



Palatability First

I have stated in this column many times that the most limiting factor in milk production and profit to dairy farms is feed intake, due mostly to feed not being available to cows. Add to this another of my naggings; profit comes from litres not solids tests. We can increase milk by 50% and only reduce solids tests by 5% or less. We have a fixed maintenance cost of around 70 MJME (energy)/cow/day whether she is producing 1 litre or 40 litres, obviously diluting this maintenance cost as litres/cow increase: LITRES DRIVE PROFIT!

Assuming we have eliminated this problem through last month's Feed Budget, then palatability comes next; and certainly first in the list of nutritional qualities of feeds. I am raising this issue now as the most common feed palatability problem we have is with silage. By no means are other feeds exempt from the palatability issue, but silage is the one costing us the most.

Clean bales for grain feeding, clean troughs and water, grazing management for both quality pasture, which impacts how good it tastes, and reducing soiling of pasture by muddy hooves, manure and urine through controlled grazing, issues I addressed in June's article.

We are eager to talk energy, protein and to a lesser degree, fibre quality of our silages, but if it doesn't taste good, cows are not going to eat a lot of it. We need to have cows eating to capacity, not just contentment to drive litres and profit. So, what are the factors that impact palatability of silage?

Lactic acid content of silage is the provider of sweet smelling, sweet tasting silage! We have all smelt it, and we have all watched with glee, cows galloping across the paddock to silage that smells like this. I'm sure I need no analogies here, but just observe feed intake at Christmas dinner. (For those not lactating it ends up as BCS.)

There are four main fermentation acids produced in both silage and in the rumen: Lactic, Butyric, Acetic and Propionic acid. In silage we want lactic acid to dominate the total acid content. In the rumen we want lactic acid to be minimal as it is the cause of acidosis. Lactic acid has these opposing desired quantities for the same reason – lactic acid is ten times stronger (more acidic) than the other three fermentation acids. It drops pH very rapidly in both silage (desired) and rumens (undesired); having said that, silage content of lactic acid is not a cause of ruminal acidosis in itself. Butyric acid certainly is a cause of unpalatable silage, and is always produced in secondary fermentation (poor face management in stacks).

Lactic acid content in silage also determines how quickly we reduce pH which impacts on the amount of dry matter retained, digestibility of protein, and retention of energy through reduced effluent discharge. Lactic acid is a major contributor to both silage quality, and how much cows will eat of it - palatability.

The million dollar question: How do we get high lactic acid content in silage?

A very professional dairy farmer client of mine who wanted to improve his silage, figuring if he can increase his energy, protein and fibre digestibility, and multiply that by 1000 tonnes of dry matter silage he makes, he will lift his profit very significantly. We tested many different batches of his silage, plus I added a number of other test results of samples I took on other farms. Last year we had access to commercial fermentation testing at a reasonable price, as a result we forgot all about energy, protein and fibre because we saw in these fermentation results an alarming trend – results tabled below.

The trend was – a direct correlation between silage moisture content and pH, and the variation in lactic acid percentage of total fermentation acids between brand ‘A’ and brand ‘B’ inoculant, and no inoculant.

Lessons learnt: 1) we are baling silage far too dry (moisture goal 65%) as there are 4 times more samples in the dryer group than the wetter groups, I think from over-tedding. The wetter silage group (2) in the table had not been tedded. 2) Inoculating silage certainly produces more lactic acid and less other fermentation acids; as a result, silage is more palatable, increasing intake and milk, and lowering pH faster. 3) All inoculants do not produce the same result. Choose your inoculant carefully.

Fermentation Test Data - 2007 Season

Sample Groups By Moisture %	Moisture %	PH	Total Acid % Of DM	Lactic Acid % Of DM	Inoculant
<i>Grass Silage</i>					
Group 1	50.33	5.7	0.67	0.56	A
Group 2	65.1	4.52	5.05	4.37	A
Group 3	73	4.4	8.6	2.81	B
<i>Sorghum Silage</i>					
Group 4	55.3	5.6	0.52	0.17	No Inoculant
Group 5	54.7	4.99	1.34	1.08	A