

# CALVING EASE

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Sam Leadley (Attica Veterinary Associates) and Pam Sojda (Offhaus Farms)

## Heat Stress and Calves

### When are calves stressed?

The temperature-humidity index (THI) is one way to describe heat stress on calves. We all know that when either temperature or humidity go up all bovines suffer from heat stress. When they both increase at the same time the degree of stress on calves and cows increases far more rapidly than either measure would suggest. If the weather goes from 80° and 50 percent humidity to 85° and 80 percent humidity the THI (a measure of stress) increases from mild to serious stress. The bottom line is that we have to take into consideration both temperature and humidity when estimating heat stress levels for calves.

### What's bad about heat stress?

With heat stress we observe these changes in calves:

- Increased body temperature which generally results in sluggish behavior
- Increased respiration rate which uses extra energy as the calf tries to cool herself
- Decrease in appetite – she ends up eating less dry matter
- Increase in water consumed - if it's available free choice
- Increased water loss through evaporation
- Negative changes in metabolic rate and hormones (not easily observed)
- Suppression of immune system's ability to fight off pathogens

We see them behaving in ways to reduce heat stress. They seek shade. They stand rather than lie down. And, as above, they reduce dry matter intake and drink more water.

### What determines the heat load on a calf?

- Temperature of the air around the calf
- Relative humidity of air around the calf
- Air movement around the calf

- Solar radiation on the calf (remember that calves with black coats absorb more radiant heat from the sun than calves that are mostly white?)

### **What are some ways to reduce this heat load?**

**Conduction** takes place through physical contact. On hot days most of their environment is just as warm or warmer than they are. If they are not completely stressed out they may stand more than usual thus exposing more of their body to moving air. Not a lot we can do to change this.

**Convection** depends on moving air to remove excess body heat. A calf's normal summer body temperature is in the range of 101° to 103°. For most of the day in most places calf body temperature is above summer air temperature. If air is moving it can help cool the calf. Our challenge is to find ways to take advantage of natural ventilation whenever we can. Open doors. Keep side curtains open. Open anything there is to open on a hutch. Temporarily remove siding from a barn if calves are housed inside.

The other air movement challenge is to use fans efficiently to mechanically move air. When placing fans remember what counts is air that moves over the calf. Moving air out of a barn while leaving a dead air pocket around the calf is less effective than when the air directly around the calf is moving.

Blocking **radiant** heat is important, too. A building provides shade. However, the roof will radiate heat down on the calves. The amount of heat from a metal roof that is only eight or ten feet above the calves is tremendous. The higher the roof or shade structure above the calves the less stress from heat radiating down from the roof. More opaque hutch structures allow less penetration of the sun's heat as well.

**Evaporative** heat loss is always present. Calves pant and sweat. This moisture evaporates and cools them. However, very few farms consider providing misting and fans for cooling calves even though this is probably the most effective means of mechanically reducing heat stress with bovines.

### **Calf Feeders' Tip**

This month's tip comes from Cindy White from Luxemburg, WI. She faced the problem of too much running back and forth when treating sick calves. It was hard to carry all the right medication, syringes, needles, markers, pencil, notepad, human pain medicine, etc. She has barns for calves with smooth concrete floors. She fixed up a tool chest on wheels with the medications on top. The drawer below holds extra syringes and supplies. The large bottom compartment has a pail, waste container, and large medicine containers. Biggest benefits? No forgotten calves – each one is treated right now. Calves treated correctly – each one receives the proper medication, not just the one I have in my pocket. Fewer steps. The same idea can be applied to outdoor operations by making a “meds. kit” that can be carried or loaded into a cart or truck.

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