



Silage Quality

The impact of silage quality is of such financial magnitude that I have decided to address the matter and its impact over two month's articles. This month I will look at what quality silage is and how to achieve it, then my October article will describe its impact on summer milk production.

The cost of getting silage right is more about management than dollars. The cost of getting it wrong can be as high as 500 litres per cow at a time when milk is at premium price.

Neutral Detergent Fibre (NDF %) is the best measure to determine the quality of most feeds. The lower the NDF generally the higher quality the feed is in terms of its capacity for cows to convert it to milk. A study conducted in Michigan State, USA, found for every 1% increase in NDF over 40% NDF there was a .69 unit drop in protein, .84 unit drop in NDF digestibility and a .83 unit drop in dry matter digestibility. Simply speaking, the higher the NDF of silage the less the cows can eat, compounded by reduced digestibility of a silage that is lower in protein as well. A rapid downward spiral which often displays itself in drops of 5 litres or more in milk production.

The shift from spring rations which optimize milk production to a ration high in silage which reduces milk production significantly is avoidable through good quality silage.

Time of cutting will determine the NDF of your silage. Fertilize with nitrogen fertilizer, shut up for, preferably 3 weeks but no more than 4 weeks as the number of daylight hours and temperature determine NDF level of your pasture. Cut, then tedder within two hours of cutting. The NDF of your silage has been decided. What happens from now on is related to field losses and fermentation effectiveness.

The greatest advance in silage quality, and its capacity to be converted milk, has been the introduction of silage inoculants. The rapid growth in their use in Australia, despite being widely used overseas for many years, is testimony to this. Silage inoculant is a powerful tool in managing silage quality.

The use of inoculant impacts in three main areas. Firstly, time of cutting can be more in line with grass maturity stage than being determined by the necessity of 4 or 5 days of clear weather. Grass can be ensiled at far higher moisture levels when inoculated than can be achieved without inoculant. I have witnessed silage going into mounds at 36 hours after cutting and into bales at 48 hours after cutting. From this you can see that the windows of

opportunity for ensiling are far greater with inoculated silage. Higher moisture silage (65% moisture) will pack tighter with higher oxygen exclusion and therefore less chance of spoilage. I have seen silage which was cut in bad weather, baled 48 hours later in bad weather, inoculated and was in perfect condition when feed out.

The test on this silage was 84% moisture. It had no effluent in the plastic tube, no mould and an excellent fermentation producing sweet smelling lactic acid silage which was highly palatable.

Inoculant adds a massive number of lactic acid producing bacteria to the silage causing a very rapid drop in pH. The goal of good fermentation is to achieve a pH of 4.5 as quickly as possible. With inoculant this pH can be reached in as little as 3 days. Without inoculant it can take 30 days or longer sometimes never reaching a stable pH. The impact of rapid fermentation is reduced dry matter losses (shrinkage). The longer fermentation continues the greater are dry matter losses, possibly as high as 20% of your silage.

The third benefit of inoculating silage is palatability. Due to strong lactic acid fermentation silage will be sweet and hence cows will eat more of it. Higher intake, more milk.

International standards recommend a minimum bacteria level of 100,000 CFU (Colony Forming Units). However many experts on the subject, including Dr Keith Bolson, Professor of Ruminant Nutrition and Forage Conservation at Kansas State University for 25 years and considered a world expert on the subject, prefer 200,000 CFU and the inclusion of enzymes for converting fibre to sugars enabling bacteria to work more efficiently.

Silage inoculant is a powerful management tool in achieving quality silage and an excellent investment in next summer's milk production.