosis-in-beefcattle/#:~:text=Acidosis%20is%20an%20animal%20health,issues%20for%20the%20beef%20sector.&text=Acidosis%20in%20beef%20cattle%20occurs%20when%20the%20rumen%20microbes%20produce,ranges%20between%205.5%20and%207 .

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