CALVING EASE

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HAY
More Thoughts on Which to Ruminate

One phrase keeps coming into my mind as I continue to read and listen to folks talk about this business of feeding hay to preweaned calves. That phrase is, "If it makes you feel good, do it."

Believers versus Nonbelievers

The few calf raisers with whom I have talked about feeding hay to preweaned calves left no doubt in my mind that they had strongly held opinions on the subject. They were the "believers" and those who fed differently were "nonbelievers." Given the strength of these opinions, maybe this issue "More Thoughts on Which to Ruminate" is superfluous, wasted, of little value. But, what the heck!

Circumstances Vary from Farm to Farm

The choice of whether or not to feed hay to preweaned calves is the focus of this letter. A quick survey of just a few calf raisers told me that we vary a good deal in how we approach this choice. The most frequently voiced reason for the choice of whether or not feed hay to preweaned calves was, "We've always done it that way and our calves do just fine." I guess you could call this "past experience" or "tradition."

The next most common reason for either feeding or not feeding hay was, "So-and-so said we (should/should not) feed hay." Maybe you could call this "expert opinion" since these advice givers were often veterinarians, nutritionists, or university educators.

The only other observation is that most calf raisers are quite certain that their choice is the correct one. They seemed as sure about this choice as they generally are about the "right" choice of liquid feed (whole milk vs. milk replacer) and the "right" way to wean calves.

Basic Biology: What do We Currently Know About Hay and Preweaned Calves?

First, I have never heard of any study that demonstrated a difference in mortality between calves fed hay versus those not fed hay. So, let's just accept that we are not talking about a life or death practice.

Second, given free water intake, both hay and textured grain starter will support bacterial fermentation in the rumen. Among other things this fermentation produces volatile fatty acids (often abbreviated as VFA's). These acids, VFA's, have been shown to be essential for the growth of the little finger-like papillae on the inner surface of the rumen. Since these papillae are needed to provide the full absorptive capacity of the rumen, we want to encourage their development. Pound-for-pound, grain has been shown to be more effective than hay in promoting papillae development.

However, although we want to provide adequate levels of VFA's, it is possible to have excess levels that cause papillae to clump together. I'm not entirely clear just at what level of grain intake this "excess" level occurs. It may be more related to age. Several researchers chose six weeks as the age to add hay to a milk/grain or all-grain ration.
Third, the rumen has an outer layer, too. This muscular layer not only supports the thin inner layer but it also moves. It contracts. These contractions move the contents around in the rumen. Contractions also force digested feeds into the omasum. These muscular movements can be measured as early as three weeks of age. Hay promotes the development of this muscular layer. Hay also helps maintain the health of the inner layer of the rumen. On the inner layer of the rumen the papillae may get covered over with a substance called keratin. The scratch provided by hay (and also by textured grain starter) helps keep these layers of keratin from forming over the papillae.

How to Decide: When to Start Feeding Hay?

This is what my grandchildren call a "no-brainer." If you are getting short heifers with hay bellies, hay is being fed in too large quantities too soon. Do something differently. But what if the heifers are healthy and growing well? When to start hay? One answer is to keep doing what ever is being done now. Don't change.

Another answer is based on cost effectiveness. Is good quality high protein hay readily available at a reasonable cost? How much extra labor will be or is required to feed hay? Is free choice water already being offered? (Remember? Rumen bacteria must have water in which to grow and ferment grain and hay. And, milk or milk replacer is not a substitute for "free" water since it is diverted via the esophageal groove directly to the abomasum.) If water is not being fed, would more improvement come from adding water feeding rather than hay feeding? Is the calf housing set up to feed hay or will the hay be just so much more bedding to be trampled underfoot?

How to Decide: How much Hay to Feed?

It's not just a question of whether or not to feed hay to preweaned calves but also how much hay to feed? In a recent series of postings on Dairy-L, there seemed to be strong support for limiting the amount of hay fed prior to six weeks of age. One Washington State raiser said, "I like to offer at least a handful of hay to calves from the start." Professor Marx, University of Minnesota, recalling results of research completed there, observed, "The calves consumed very little forage while on milk and grain starter. The results indicated no statistical difference in calf performance between those that received forage and no forage."

Where does all this discussion get us? As I said at the beginning, "If it makes you feel good, do it."
Perhaps that leaves both the "believers" and "nonbelievers" comfortable. Available for loan at the Attica Vet. Clinic is an informative thirty minute video on rumen development. If you have Internet access, more information is available at

http://www.americanprotein.com/calf/calfnotes/APCcalfnotes.htm

Jim Quigley's CalfNotes on rumen development and hay feeding are related to this letter.
References:

Quigley, J. CalfNotes: Does Hay Develop the Rumen?; Ingredients for Rumen Development; Rumen Bacteria for Calves; Calf Starter Quality; Water, Water, Everywhere... (various publication dates on web site shown above).

BAMN Publication, "A Guide to Dairy Calf Feeding and Management: Optimizing Rumen Development and Effective Weaning" 1997. (This BAMN publication and others on milk replacers and colostrum management are available by contacting Dorann Towery FAX 703-524-1921 or call 703-524-0810.) NRAES publication #74, "Calves Heifers and Dairy Profitability: Facilities, Nutrition and Health." 1996.(Available from NRAES, Cooperative Extension, 152 Riley-Robb Hall, Ithaca, NY 14853-5701. Phone 607-255-7654, FAX 607-255-4080, E-mail nraes@cornell.edu) Penn State Satellite conference on Calf Health, Nutrition and Management, "Selecting the Best Dry Feed for the Calf." 1998.

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