



Manure Window of the Rumen

Manure's greatest use, well beyond its capacity for recycling as nutrient on paddocks, is its capacity to tell us what is happening in the rumen. The rumen is the central organ of the cow. Every other part of a cow's body and function is dependent on the rumen's metabolic status. The obvious benefits of this are cow health and feed conversion efficiency, both of which have major impacts on farm profit.

I strongly advocate the farm owner or manager get the cows in for afternoon milking. This is a good time to study manure in the paddock. Manure in dairy yards is not indicative of general rumen function as stress factors can come into the equation through confinement and handling. Like most things, the more you study manure the more you begin to see.

The common statement, "the cows are a bit loose", often passes as just a statement, and not the alarm bell it should be. Any variation from ideal manure is costing the farm profit; the greater the variation, the greater the cost at a multiplier effect. Most farmers are aware of the manure score system of a '1 to 5' scale; 1 being very liquid and 5 being 'elephant dung'.

Measurement is management: you manage what you measure. In the case of manure; it never lies. Numerical data such as milk slip information, grain weight, hay and silage fed out, is prone to human error, and is only verified by physical observation of cows, feed, and most particularly, manure.

Score 1 – the liquid phase is indicative of acidosis; if not clinical at the time, it soon will be, but it certainly tells us the cow has sub-clinical acidosis (SARA). In a fresh cow it indicates a transition diet problem – too fast a change from dry cow to lactating cow ration. It will rapidly initiate other metabolic disorders (milk fever, ketosis, metritis and mastitis), followed by further health issues from debilitated immune function. This is a major cost to whole lactation performance. In later lactation cows it is similarly caused; rapid diet change by poor feeding management or default (cows eat something they not meant to).

The addition of 'effective fibre' - long hay, preferable quality oaten hay (it must be "effective" and digestible), will correct this manure score and its inherent problems quickly. Quality oaten hay is a wonderful addition to the dairy 'medicine cupboard'. Very watery manure is usually associated with salmonella, and often precipitated by acidosis.

Score 2 – is flowable, but not as wet. It contains some fibre, but insufficient for good structure. It will most likely contain undigested milled grain and may have some gas bubbles visible. Again, acidotic rumen conditions are highly probable and feed conversion efficiency is compromised. Acidosis is the major cause of lameness. A good experiment is to gently wash a sample of manure in a fine kitchen flour sieve. Often this reveals not just undigested grain, but even green undigested pasture fragments that have passed through the digestive tract too fast for digestion. As above, the addition of minimal 'effective fibre' (1 kg oaten hay) will improve manure consistency, slow down the rate of passage through the digestive tract, reducing acid accumulation in the rumen and increase feed conversion efficiency.

Score 3 – perfection! Manure will be about 4 to 5 cm deep (credit card depth), a surface texture like whipped cream, have three concentric rings, be dull in appearance unless the ration has a high oil/fat content and have little to no visible grain when smudged with your boot. As mentioned last month, we can now have manure samples tested for starch content, and I'll report on this later. Starch content will give us very accurate indications of digestibility from the perspective of feed quality, but also in combination with a manure score, the efficiency of conversion to milk. This may seem 'nit-picking', but I can assure you I have uncovered grain/milk dollar losses in the 'hundreds of dollars' a day in herds.

Score 4 - is very healthy for rumens, but not for farm profits. It is a score three with excessive fibre. Excessive fibre is usually due to excessive quantities of hay being fed, or poor quality silage. High fibre diets are very restrictive to total feed intake as fibre content determines 'gut-fill' and the time it remains in the rumen reducing through-put. It is normally low in both energy and protein, so has even greater impact in reduced nutrient intake and milk production. You cannot convert hay to milk profitably for these reasons. Hay is for effective fibre and rumen health/function only, not for conversion to milk. If hay/silage is a substitute for pasture it must be fortified both nutrient-wise, and to lower total ration fibre, increasing intake, with grain.

Score 5 – is frequently seen in dry cow paddocks in autumn calving herds (no pasture). It's due to very high hay diet and generally contains large amounts of undigested fibre. If hay alone is the dry cow diet, they will be losing weight. This happens more often than many dairy farmers would like to think. This diet needs a couple of kgs of a good dairy grain mix added to it to increase energy density and meet the dry cow's need for maintenance and pregnancy, plus protein to improve fibre digestion, also adding to energy intake.

I was provoked to write on this subject as I'm seeing many acidotic herds in early winter. Pasture nitrates are already very high with pasture testing around 35% for crude protein in May. The dark to blackish colour indicates high rumen N and needs to be dealt with to prevent excessive energy being used to convert rumen N to ammonia for excretion via urine, impacting fertility from negative energy balance and high blood N levels. Profitable milk production is not 'rocket science', it's about attending diligently to daily issues like ensuring healthy manure.