

Dairy & Livestock

Heat stress hits at 72 degrees F

By MARK MAYER

HEAT stress is one the largest profit robbers on dairy farms, with annual losses of more than \$200 per cow at many dairies. These losses are not just from lower milk production, but also include loss of body condition, embryotic mortality, lower fat test, missed heats, and feet problems related to acidosis and increased standing.

There are many effective methods for heat abatement on a dairy farm. Providing shade in pastures and at outdoor feed bunks, and installing ventilation fans and sprinkler systems can all help reduce heat stress. Properly designed natural ventilation and sprinkler soaker systems can also be effective in freestall barns. Most dairy farms already have these systems in place, but many fail to start using them early enough to effectively eliminate heat stress in milk cows.

Keep cows cool

The ideal temperature for a dairy cow is between 40 and 60 degrees F. This means heat stress occurs in cows much earlier than it does in humans. Therefore, it's important to not wait until you feel uncomfortable to implement heat abatement systems for

your milking herd. And once a cow's body temperature rises due to excessive heat, it takes 30 to 45 minutes to get her temperature back down.

The old Temperature Heat Index, or THI, was developed more than 60 years ago and was based on data from cows producing 30 to 35 pounds of milk per day. The old index suggested that cows started to experience heat stress at a THI of 72. However, new research shows that lactating dairy cows start to suffer from heat stress when a THI of 68 is reached. For reference, a temperature of 72 degrees with a humidity level of 50% equals a THI of 68.



Since it's easier to keep a cow cooled down than it is to lower her body temperature after it has risen, fans and other cooling systems should be turned on earlier than is commonly done on most farms. Many fan thermostats are set to turn on at 75 to 80 degrees, and many dairy producers do not use their sprinkler systems until the temperature and humidity level are both in the mid-80s.

At 85 degrees and a humidity level of 85%, the THI is 83 and your cows are already suffering from moderate heat stress. This would include a body temperature of 104 degrees with a respiration rate



of greater than 80 breaths per minute. Anything over 40 breaths per minute can indicate heat stress.

Fans should be set to turn on when the air temperature reaches about 68 degrees, and sprinkler systems no warmer than an air temperature of 74 degrees. It's also important to clean fan blades and screens at least once a year, as the efficiency of fans can be reduced by as much as 25% to 30% from dirt.

Sprinkler systems should be low pressure with proper nozzles. They should produce large droplets that shoot 5 to 6 feet back from the feed barrier to soak the cows' hides from their shoulders to their backs. The sprinkler should be on a timer, running for 1 to 2 minutes. Then it should turn off for 10 to 12 minutes to allow fans to do evaporative cooling. Then the process should be repeated. Soaking frequency will need to be increased with rising ambient temperature.

The most important component of a sprinkler is for the droplet size to be large enough to wet the hide. Mister hoses that

produce small water droplets should not be used. The small droplets produced by these hoses only wet the hair coat and actually form a barrier that makes evaporative cooling less efficient.

More water when it's hotter

Adequate access to clean drinking water is also of great importance to reducing heat stress. Milk cows can drink twice as much water on hot days and will drink 60% of their daily water requirement after milking. Thus, water should be readily available after the cows exit the barn or parlor. The goal is to provide cows with 4 inches of linear water space for summer months, and ideally they would never have to walk more than 80 feet to access water.

For more information on heat abatement systems or to receive assistance in designing ventilation and sprinkler systems for dairy cows, contact your local University of Wisconsin Extension county agriculture agent.

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