DAIRYTECH NUTRITION

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CALVES

Following on from last month's article; it is hoped we now have a healthy vital 'heifer' calf on the ground and a dam in pristine condition – no excessive negative energy balance, milk fever, ketosis, retained placenta or mastitis: all are prevetable through good transition management.

There is now a real urgency to feed 4 litres of quality colostrum to our calf. The "holes" in the intestine that absorb the colostrum close rapidly within the first few hours of the calf's life. After 8 to 12 hours, approximately 50% of the ability to absorb colostrum is gone. Both quality and volume of colostrum consummed by the calf at this time has major production implications for whole of life. Research in the USA comparing 2 litres of colostrum and 4 litres of quality colostrum on life milk production is horrifying. In first lactation, the heifer calf receiving 4 litres produced 1000 litres more milk, and in subsequent lactations, around 1500 litres more milk.

Colostrum quality/quantity is not just about survival of the calf. Certainly passive immune transfer through IgG is important, and a major failing on many farms, but colostrum contains over 180 identified substances, many of which are natural growth promotants.

Clean colostrum is essential. If it is not fat, protein or antibodies, then we don't want it. Trash will ruin even best quality colostrum. Visible trash is blood and manure. Discard any clostrum with blood in it. The trash we can't see is more dangerous – bacteria! All colostrum contains bacteria, however, it can grow to dangerous levels under poor sanitation. Equipement needs the same sanitation as your milk line.

Bacterial contamination is a common problem with colostrum and can easily kill a calf from "food poisoning". Colostrum pasteurizers are becoming common on Northern Hemisphere dairy farms.

Obviously immune transfer is of equal importance. Calves require 150 to 200 gms of anitbodies in the first meal. This can be cheched with a colostrometer, or newer technology of a BRIX refractometer. A reading of 22% on a BRIX indicates over 50 gms per litre which is good quality. 4 litres of this colostrum will supply 200 gms of antibodies. The advantage of the BRIX refractometer is that it uses one drop of colostrum and the reading is not influenced by temperature. BRIX refractometers are available from TestEquip, Dandenong Vic (03 87688166). Almost every disease outbreak can be traced to a breakdown of colostrum management. If you are having problems with calf health, apart from normal facility hygiene, a blood sample can be easily taken 30 hours after colostrum administration and tested for immune transfer. This will certainly indicate adequacy of colostrum management, or point to poor facility hygiene, at least in the first week or so of life.

A product called Vibrex, available from Total Agronomy (03 5622 14450) is brilliant for sterilizing calf sheds and can be sprayed regularly while claves are in the shed. We have even witnessed reduction in lameness and mastitis when Vibrex has been sprayed on wet muddy winter tracks.

After surviving and thriving from week one, nutrition then plays a major role in ongoing calf thrift. Our goal is to double the calf's birth weight by 60 days of age. Calves are very sentitive to changes in diet (just like their dams, but far more so). They are however, the most efficient animal on farm at converting nutrient to growth.

Solids content of milk fed to calves can vary dramatically due to solids test variations, but especially when powdered milk is mixed with waste milk. One evaluation revealled a variation of 8.8% to 12.5% solids. This is a massive range in terms of daily energy/protein intake. Solids percents exceeding 15% may predispose calves to digestive upsets and clostridia.

Increased milk intake increases average daily weight gain (ADG), but the above needs to be noted. Recent US research has found raising dietary protein over the whole ration (milk and grain) boosted ADG. Conversion of dry matter intake was better with a 28% protein/15% fat milk replacer. Traditionally, milk replacers are 20%/20%.

Feed conversion efficiency is important to cost and heifer development. The best feed efficiency occur with milk and grain. I have published rumen photos showing rumen development on differing diets (see website Library). High forage rations decrease conversion efficiency due to time in the rumen fermenting and gut fill.

Feeding additives can be beneficial. Relatively new science, not yet available in Australia can promote immunity and enhance ruman function. Other products such as direct-fed microbials (DFM) have significant trial variations. *Lactobacillus acidophilus* has very beneficial effects on young animal development. However, there are many strains of this organism; some work and others do not. Do not rely on farmer testimonials. Demand sound trial data from reputable independent universities. DFM's cannot be fed in conjunction with some other common feed additives (Rumensin for one). DFM's are live bacteria and handling/temperature can impact their viability and effectiveness.

On the bacterial infection front: *E. Coli* between day 3 and 21. Salmonella between day 7 and 21. Poor nutrition causes stress. Stress weakens immune function and infection soon follows. More calf articles can be found on our website under Library/Calf rearing.

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