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TECHNICAL INFORMATION FOR TODAY'S FEED PROFESSIONAL

Calves feel the heat, too

Reducing heat stress in calves may not be your first concern during scorching summer days, but you should make it a priority. Here's why.

Although you do notice the lost milk production in your cows, the fact is, the effects of heat stress often go unnoticed on calves. Sure, they may be panting, but, the cows need all your attention.

If this is your mind-set, you might change it after you realize that failing to manage heat stress does impact your calves. You won't notice it immediately, but the effects will sneak up on you when those heat-stressed calves finally freshen – nailing you with milk production losses of $189 per animal during her first lactation. Multiply this figure by 10 or 12 heat stressed calves, and you've got a huge production loss.

Here's why you need to give your calves more attention during the hot summer months.

Rapid Dehydration

Calves cool themselves by sweating, similar to a cold can of soda pop sitting on a picnic table on the Fourth of July. After a while, the can starts to "sweat" and the water runs down the sides, forming a puddle on the table. Although you won't see your calves sweat like a can of pop, or melt and form a puddle, that doesn't mean they aren't dehydrating.

In fact, when the sun beats down on your calves, their skin temperature rises enough to cause discomfort. For example, a study conducted at the University of Missouri, found that calves housed in hutches without shade had an afternoon skin temperature of 100º F when the outside air temperature was 88.5º F. However, calves housed in shaded hutches had a skin temperature of just 96º F when the outside temperature was 85.1º F.

In response to elevated skin temperature, calves sweat and pant more. Although the amount of fluid lost to sweating is unknown, calves try to replace lost fluids by drinking a total of 3 to 6 gallons of water per day, which includes their normal feeding of milk or milk replacer, says Jan Shearer, dairy extension veterinarian with the University of Florida. He says very few producers provide enough water during heat stress situations. Thus, calves can dehydrate rapidly, losing water and electrolytes such as sodium and potassium.

Elevated body temperature

Besides rapid dehydration, heat stress causes a calf's internal body temperature to reach dangerous levels.

Researchers at the University of Florida found that calves housed in hutches had increased body temperatures during an intense, three-day period of hot, humid weather. In the study, all calves reached an average body temperature of 106º F for all three days. The body temperatures of heat-stressed calves can range from 102º F to 108º F, says Shearer. However, when it passes 108º F, mortality increases quickly.

Besides dangerously high body temperatures, heat stress weakens a calf's immune system by decreasing immunoglobulins which circulate through the blood and ward off infections, says Jim Spain, professor of animal science at the University of Missouri. And, high temperatures can cause increased respiration rate.

Reduced growth rates

Calves can adjust to higher temperatures, but that doesn't mean they don't suffer long-term effects, like reduced growth rates.

Calves grow best between a temperature range of 55º F to 78º F. When temperatures exceed 78º F, heat stress starts to

affect calves. If they don't receive enough fluids – a total of 3 to 6 gallons daily – it limits their cooling ability and reduces feed intake.

Although it's not known how much their feed intake drops, their maintenance requirement increases 20% or 30% due to the extra cooling effort. Thus, you've got a "double whammy" on your hands because the calf doesn't want to eat, yet her energy requirements increase in an effort to support body maintenance, Shearer says. As a result, she can't meet an average daily gain of 1.5 pounds.

Heat stressed calves can experience compensatory growth, or a growth surge that allows them to "catch up", says Spain. But if calves are neglected during times of heat stress, their chances of experiencing reduced growth rates increase.

Economic losses

Although it is difficult to quantify how much heat stress impacts a calf, failing to manage it can contribute to problems down the road.

Essentially, three expenses can result when, for example, heat-stressed calves don't calve by 24 months, says Roger Cady , extension dairy scientist in Puyallup, WA.

First, the cost to maintain an open heifer beyond 24 months is bout $1.30 to $1.50 per day, resulting in a total of $45 per month, Cady says. This cost includes all fixed and variable expenses. If she freshens at 26 months, you spend $90 to maintain her while she remains unproductive.

Second, as age at calving increases, the number of heifers hanging around also increases, Cady says. For example, if heifers calve at 24 months, you need 66 replacements per 100 cows if your cull rate is 30%. If heifers calve at 26 months, you need 72 replacements per 100 cows with the same cull rate. So, besides paying more to maintain heifers, you are also paying for extra heifers. That amounts to an extra $540 for six additional heifers, not to mention the $5,490 you need to dish out to maintain the 66 other heifers.

Finally, if a heifer calves at 26 months instead of 24, you lose milk income for every day that heifer goes without producing milk. For example, a heifer would produce, on average, 55 pounds of milk per day, or 3,300 pounds over a two-month period. At $13 per hundredweight, that's $429 over a two-month period.

It will cost you $10 per hundredweight, or $330, in increased feed expense when a heifer calves two months late. Thus, you are left with $3 per hundredweight or $99 as "profit", Cady says. However, when a heifer caves two months late, you lose this $99 profit. Add your $90 maintenance cost to the $99 of lost milk production, and you lose $189 per heifer. A 100-cow herd with a 30% cull rate would lose $5,670 annually.

Bottom line, if you don't take precautions against the heat, you could very well see lost profit.

Prevent heat stress

Don't let heat stress snatch your calves' future productivity. Dan McFarland, Penn State extension agricultural engineer in York, PA, recommends the following steps to prevent heat stress in calves.

- Make sure calves have clean, fresh water available at all times.
- Take direct sunlight off the calves by providing supplemental shade. For example, purchase shade cloth which blocks 80% of the sun's rays. It sells for 10¢ to 25¢ per square foot.
- Promote good air exchange. For example, open the sidewalls on naturally ventilated structures, such as greenhouse barns; remove the back of a hutch to facilitate air movement; and provide a 45-second air exchange rate or at least 100 cfm for each 100 pounds of animal in a warm housing facility.

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