



The Tragedy at Virginia Tech

Dairy Pipeline is a product of the University Community called Virginia Tech. What follows on these pages this month is typical of the timely, scientifically based, useful and applicable information that we seek to share with the dairy industry each month. But those who contribute these notes and the institution that supports them have been deeply and profoundly shaken by the tragedy that befell our University this week. Through the words of sympathy and encouragement that have flowed into this campus from every corner of the globe, we have learned that Friends of Virginia Tech are everywhere. This week, truly, we are all Hokies, as we are all human. I express a deeply felt appreciation to all who read these columns and turn to us for new knowledge and sound advice, for your support and prayers in these difficult days. As we, the inclusive family of Virginia Tech, work our way through mourning and ultimately, healing, I ask that we rededicate ourselves to the purpose for which this University was founded: service to and concern for others everywhere.

*Bennet Cassell
Genetics and Management*

HOW CLEAN IS YOUR COLOSTRUM?

“...calves face an increased risk of disease during the first month of life until their immune system begins producing antibodies.”

Several surveys and clinical studies have shown that approximately 30% of all calves fail to absorb adequate amounts of antibodies from colostrum even when adequate quantities of colostrum are fed early in life. These calves face an increased risk of disease during the first month of life until their immune system begins producing antibodies.

Research from several studies sheds some light on why calves fail to absorb colostrum antibodies. A study conducted at Va. Tech by Bob James and Carl Polan demonstrated that the presence of high levels of bacteria in the intestine were associated with low antibody absorption. In this study, early colonization was the result of administering a “probiotic” bacterial inoculum prior to or shortly after colostrum feeding. The higher the bacterial counts in the intestine, the less antibody absorption.

More recently Dr. Sandra Godden from the University of Minnesota demonstrated that colostrum can become a source of large numbers of bacteria if it is not cooled rapidly after milking or if it's administered with an improperly cleaned esophageal feeder. She found that bacterial growth in colostrum was rapid and exceeded 100,000 bacteria/ml within a short time after milking if unrefrigerated. In a Minnesota field study, standard plate counts of colostrum fed to calves exceeded 162,000,000 cfu/ml. These studies lead us to the following conclusions:

► Treat colostrum as you would saleable milk. Colostrum should be fed within an hour or two

of harvest or refrigerated immediately. If refrigerated, feed it within 24 hours to limit bacterial growth. Make sure that refrigeration temperature is less than 40°F, but above freezing. Keep a refrigerator near the milk room specifically for storage of colostrum.

► If a calf is born between milking times and refrigerated or frozen colostrum is not available, consider using one of the colostrum replacer products that contain at least 100 g of antibody/dose.

► Do not feed “probiotics” within the first 12 hours of life and preferably at least 6 hours after the last colostrum feeding.

► Do not use colostrum supplement or replacer products that also contain probiotics. These products will commonly show the addition of bacteria such as lactobacilli or bifidobacteria.

Follow the standard “3 Q” recommendations for colostrum feeding – quantity, quality and quickly.

1. Feed at least 2 quarts followed by another 2 quarts within 12 hours of birth.
2. Test colostrum with a colostrometer or suitable test and use only colostrum containing more than 50mg/ml of IgG.
3. Provide the first feeding as soon as possible after birth (< 3 hours) and the second feeding by no later than 12 hours of age.

—Bob James
Extension Dairy Scientist, Dairy Nutrition
(540) 231-4770; jamesre@vt.edu



TAKE CARE OF THE BARN BEFORE YOU HEAD TO THE FIELD!

Spring... time to plant corn, 1st cutting of hay and spread manure. But before you climb on the tractor seat, think about adjusting your barn ventilation in anticipation of warmer weather. That may be as simple as rolling up sidewall curtains or it may entail the removal of plastic tarps or plywood that protected structures from those brisk winter breezes. Regardless of what it takes, make sure to “open-up” your barns before the hot weather.

The “comfort” zone for dairy cattle is 41 - 77°F. Temperature inside poorly ventilated barns could exceed that during the middle of the day even in early spring, especially on dairy operations located in eastern portions of the state. Above 77°F, cows are heat stressed and dry matter intake suffers leading to a list of problems including reduced milk production, reduced reproductive efficiency, and increased occurrence of metabolic disorders.

The effects of heat stress can haunt you for the rest of year—recall that 1 lb. of peak milk translates into 225-240 lbs. per lactation. For example, 4.5 lbs decrease in peak milk can lower the lactation yield by 1,000 lbs. So make sure you have the capability to cool early lactation cows. Ration adjustments may be needed to compensate for reduced dry matter intake.

A great place to start addressing heat stress

is the holding pen and the feed bunk. These two areas of higher cow traffic are prone to heat stress. Look for ways to provide fans and possibly sprinklers on cows at these locations. Below is a list of items to consider as the temperature rises:

- ▶ Open up barns (remove sides, roll up curtains) to maximize natural ventilation.
- ▶ Clean dust and residue off of fan cages as it can cause drag, which compromises the air moving ability of the fan. (You would be amazed at how much better a clean fan can function relative to a dirty fan.)
- ▶ Ask yourself if any structures around cow housing can be removed or modified to allow for better air flow. (Do you really need that ivy-covered corn crib that you haven't used in 10 years?)
- ▶ Consider installation of a cow sprinkler system. (Your local dairy extension agent should be able to assist you in the design of these systems.)
- ▶ Is your feed bunk and holding pen adequately shaded? (Is this true at different times of the day as the position of the sun changes?)

—M. Chase Scott
Extension Agent, Southwest Virginia
(276) 223-6040; miscott1@vt.edu

“Regardless of what it takes, make sure to ‘open-up’ your barns before the hot weather.”

“Feeding closer to your cow’s requirements reduces overfeeding and cost, but how feasible is this?”

TO CONTROL COST AND PREVENT OVERFEEDING KNOW HOW MUCH YOUR COWS ARE EATING

In this time of high feed prices and concern about the environment, it’s a good idea to check your feeding protocol. Feeding closer to your cow’s requirements reduces overfeeding and cost, but how feasible is this? In many herds it is not only reasonable, but a good management practice to consider.

First it is important to know the dry matter intake of the herd or group being evaluated so you can determine the actual amount of nutrients consumed. Dry matter content can be determined in a lab or on the farm. On the farm testing is needed if dry matter intake is calculated weekly or more often. Testers are available that can do this.

Although not exact, lactating cows need approximately one pound of protein and ten grams of phosphorus for each ten pounds of milk produced over sixty pounds. Formulating that amount in the dry matter consumed will many times result in a lower concentration (percent)

of the nutrient fed. Routine laboratory measurements of nutrient content of feeds or TMR is necessary to monitor nutrient intake. As changes in dry matter intake occur it is possible to make adjustments in supplementation rates.

If feeding all cows in one group, consideration should be given to higher producers but this should be weighted against extra cost of supplementation. Use bulk tank milk urea nitrogen (MUN) to monitor nitrogen or protein status and adjust protein level, undegradable and degradable protein and rumen available energy if levels are excessive (above 14 mg/dl). Now is a good time to consider more than one feeding group for your lactating cows. Consult your herd nutritionist for more specifics on how to do this without losses of milk production.

—Charlie Stallings
Extension Dairy Scientist, Nutrition & Forage Quality
(540) 231-3066; cstallin@vt.edu

www.ext.vt.edu

Extension is a joint program of Virginia Tech, Virginia State University, the U.S. Department of Agriculture, and state and local governments.

Virginia Cooperative Extension programs and employment are open to all, regardless of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. An equal opportunity/affirmative action employer.