

# DAIRY PIPELINE

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“More liberal milk or milk replacer feeding programs for preweaned dairy calves have gained favor with the adoption of acidified free choice and computer controlled autofeeders.”

## HOW MUCH, HOW SOON?

—R. E. James, Extension Dairy Scientist, Dairy Nutrition, [jamesre@vt.edu](mailto:jamesre@vt.edu)

Traditional calf feeding programs have fed calves 2 quarts of milk or milk replacer twice daily with weaning sometime between 6 and 12 weeks of age. This is based upon the concept that limiting energy from milk stimulates early intake of dry feed which favors earlier weaning and lower cost. However, this practice is unique when compared to feeding behavior of all other mammals in which the young consume milk at will from their dam. More liberal milk or milk replacer feeding programs for preweaned dairy calves have gained favor with the adoption of acidified free choice and computer controlled autofeeders. With the acidified free choice milk feeding systems there is no limit to how much calves can consume. However, there is a tendency for other feeding systems to gradually increase the liquid diet over days or weeks. The concern is that allowing the calf to consume large quantities of milk or milk replacer will cause digestive stress and diarrhea.

Workers at the University of British Columbia compared growth and health of calves fed milk ad libitum (free choice) to calves fed at 10% of body weight per day. Ad lib fed calves consumed up to 9 liters/day by 5 days of age followed by a slight reduction in intake until 14 days when milk intake rose to more than 10 L/day (1 liter = 1.05 quarts). Calves on both treatments were weaned by gradually diluting their milk with water beginning 35 days of age with weaning by 42 days. In both groups starter intake was negligible for the first 3 weeks with a slight advantage to limit-fed calves.

By 9 weeks of age there was no difference in starter intake and there was no difference in incidence of diarrhea. However, the ad lib calves weighed 18 lb. more at the end of the trial. A similar trial on a German dairy farm using calf autofeeders found that calves allowed ad libitum intake consumed over 10 liters/day within 4 days of entering the autofeeder facility with intake peaking above 14 liters/day. These two studies demonstrate that calves will consume more than 4 quarts of milk or milk replacer early in life. This added nutrition provides needed energy for growth and health which is especially important during cold weather.

When allowed to consume milk or milk replacer according to appetite, calves will eat smaller amounts at one time but more frequently. Attempting to feed large volumes of milk in two feedings per day with uneven intervals between feedings has not been successful because the volume of liquid may exceed the stomach capacity of the calf. With higher liquid feeding rates, the quality of the milk or milk replacer is important. High bacteria count milk or lower quality milk replacers would be more likely to cause digestive upsets in the young calf.

These studies and the experience of producers has shown that higher levels of intake are readily achieved by calves early in life with autofeeder or acidified free choice systems or when calves are fed more frequently (3Xdaily) at uniform intervals with buckets or bottles.



## NO MORE UNNECESSARY MIDNIGHT CALVING PEN CHECKS!

—Turner Swartz, Ph.D. Student with Dr. Christina Petersson-Wolfe, [ths120@vt.edu](mailto:ths120@vt.edu)

It's 6:00 p.m. A farmer is finishing chores on the dairy and is about to head in for the night, when he/she notices 1157, a heifer that looks like she's close to calving. The farmer decides to check on the heifer in a few hours to monitor her progress. At 9:00

p.m. the farmer checks 1157 again, but there are no new developments, so he/she decides to come back at midnight. But yet again, when the farmer checks 1157, there's still no progress. Now, tired, sleep deprived, and frustrated, the...



## Upcoming Events

See [VTDairy](#) for details.

**March 8-11, 2016**

[Area Dairy Conferences](#)

**March 12, 2016**

Rockingham County Farm Safety Day, Dayton, VA

**March 25, 2016**

ERME Workshop #2, Franklin Center, Rocky Mt. (snow date meeting from Jan.)

**March 30, 2016**

Dairy Management Institute, Franklin Center, Rocky Mt.

**March 31, 2016**

Dairy Management Institute, Dayton, VA

**April 2, 2016**

VA Spring [Holstein Show](#)

**April 9, 2016**

State Dairy Bowl Contest, Elkton, VA

**April 23, 2016**

Virginia Tech Little All-American

**May 14, 2016**

Progressive Ag Safety Community Day – Franklin Co. Parks and Rec., Rocky Mt.

**May 23, 2016**

Hokie Cow Classic, Blacksburg Country Club

**June 10-11, 2016**

Franklin County Open Youth Livestock Show

**June 10-11, 2016**

Maryland [Show like a Pro Workshop](#)

**June 17, 2016**

State Youth Dairy Judging Workout, Shenandoah Co.

**August 1, 2016**

State 4H/FFA Dairy Youth Field Day  
Clarke & Frederick Counties

*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.*

...farmer decides to head to bed and check her in the morning.

All too many times I have either been part of this story or heard it as an everyday frustration from dairy farmers. Well, there is finally some good news—precision dairy technologies can predict calving events. With a computer or a mobile device, farmers can monitor their cows from the comfort of their own homes.

### Out with the old...

Currently, farmers use visual signs such as udder firmness, pelvic ligament relaxation, and vulva swelling as indicators of a time frame for calving. While these old but true methods have merit, there is a large variability in these signs from cow to cow. For example, research has shown that pelvic ligament relaxation can start as early as 15 days, and as late as 7 hours prior to calving (Berglund et al., 1987). Due to this variability, making management decisions, such as when to move close-up dry cows to calving pens, and how often to monitor these cows can be difficult. To make matters worse, research has shown that moving cows that have already initiated calving can result in a 2.5-fold increase in stillbirths (Carrier et al., 2006).

### In with the new...

A research study conducted by Schirmann and coworkers at the University of British Columbia found that rumination and feeding time are strong indicators of an imminent calving event. Eleven mature close-up dry cows were fitted with rumination collars and housed in a free stall barn equipped with a feeding system that measures individual intakes and feeding times. Additionally, cows were monitored

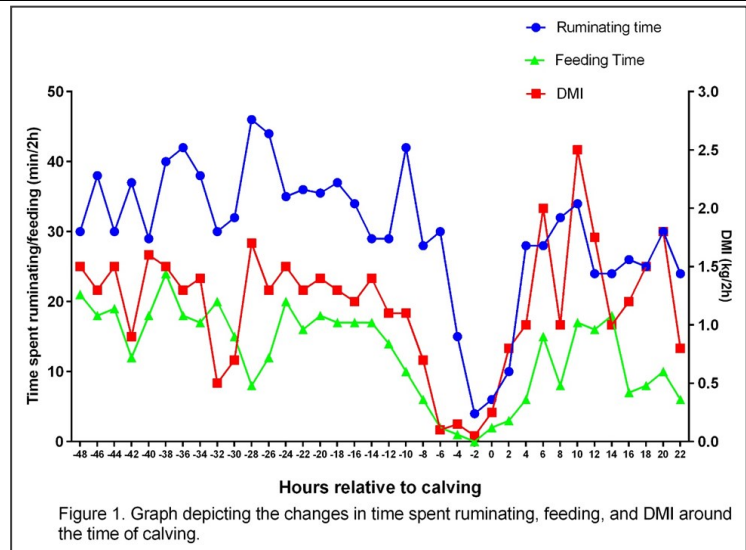
“...precision dairy technologies can predict calving events.”

Schirmann, K., N. Chapinal, D. Weary, L. Vickers, M. von Keyserlingk. 2013. Short communication: Rumination and feeding behavior before and after calving in dairy cows. *J. Dairy Sci.* 96:7088–7092.

For more information on Dairy Extension or to learn about current programs, visit us at VTDairy—Home of the Dairy Extension Program at: [www.vtdairy.dasc.vt.edu](http://www.vtdairy.dasc.vt.edu).

*R. E. Jones*

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with video cameras to determine the time of calving. Because rumination has a very specific sound, rumination collars are equipped with a microphone to record the sound of cud chewing. The feeding system utilized individual RFID tags to allow cattle access to the feed bunk, and while at the feed bunk, duration of the feeding visit and intakes were measured. Time spent ruminating dropped 15% on the day prior to calving, and this decline was further emphasized in the final 4 hours before calving. Consistent with rumination, time spent feeding also decreased considerably by 32% on the day prior to calving, and dramatically declined in the final 8 hours. Dry matter intake (DMI) also decreased by 24% on the day of calving (Figure 1). In conclusion, time spent ruminating and feeding can be monitored on farms either with rumination collars or automatic feeders, respectively to indicate an imminent calving.

These technologies emerge at a time when farm labor is becoming harder and more expensive to come by despite the fact that herd sizes continue to grow. Farmers can utilize precision dairy technologies to compensate for labor shortages while still maximizing animal performance. Now, let's get back to 1157, isn't it about time you checked on her again?