Cattle feeding is just hiring the right nutritionist and mixing up the right TMR ration. Or, is it? Should your cows have some input into their ration and how it gets mixed and delivered? Recent research at Utah State University relates to why cows eat what they eat. The goal of this article is to review some of the findings about why cows eat what they eat and for you to consider this information in your ration preparation, feeding, and feed delivery programs.

TMR vs. Free-choice

The recent feeding research that stimulated my interest was by Dr. Fred Provenza at Utah State with beef calves. Calves were offered one of two experimental treatments: 1) a totally mixed ration (TMR; with no individual ingredient selection possible) of barley, corn, corn silage, and alfalfa hay; or, 2) the same feeds offered separately, free-choice (SFC) in which calves could select whichever and how much of each feed they desired to eat. In this 63-day trial the TMR-fed calves and those fed SFC had the same rates of gain and the same feed efficiency (gain/unit of feed). The feed cost per day was slightly higher for the TMR- compared with the SFC-fed calves. It was interesting to note that calves in the SFC treat-

How Do They Know?

How do cows know what to eat? Animals learn what to eat from their mother or other animals, and from their past eating experience. For example, lambs that were fed wheat for 1 hour per day for 5 days with their mothers eat more wheat than lambs exposed to wheat without their mothers (2). Many farmers know that if you can get a few calves up to the feeder and eating, then other calves will join them. Their past exposure to various types of feeds also is important.

In one study over a 3-year period, 32 beef cows from 5 to 8 years of age were fed an ammoniated straw diet. Inconsistent animal performance was noted among the cows in the trial. After reviewing the histories of the cows, it was noted...
that cows that had been exposed to ammoniated straw for 60 days when they were less than 90 days old performed better than their herdmates that had never been exposed to straw. Throughout the 3-year trial, cows with exposure to ammoniated straw in early life maintained higher body condition, produced more milk, lost less body weight, and bred back sooner compared with cows with no exposure to ammoniated straw as calves. This was the case even though the cows with previous exposure to ammoniate straw had not been exposed again for 5 years (3).

Another example of the role of previous experience is my own personal experience feeding calves not exposed to their mothers (orphan dairy calves) versus dam-raised calves. We purchased 300-pound calves to raise. The calves that had been raised without a mother were familiar with a feed bunk and quickly started on feed. In contrast, we occasionally get a dairy calf that was fostered onto a beef cow mother. These fostered calves are slow to come to a feed bunk and to begin eating grain. This is a situation where not having a mother and past eating experience has encouraged these calves to try new feeds.

Can Cows Balance Their Rations?

We do know that cattle are motivated by specific hungers (euphagias) to maintain intake to acquire major nutrients such as protein, sodium, energy, and possibly others (4). A graduate student of Dr. Provenza’s, Darrell Emmick, demonstrated the ability of grazing cattle to modify what plants they grazed to apparently meet their protein needs. He planted strips of clover and grass, strips of all grass, and strips of all clover. When cows were fed a 10% protein supplement, they preferred to eat the higher protein clover strips and when fed a 16% protein supplement, they tended to eat more of the all-grass strip. This suggests that grazing cattle can change their intake of selected feeds in response to meet nutritional requirements. Whether cattle offered individual components of a totally mixed ration would respond similarly poses an interesting question. Nonetheless, cattle do not “balance their rations” for the least cost, or to include a less palatable feed, or necessarily to optimize performance (e.g., rate of gain or milk yield).

Apply Eating Behavior Information

How can this eating behavior information be used in dairy farms? Many of our current feeding programs are geared to ever increasing genetic change to increase milk yield. On the other hand, even with our sophisticated ration balancing and feed delivery systems we still experience feeding-related health problems such as acidosis, metabolic problems, and lameness.

Review what feeds you use and how you feed both your calves and your cows. Are you feeding your cows something that they never were exposed to or tasted as calves? Remember that for most dairy calves, we are their mothers, and we must teach them what to eat.

Honor the golden rule of making ration changes slowly, 5 to 10 days, to give both the cow and her rumen time to adjust.

Make sure many good ingredients are used in TMRs, as well as ones you’d rather hide. When feed is mixed together, the cow can no longer choose not to eat any particular “bad” feed, but there could be a decrease in overall intake of the totally mixed ration. This spring I talked to a number of farmers who saw a jump in feed intake and milk production when they took out the small amount of spoiled corn silage that they were feeding. The corn silage was spoiled because they were feeding it too slow or it was just bad feed from the bottom of the silo. This is a situation where smelling a handful of feed and visually observing color and texture was more useful than a laboratory feed analysis.

Double check your ration if your cows are exhibiting unusual eating activities or appetites. Your cattle may be trying to make up for something that has gotten out of balance in your ration. Your cattle will give you feedback on the ration you are delivering, take time to listen and learn from your cows.

The Goal

As we look at the challenges of creating a cost-effective feeding program for healthy productive cows, we need to look for ways that the cows can help us achieve this goal. By understanding some of the reasons why a cow eats what she eats we can build feeding programs that are both productive and animal-friendly. One of the fast food restaurants has a slogan that goes “have it your way” to acknowledge that not everyone has the same tastes, needs, or desires in food. As we learn more about why cows eat what they eat, we need feeds and feed delivery systems to let cows have it “their way”.

References