



## Raising Calves

An obvious follow-on from the transition cow subject of the last two months has to be calf rearing. In fact calf rearing begins during the transition period, 3 weeks prior to calving, through sound nutritional management of our springing cow.

Firstly, directly from nutrition and ease of calving, and secondly, colostrum quality is affected by pre-calving nutrition of the dam. Protein/energy/mineral content of the lead feed impacts considerably on colostrum immunoglobulin content.

There are three crucial periods that determine the calf's survival, let alone thriftiness. The first, as indicated above is the three weeks prior to birth, second, the milk-fed stage, and finally, weaning.

Early calf health problems are 1) low body temperature; 2) drop in blood sugar levels. Dystocia, difficult or slow calving, is the biggest single cause of these two calf health problems, and can raise calf mortality rates by 4 to 8 fold! A vet once told me the most dangerous thing you can do in life is being born. Transition cow management and nutrition of the springing cow is the calf's first life threat.

Assuming we have a healthy calf on the ground, colostrum intake is the next critical event. Last year I wrote extensively on colostrum quality and administration to the calf (June 06) sighting data from several USA studies on this subject. Anything less than 4 litres of quality colostrum in the first 12 hrs of the calf's life, you may as well put it on the calf truck.

Calves are born with no immune function and colostrum will provide this for 8 to 10 weeks. Compounds in colostrum also contain growth factors. There is no significant difference in quality of colostrum from 1<sup>st</sup> and 2<sup>nd</sup> calf cows. Certainly older cows provide higher quality, but they are far fewer in herds these days.

Feed 4 lts within 12 hours of birth, usually calves can't drink this amount suckling a bottle so oesophageal tube feeders are best. Test kits are available for assessing quality, so consult your vet on which to use. No mastitis milk should be fed to calves as you are only adding a large bacteria load on the calf it does not need at this time.

If calf mortality is an issue I suggest your vet run tests for immune transfer by testing calves. This can highlight either colostrum quality problems or management of first feeding. A study in USA showed a difference between calves fed 2lts and 4 lts of colostrum produced a 1000 lt milk variation in first lactation, and 1600 lt difference in second lactation.

The two greatest threats post calving to our calf are; scours and respiratory disease. Both are heavily influenced by colostrum quality and adequate intake in the first 12 hours. Scours is an infectious disease, but with quick response by the calf rearer can be overcome. Obviously sanitation and prevention are the first steps. Research has shown continued milk feeding during treatment does not prolong scours. Withdrawal for more than 12 hrs will drop blood sugar levels and weaken the calf. Use an electrolyte containing acetate or propionate, not bicarbonate.

During the milk-fed phase our goal is rumen development, the milk is only to feed the calf until we can establish a functional rumen for digestion of solid feed. Rumen development is dependant on production of VFA's (volatile fatty acids) from digestion of dry feeds. Hay produces high volumes of acetic acid which does little for development of rumen papillae. Grain produces high quantities of butyric (and propionic) acid which stimulate rapid development of papillae enabling absorption of VFA's which feed the animal. Starch from grain is the key.

Water intake drives grain intake. So, 4 litres of milk a day, access to ample clean water and fresh calf grain mix kept well away from water to prevent cross contamination and rejection. By 4 weeks the calf should be drinking 4 lts of water on top of milk, enabling up to 2 kgs of grain to be consumed. Research has demonstrated that free choice water increased grain intake by 46% and live weight gain by 61%.

Weaning is determined by grain intake, but the calf should be eating 2+ kgs of grain by 5 weeks, indicating the rumen is developed enough to withdraw milk. This brings us to the final high risk period of our calf; weaning.

Assuming we have successfully achieved the above (rumen maturity); transition stress can undo all we have so diligently established. Pre-weaning, calf scours is the threat, but post weaning respiratory problems are, and have life-long implications. Stress and respiratory disease go hand in hand.

Last June's article sighted research data connecting post-weaning respiratory disease directly to effective colostrum feeding, with startling life productivity handicaps as a result of post-weaning respiratory disease. Respiratory disease accounts for 50% of post-weaning deaths.

Wean calves at 2+ kgs grain intake, but leave them in current housing/groups for 2 weeks to establish the feeding transition to a total dry-feed diet in familiar surroundings, and then shift them to paddocks when they now will be able to digest pasture/hay and be competitive, but maintain grain feeding to sustain energy/protein density in their ration.

Finally, a good calf grain mix contains several cereal grains, spreading fermentation rate, 20% canola meal for both rumen degradable and by-pass protein, macro elements of magnesium, calcium and salt. Trace elements and rumen modifiers (rumensin and tylan) for both optimum feed utilization and rumen pH control, and control of coccidiostat which can cause life-long damage to rumens.