

CALVING EASE

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Encouraging Rumen Development Among Preweaned Calves

- **Coordinating weaning and rumen development promotes good stable growth during the transition to fully-weaned heifers.**
- **Providing a continuous source of palatable water for preweaned calves is a critical best management practice for promoting good rumen development.**
- **Among calves on an intensive milk feeding program a ration that encourages rumination helps maintain healthy rumen pH levels.**
- **Calves may be fed combinations of pelleted or textured calf starter and some kind of forage to encourage rapid rumen development.**

Level of rumen development and weaning

Every experienced calf raiser knows the result of weaning a calf before she has adequate rumen development. She cannot meet her nutrient needs from solid feed – she loses weight and, often, becomes ill. Easily observed indirect indicators of rumen development include the length of time a calf has been regularly eating calf starter grain and the daily volume of calf starter she eats. I like to see calves regularly consuming starter for three weeks with a final daily volume of four quarts (around four pounds) before taking away all milk.

Water, Water, Water

Fermentation of concentrates and forages in the rumen provides the organic chemicals that stimulate the growth of the rumen lining. Fermentation does not happen without water. Feeding milk does not provide this water for calves. The only practical way to get water into a calf's rumen is for her to drink it. That means having clean palatable water available every day, period, end of story!

Intensive milk feeding programs and starter intake

Many calves are now being raised on an intensive milk feeding program. This often means eight or more quarts of whole milk or two or more pounds of milk replacer powder per day. The nutrients from milk/milk replacer meet most of their energy and protein needs for the first few weeks of life. Compared to calves fed limited milk these calves usually begin eating solid food later. Although, in my experience, most intensively-fed calves regularly

consumed at least a big handful of calf starter grain daily by the end of three weeks of age. Not much, but enough to begin fermentation in the rumen. I feel it is important to track this intake. Tracking intakes is easy if you feed individually housed calves only one full handful of grain daily refreshing it at least every other day. For group-housed calves in all-in:all-out facilities I suggest providing a known and limited amount of grain daily to allow a rough estimate of consumption rates.

Encouraging rumination through ration choices

There are many debates over preweaned calf rations: pelleted versus textured calf starter grain, a combination of shelled corn with a protein pellet versus a complete calf starter grain, no hay versus limited hay versus ad lib. hay. The debates will continue as long as there are personal preferences among calf raisers.

What really counts? Kertz in a recent summary suggests that as long as most of the preweaned ration is grain the factor that counts is whether or not the ration encourages rumination among preweaned calves. He argues that the rumination and chewing stimulates enough saliva production to stabilize rumen pH and minimize subacute ruminal acidosis.

What rations seem to promote high rates of rumination/chewing among preweaned calves of this age? I have seen a ration of well-formulated textured starter with no roughage work well for this. In England I observed calves fed pelleted concentrates along with chopped straw ruminating. In Indiana I watched five and six week-old calves being raised on a calf starter ration composed of whole shelled corn and a high protein pellet chewing and chewing. In New York I have seen calves being fed a pelleted starter and limited hay (healthy handful daily in the top of their grain pail) ruminating consistently.

For me Kertz's recent review along with my own observations suggest that there is more than one ration to promote early and healthy rumen development among preweaned calves. Depending on the preweaning housing (individual, paired, group), concentrate handling facilities and procedures, availability of concentrates and forages, labor availability, dairy's goals for growth rates and weaning age and post-weaning facilities what is practical for one dairy may not make good sense for another.

References: Kertz, Al "Calf starters: a historical review" Feedstuffs, July 14, 2014. Porter, J.C. and Others, "Effect of fiber level and physical form of starter on growth and development of dairy calves fed no forage." Professional Animal Scientist 23:395-400 2007. Khan, M.A. and Others, "Hay intake improves performance and rumen development of calves fed higher quantities of milk." Journal of Dairy Science 94:3547-3553 2011. Terre, M.E. "What do preweaned and weaned calves need in the diet: A high fiber content or a forage source?" Journal of Dairy Science 96:5217-5226 2013. Further, Jim Quigley has summarized research on sub-acute rumen acidosis among calves in four Calf Notes (#'s 170, 172, 173, and 176. These may be accessed at www.calfnotes.com. He also describes the need for new research on this topic.

Our thanks to Attica Veterinary Associates, P.C. for supporting Calving Ease. See www.atticacows.com and www.calffacts.com for calf-related resources.

Remember to Google "Calves with Sam" blog for profit tips for calf rearing.