

Challenges of Temperate Pasture

Although temperate pasture (ryegrass/clover) is the cheapest high quality feed available to cows, it does have some inherent limitations, which may have consequences for cow health and production.

1. Moisture or Dry matter (DM)

- The high water content of lush pasture may limit the ability of cows to physically fit DM into the rumen. A cow with a requirement for 16kgDM/day from pasture of 10% DM (90% water), has to eat 160kg of wet pasture.
- Cows walking long distances and standing on concrete for prolonged periods (large herds in particular) are unlikely to be able to eat sufficient quantities of low DM% pastures.
- High moisture pasture flows through the digestive system at a faster rate. This may prevent magnesium concentration within the rumen fluid from reaching sufficiently high levels to sustain blood Mg levels.
- Saliva has an anti-acidosis effect by buffering the rumen pH. High moisture pasture = reduced chewing and saliva production = increased risk of acidosis from pasture alone.

2. Pasture Carbohydrates (Energy Precursors)

- Plant carbohydrates in lush grass are in a rapidly degradable (very digestible) form. As grass matures, moisture content and rate of digestion decreases.
- Seasonal differences in the energy efficiency of pastures exist. Although Autumn grass can have a similar energy value to Spring grass, it is typically associated with lower concentrations of rapidly digestible carbohydrates. Therefore the efficiency of converting the energy in the pasture into energy for the cow is reduced. Also, more methane gas tends to be produced on Autumn grass which means more inefficiencies in energy production.

3. Pasture Protein

- Lush pasture in Autumn and Spring may contain in excess of 25-30% crude protein (CP). Mature, stemmy pasture may be less than 12% CP. Cow CP requirements in early lactation (depending on production level) are only about 18%.
- In contrast to grasses, legumes have a relatively constant ratio of stem to leaf, so the CP content remains more stable. Overall, legume protein is superior to that of ryegrass.

- The use of tetraploid ryegrasses favours the legume component of pasture because tetraploids are less densely tillered and permit a greater clover population.
- Much of the CP in lush grass is rapidly degraded in the rumen and exceeds the requirements of rumen bugs. This results in excessive ammonia levels in the rumen, which is absorbed and de-toxified in the liver. This process represents an energy cost to the cow. This energy could otherwise have been used for milk production and may be the equivalent of 1-5 litres of milk.
- It would appear that cows and rumen bugs are able to adapt to long term challenge with high levels of CP.

What to do?

- Nutritional and herd management targeted at maximizing dry matter intake (DMI). This means maximum grazing time on a high quality pasture that is at the appropriate stage of growth and height, ie 3 leaf and about 2500kgDM/ha.
- Strategic use of nitrogen fertilizer.
- Strategic use of high energy supplements (eg pellets) to bring some balance to the diet in early lactation. The milk production response to the first 1-2kg of pellets often exceeds a 1:1.5 ratio and improves pasture utilization.
- The cost benefit of balancing diets with expensive 'bypass' proteins and large quantities of concentrates has to be carefully assessed taking into account current milk price, cost of supplements and likely responses/benefits. The most economic decision is usually to accept a higher than desired CP level in the diet and focus on pasture production and utilization.
- Use MgO (causmag) from calving through Spring to improve blood Mg levels, help neutralize rumen pH and possibly help maintain milk fat content.
- Consider the use of rumensin or bovatec to enhance rumen function, particularly when feed quality is high.
- Consider feeding a small quantity of hay or roughage if lush pasture-induced acidosis is a problem. Roughage promotes saliva production, slows flow rate of gut contents and stimulates rumen movement. Cows with this form of acidosis often have very fluid, bubbly, smelly faeces; rough coats and are not milking to expectations. Don't be too worried about loose faeces if cows are performing well and look OK.