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Heat Stress: Misconceptions and New Concepts!!

After a seemingly never-ending winter and spring, we must get ready to face heat stress and its effect on the animals. A few things we have been doing right and a few things that we have been doing wrong have come to light as the latest information becomes available. Most of these new recommendations arise from the understanding of how a cow's internal temperature fluctuates and how to influence it. Her behavior is influenced by heat stress and consequently has a big impact on hoof health.

- Cows start expending energy to cool down at 21 degrees Celsius. **This means that we are not nearly aggressive enough in turning ventilation up when outside temperatures change**. Maybe there is a reason why milk is always highest in March. Not many barns have temperatures below 21 degrees past the month of April.

- Heat stressed cows first stand up and then bunch up. When cows lie down, their internal temperature begins to rise. As their core temperature increases, they feel the need to stand and will thus shorten their lying down periods. Cows need to lie down a minimum of 10 hours a day, which is about 14 periods lasting around 45 minutes each. When lying times go below this, sole ulcers and white line disease increase greatly. *We have been making the mistake of ventilating the eating areas instead of the resting areas.* This has encouraged them to stay on their feet, which causes our increases in hoof problems during heat stress. Cows eat 4.5 hours a day but should lie down for 10-12 hours. Therefore, **ventilate the stall surfaces so the cows stay cool when lying down.**

- Tunnel ventilations are great to bring in fresh air from outside and this works well for the majority of warm days. When the humidity is very high and the ambient temperatures rise, the wind speed needed to cool the cows is not achieved, especially when they are lying down, because the air flow will go through the areas of least resistance, i.e. the alley ways and the space above the cows near the ceiling. **The new recommendation in these tunnels is to place fans above the stall areas every 30 feet angled down towards the cows to mechanically cool them during the heat stress periods.** These fans would only be on when inside temperature and/or humidity is high.

- Naturally ventilated barns will use 2 different problematic strategies to compensate for those days when the air is still and the relative humidity is high. High volume low speed (big ass) fans placed over the center feed alley only recirculate air and do not reach air speeds fast enough to mechanically cool cows. Cows may attempt to reach the cooling area closest to the fans and simply stand in the feed alley. This will not achieve our goal of promoting proper lying times by cooling resting areas. The solution is to place these 20 foot fans above stall areas at 60 feet spacing to achieve mechanical cooling. The other problematic strategy involves water sprinklers in alley ways. Evaporative cooling is not as efficient with high relative humidity such as our north-eastern climate and when it is not used in conjunction with mechanical ventilation. It also encourages standing which is undesirable for hoof health. It is a viable solution in case of extreme overheating where cows are in distress. **A better solution in free stall barns is angling down panel-fans (48 inches) over the stalls every 30 - 40 feet.** This will help us attain the goal of having the cows lying down for more than 10 hours per day.

Obviously, every barn presents its own challenges regarding ventilation. To ventilate means to provide fresh air. When this fresh air is too warm and humid to keep the cows comfortable, we need to talk about cooling. Wind speed on the cow is called mechanical cooling. Also bear in mind: dirty louvers and screens on fans reduce their output by 25% and more. Keeping these clean will prolong the life span of the motors as well.