

DAIRY PIPELINE

Department of Dairy Science

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“A dairy cow undergoing heat stress is in survival mode.”

HAVE A PLAN FOR HEAT STRESS

Summer is fast approaching, bringing with it the promise of hot weather and added stress for dairy cows. The symptoms of heat stress are easy to recognize. Rapid, shallow breathing with respiration rates of at least 60 breaths per minute, open mouth panting, extended tongues, and drooling are all indicators of animals experiencing heat stress. Less apparent are the effects this has on the cow internally. A dairy cow undergoing heat stress is in survival mode. Her feed intake can decrease by 35%. Instead of mobilizing fat (which generates more heat), her body chooses to degrade protein. Protein degradation produces urea as a byproduct. Some of this urea can accumulate in the uterus resulting in reduced fertility and the remainder must be removed by the kidneys—a process that requires her to use more energy. On the reproductive side, not only can fertility be reduced by the increased urea, but embryo survival is compromised at body temperatures exceeding 102.2°F, particularly in the first week after insemination. In the end she is not able to meet the energy demands required for maintenance and production; production is sacrificed and embryo survival is greatly reduced. Is it any wonder that production losses of 20 to 30 percent and single-digit pregnancy rates are common during the summer months?

The good news is you can mitigate some of these losses through cow cooling. **Providing shade should be priority number one.** Solar radiation can raise the temperature-humidity index (THI) by 6 to 9°F. Also, make sure adequate drinking water is available.

Provide 3 to 4” per cow of linear tank perimeter. Keep in mind cows will consume 30 percent of their water upon exiting the parlor; make sure adequate space is available for all cows to drink upon exiting the parlor.

Sprinklers and fans are also critical for effectively cooling cows. Research from University of Arizona shows that fans alone are not effective at cooling an already hot cow. This is not to say that fans are not beneficial. Fans can still increase airflow and delay the rise in temperatures in a barn. However, if you really want to cool cows and have a major impact on heat stress, water is critical.

► Sprinklers and fans in the holding pen are a great place to start. The holding pen is the most stressful location on the farm and can be one of the best locations to add sprinklers. However, if sprinklers are added make sure to include fans or you can create a “sauna” effect with water alone.

► Sprinklers over the feedbunk are the next priority.

► Fans over the freestalls and the feedbunk should be next. All fans should be spaced so that at least 5mph wind speeds can be measured underneath the next fan. New recommendations are to turn fans on at 65°F and sprinklers at 68°F. Also, keep in mind fans need to be cleaned. Dirty fans can reduce fan efficiency by 40 percent. For more information on recommended cooling systems contact your local Dairy Extension Agent.

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BULK TANK SOMATIC CELL COUNT—LOWERING THE LIMIT?

For decades, the legal limit for the bulk tank somatic cell count (BTSCC) in the U.S. has been 750,000 cells/mL. Above which, producers cannot ship their milk for sale. However, there has been a movement to lower the legal limit. Most recently, the National Milk Producers Federation proposed to drop the legal limit from 750,000 cells/mL to 400,000 cells/mL. This proposal was re-

jected by the National Conference on Interstate Milk Shippers (NCIMS). Despite this rejection, the legislation has been introduced to Congress and if enough scrutiny is raised, the lowering of the legal limit may happen in a process outside of NCIMS.

The impetus to lower the legal limit has been prompted by the European Union (EU), which has maintained a

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Upcoming Activities

June 25 – Franklin County Dairy Heifer Show, 1:00 p.m., Franklin County Recreation Park shelter. Contact Beverly Cox at becox@vt.edu or (540) 483-5161.

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.

“Producing milk of the highest quality not only benefits the processor and consumer through increased shelf life and improved taste, but also benefits you through long-term profitability.”

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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¹ Extension publication web address for this guide: <http://pubs.ext.vt.edu/404/404-230/404-230.pdf>

400,000 cell/mL limit for years. EU documentation states that any imported milk product must be produced under these same guidelines. Despite our international trade in previous years, the EU is now adhering tightly to their guidelines and requiring all imported products to meet their standards. Our current limit of 750,000 cells/mL will quickly limit trade, affecting our ability to remain competitive internationally.

With this background, it is my opinion that the national limit for SCC will be lowered in the near future—making this the perfect time to review some BTSCC lowering guidelines. First, **culture all cows over 400,000 cells/mL or the top 20% of the herd**, whichever results in the least number of cows. This list is easiest to determine if you are enrolled in the DHIA monthly monitoring program. If you are not, this is the time to get enrolled. Once you have these culture results, refer to the [Reference Guide for Mastitis-Causing Bacteria](#)¹ to learn the source of the infections specific to your herd. Remove contagious animals from the herd or milk them last, treat those which might be susceptible to antibiotics with the help of your herd veterinarian, monitor those high SCC cows in subsequent months and repeat this process monthly.

Next, **culture all cows with clinical mastitis**. Again, remove contagious cows from the herd or milk them last, treat those susceptible to antibiotics with the help of your veterinarian, and monitor these cows with subsequent tests. The use of a strip cup in the parlor will help to identify cows with the early signs of mastitis. Milk from these cows and any other suspect cows should not go in the tank. You must also be willing to cull cows who do not cure. They may be a risk to uninfected herd-mates and also put an economic strain on the farm.

Proper parlor management is key to ensuring high milk quality. The **parlor must be properly functioning**, which includes the correct teat end vacuum level, proper amount of air-flow capacity in the system and pulsators that are functioning as they should. A sign of improper milking equipment function is teat end damage, which can be seen by cracks and also hyperkeratosis (cauliflower appearance of the teat end). A proper functioning parlor also includes the **proper milk-**

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ing procedures. The use of an efficacious **pre- and post-milking teat disinfectant** is an absolute must, as well as the **use of gloves and single-use towels**. I suggest cows be prepped in sets of 4 or 6 depending on the size of the parlor, number of employees working and efficiency of the parlor. Always starting with cow number 1 in each set, I recommend the milker strip each cow into a strip cup, and coming back to cow 1, apply the pre-dip to each cow in the set. The **dip must remain on the teat-ends for 30 seconds** to allow for enough time to kill the bacteria on the teat skin. A second important time-frame to remember is the **time from first tactile stimulation (either wiping or stripping, depending on your order, in this case stripping) to unit attachment should be approximately 90 seconds** to allow for full milk let-down. Ensuring these time frames have been met, the milker can wipe cow 1 with a single use towel and attach the unit, then move to the rest of the cows in this set. Procedures must be monitored very closely to ensure every milker in the parlor is prepping all cows properly. Units should be attached to clean, dry and properly stimulated teats at every milking.

Finally, I suggest a California Mastitis Test (CMT) be performed on all fresh cows prior to their milk going in the tank. The **best chance to cure an infection is during the early postpartum period**, prior to the infection becoming chronic. Therefore, any positive quarters should be cultured immediately and treated when possible. Cows with a contagious infection should be removed from the herd or milked last. Also, it is absolutely essential to **focus on maintaining a clean and dry area for calving as well as for fresh cows**. Calving stresses the immune system, increasing risk for new mastitis infections. Ensuring a clean and dry environment will help reduce this risk.

These recommendations will help producers proactively lower their bulk tank SCC. Producing milk of the highest quality not only benefits the processor and consumer through increased shelf life and improved taste, but also benefits you through long-term profitability.

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