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NEW RESEARCH SUGGEST INCOMPLETE MILKING COULD IMPROVE IMMUNE STATUS OF TRANSITION COWS

The transition period is a difficult time for both cows and producers. Cows are in a state of negative energy balance which makes them susceptible to diseases, and producers suffer the consequences with treatment bills and lost milk production. A new study conducted at the University of British Columbia Dairy Education and Research Centre in Canada has produced some evidence that incomplete milking for the first five days after calving could be beneficial for the immune health of transition cows (Carbonneau, de Passille et al. 2012). The researchers hypothesized that reducing the milk harvested till five days postpartum while still stimulating milk production the same amount of times would make the animals energy balance more positive thus decreasing disease susceptibility, while not affecting total milk production for the lactation. In this study, researchers used 47 cows in three treatment groups, two of which will be discussed. The first group included 15 cows which were milked out completely twice a day for the duration of the 61d experimental period (control, CON). The second group consisted of 16 cows which were incompletely milked twice a day, 6 liters(L) on d1 was taken from the animals, 8L on d2, 10L on d3, 12L on d4, and 14L on d5. The cows were milked out completely twice a day after five days postpartum for the rest of the experimental period (Incomplete, INC).

During the experimental period, feed intake, water intake, and milk production were recorded daily. Milk composition including fat, protein, lactose, and SCC were evaluated weekly. Blood samples were taken on day 21 prepartum and day 2, 3, 4, 5, 14, 21, 28, and 61 postpartum. From these samples, BHBA, plasma NEFA, glucose concentration, phosphorus concentration and many other parameters were evaluated. Researchers measured that milk taken from INC cows through d5 was 35% of the amount of milk taken from CON but there was no effect of incomplete milking on overall milk production for the lactation which averaged 47.8 ± 0.72 and 45.7 ± 0.83 kg/d between wk 2 and 9 for CON and INC, respectively. Blood glucose concentration was greater for INC cows than CON cows until 21 DIM. The concentration of NEFA and BHBA was greater for CON than INC cows until 21 DIM. Phosphorus concentration was greater for INC cows until day 5 and then was similar in both treatments during the remaining time in the experimental period. Based on BHBA concentration, 47% (7/15) of cows in the CON treatment and 6% (1/16) in the INC treatment met the criteria for clinical ketosis and 13% (2/15) in CON and 6% (1/16) in INC met the criteria for subclinical ketosis.

From these results, incomplete milking was shown to be beneficial by lowering the amount of NEFA and BHBA in the blood which is a good indicator of the degree of negative energy balance of the cow. Along with lower NEFA and BHBA levels, the glucose concentration was greater in INC cows than CON which would indicate these cows would be at a lower risk of ketosis. This was found to be true by the amount of clinical and subclinical ketosis cases in each treatment. In addition to reducing the number of ketosis cases, a higher phosphorus concentration in the blood for INC cows could indicate that incomplete milking would also lower the amount of calcium and phosphorus mobilized from the body for milk synthesis. If this is true, incomplete milking could lower the incidence of milk fever in transition cows. Furthermore, incomplete milking within five days postpartum had no effect on overall milk production for the lactation. More research will be needed as blood calcium concentration was not tested in the current experiment due to the cows receiving a subcutaneous injection of calcium to prevent milk fever. With more research, incomplete milking with an equal amount of milking stimula-

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Upcoming Activities

-March 13 or 14, 2013
Financial Workshop Managing Milk Margin to Improve a Dairy's Cash Flow, Harrisonburg
Contact Cynthia Martel at 540-483-5161

-March 27, 2013
Farm Credit DMI program, Rocky Mount

-April 20, 2013
VT Little All-American

-May 20, 2013
Hokie Cow Classic

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 at: www.vtdairy.dasc.vt.edu.

R.E. James,
Dairy Extension Coordinator & Extension Dairy Scientist,
Dairy Nutrition

tion (twice daily or more) could become a tool to improve herd health and increase farm profits.

—Abigail Griffith, Master's student with Christina Petersson-Wolfe, Extension Dairy Scientist, (540) 231-4767 | cspw@vt.edu

Carbonneau, E., et al. (2012). "The effect of incomplete milking or nursing on milk production, blood metabolites, and immune functions of dairy cows." J Dairy Sci.

BMR Dwarf Forage Sorghum: What's the Buzz?

High feed prices motivate dairymen to evaluate every aspect of their nutrition program including their home grown forages. Forages are typically the cornerstone of a dairy's feeding system with corn silage as the standard by which most other forages are measured due to its consistency in combining high yield and high quality. Other common forages offer niches when compared to corn silage such as alfalfa's superior protein content or agronomic advantages of winter small grains in cropping rotations. So where does brown midrib (BMR) brachytic forage sorghum fit in?

A warm season annual like corn, BMR brachytic forage sorghum grows in much the same seasonal window. It is more efficient than corn in water and nitrogen use, requiring less of both. Dr. Chris Teutsch of the Southern Piedmont AREC showed establishment cost for forage sorghum was almost $40/acre less for seed and $50/acre less for fertilizer compared to corn. Additionally, it is more drought and heat tolerant than corn. Like traditional sorghums, these new varieties possess many of the same attributes including the possibility of nitrate and prussic acid poisoning, but these issues are manageable.

What makes these new BMR brachytic varieties unique? First, the BMR trait results in lower lignin content, which increases forage digestibility. Second, brachytic refers to the dwarfing trait resulting in less stalk and more leaf area. Combining greater leaf:stem ratio with less plant lignin, and adding the seedhead at harvest results in forage quality that compares quite well with corn. Dr. Teutsch observed DM digestibility of BMR forage sorghum at 74%. Data on nutritional quality is still limited, and may vary by variety.

Given BMR forage sorghum's attractive quality traits, establishment costs, and its ability to handle hotter, drier and slightly more acidic growing conditions, these newer varieties offer two distinct opportunities for consideration in your forage program.

1. An emergency crop. Forage sorghum typically requires warmer soil temperatures for germination compared to corn, so it is often planted later. Research studies have planted sorghum as late as early July with acceptable results. Though they may not have time to develop a full seedhead, they will still produce a significant amount of quality forage. In the drought of 2012, Dr. Chris Teutsch's research at the Southern Piedmont AREC showed 4 varieties yielded 12 to 19.5 tons/acre (adjusted to 35% DM) when corn plots only yielded 6.1 tons/acre. Drought prone fields may be good places to consider BMR dwarf forage sorghums.
2. Double crop alternative. In western Virginia, cooler climates lend themselves to less stressful growing conditions for corn most years compared to hotter areas of the state. In the cooler regions the greater need may be the added option to increase total forage yield per acre using a double cropping system. Corn can be used in rotation with harvestable winter small grain crops, but it can be a challenge to get corn planted on time. With its later planting date, BMR dwarf forage sorghum may be advantageous following a spring small grain silage harvest.

In conclusion, BMR dwarfing forage sorghum is relatively new to the scene. While there appears to be justification for its use in dairy forage systems, remember to consider it as part of an overall forage management strategy. I do not recommend a whole farm conversion to forage sorghum away from corn silage, but it may be another tool to consider. Diversity in your farm's cropping and feeding plan reduces risks for crop failure and can help break disease and pest cycles. Consider all these factors, and seek trusted advice as you decide what forages to include in your cropping and dairy herd feeding plans.

—Kevin Spurlin
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