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DAIRY PIPELINE

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Have You Ever Watched Cows Eat?

—Kevin Spurlin Extension Agent, Grayson County; spurlink@vt.edu

"Observe and manage cow feeding behavior to ensure the diet properly formulated, mixed and delivered is actually the same one consumed by the cow."

I am blessed to have the perspective of both nutritionist and dairyman when it comes to feeding dairy cows. I have formulated rations for other farms, and been up in the wee hours of the morning mixing and feeding the TMR on the home farm. Watching cow behavior is one skill I have developed that has made me a more effective nutritionist and dairyman. Have you ever watched cows eat? It may be about as entertaining as watching grass grow, but what you may learn could be invaluable.

Dr. Trevor DeVries of the University of Guelph has researched cow feeding behavior extensively. He states that cows on pasture will spend about 8 to 9 hours grazing during the day. During these grazing events, cows are highly selective in what they consume, yet also highly consistent in what they consume. A cow's ability to be consistent results in more stable digestion throughout the day.

In comparison, TMR-fed cows often in confinement housing such as pack or freestall barns spend about half as much time eating (3 to 5 hours/day) as compared to grazing herds. They also eat about 1.5 to 2 times as much total dry matter per day. In essence, cows in confinement eat larger meals faster, and less frequently. The tendency of TMR-fed cows toward "slug feeding" necessitates a close look at feed bunk management and diet formulation to avoid problems caused by this type of feeding behavior. To do this, watch cows eat!

First, pay attention to when cows eat. Dr. DeVries notes that the delivery of new feed is the primary driver of when cows eat. Milking is often a secondary driver. Combining milking and feeding events at the same time is very stimulating to cow feeding behavior. By staggering feeding times and milking times, a farmer can spread out the feeding pattern leading to more stable intake and a more stable rumen environment. If this is done, ensure that the feed available at milking is high quality and plentiful or the benefit of a staggered feeding is negated. Pushing up feed, while important, is less of a stimulating factor than we may have previously thought. If some cows are not eating at these important times such as milking or feed delivery, ask "why not?" Is feed bunk space limiting access to some cows? If a few cows are not eating at those critical times, are they sick or in heat?

Second, are cows sorting excessively? Cows have a tendency to be selective. Cows that push their noses into a large pile of feed and start making a circle are pushing fibrous feeds to the edge to gain access to delectable morsels at the bottom. Smaller portion sizes at each feeding will limit this activity somewhat. Excessive sorting impairs digestion of the cow doing it, but that behavior also changes the diet consumed by the next cows into that spot. In pens of cows with severe cases of sorting behavior, two cow-side symptoms include variable manure consistency and variable body condition at the same stage of lactation indicating that all cows in the pen are not consuming the same diet.

Dr. DeVries advises that proper nutritional management allows cows to eat a ration balanced to meet their requirements, and do so in a manner that is good for the cow. Two critical steps to achieve those goals is 1) provide access to the formulated diet throughout the day by taking advantage of cow feeding triggers, and 2) minimize competition at the feed bunk through proper bunk design and stocking density. Observe and manage cow feeding behavior to ensure the diet properly formulated, mixed and delivered is actually the same one consumed by the cow.

DAIRY SCIENCE

Upcoming Events

See VTDairy for details.

May 10-15, 2017
Low stress dairy handing workshop

May 13-14, 2017
Show Like a Pro Workshop
Frederick, MD

May 15, 2017
Hokie Cow Classic
Blacksburg Country Club

May 20, 2017
Dairy Judging Workout
New Market, VA

May 27, 2017
Breakfast on the Farm
Arbogast Farms

June 10, 2017
Franklin County Open Youth Livestock Show

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.

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For more information on Dairy Extension or to learn about current programs, visit us at VT Dairy—Home of the Dairy Extension Program on the web at: www.vtdairy.dasc.vt.edu.

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Gestational heat stress: considering the prolonged effects on dairy calves

—Nicole Steele, Ph.D. Student with Dr. Christina Petersson-Wolfe, milk@vt.edu

The negative effect of heat stress on milk production in dairy cows has been researched for many years, but there is now growing interest in how heat stress during conception and gestation affects the subsequent health, growth and productivity of calves. The extent and duration of heat stress varies by geographical location, but is particularly common in Florida, Georgia and Texas, and certainly can be seen during the summer months in Virginia. This review will consider recent studies from these states that investigated the future performance of calves born to heat-stressed dams. Heat stress occurs when a cow's heat load exceeds her capacity to dissipate heat. Most heat is lost via the skin; therefore, in times of heat stress, blood will be redirected to the skin to aid heat loss, and away from internal organs. For lactating cows, less blood flows to the mammary gland, and for pregnant cows, less blood flows to the uterus and placenta to support fetal development. The degree of heat stress exposure for dairy cattle is considered as a temperature humidity index (THI). At a THI of 68, and relative humidity of 50%, cows may experience heat stress and an associated drop in milk yield at temperatures as low as 72°F.

Year-round calving systems mean that heat stress is inevitable for many cows during some stage of gestation. In a study using 10 years of records (n= 75,000), when cows conceived in summer, their daughter's milk production was lower compared with offspring that were conceived during winter (Brown et al., 2015). The difference in milk yield between the daughters of heat-stressed and thermoneutral cows ranged from 82 to 399 kg per lactation. Consequently, planning to breed cows outside of the hot season or utilizing cooling systems might lessen the impact of reduced milk production from the daughters of these cows.

Heat stress of cows during late gestation was also demonstrated to have negative effects on daughter performance in a series of studies from the University of Florida. The final two months of gestation are critical as the fetus gains approximately 60% of its total birth weight (Bauman and Currie, 1980). Fetal growth was compromised in cows that were heat stressed in the 45 days prior to calving, demonstrated by the lighter birth weights of their calves, relative to those from dams that were cooled using fans and sprinklers (Monteiro et al., 2014; 2016). The difference in birth weight could be explained by shorter gestation times (by 4-5 days), lower maternal feed intake, impaired placental function, and reduced blood flow to the placenta. In addition, the transfer of immunity via absorption of antibodies in colostrum was impaired in calves born to heat-stressed dams, regardless of whether they received colostrum sourced from heat-stressed or cooled dams (Monteiro et al., 2014). Data from 5 consecutive summers also indicated that maternal heat stress negatively affected milk production and survival in the herd in the first lactation (Monteiro et al., 2016). Heifers from heat-stressed dams produced, on average, 5.1 kg milk/d less than those from cooled dams (31.9 ± 1.7 kg milk/d), equating to a total difference of approximately 1,250 kg milk/cow during the first 245 DIM.

These studies provide good reasons to consider the next generation of animals, well before they are born. Avoiding exposure to heat stress during the entirety of gestation is difficult, because gestation length spans three quarters of the year, and especially as climates become warmer. Therefore, management strategies to reduce the impact of heat stress, such as cooling cows with shade and fans, provide the most practical way to mitigate the lower productivity from the offspring of these cows, setting them up for a successful first lactation and beyond.

References

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