

CALVING EASE

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COLD WEATHER BEDDING

On a chilly day this past week a group of us were standing around outdoors listening to a speaker. I was tired and needed a place to sit down. I sat on a concrete step. Even with overalls, insulated jeans and long underwear as a cushion, I soon had to decide which was more uncomfortable - the discomfort from standing or the pain from having all the heat sucked out of me by the cold concrete.

If you have had an experience like mine, you should be able to empathize with a calf with inadequate bedding lying down in her pen or hutch during cold weather. The cold base underneath her serves as a heat sink. That is, the mass of the base (concrete, stone, dirt) is so huge that as long as she lies down she will continue by **conduction** to lose body heat. Remember that calves lie down about eighty to ninety percent of the time.

Two ways to test the adequacy of our wintertime bedding

The calf's body weight is sufficient to compress most kinds of bedding (examples would include straw, sawdust, shredded paper, chopped corn waste, feed waste). To accurately estimate the rate of heat loss through bedding we have to create similar compression. An adult kneeling on the bedding is a practical way to do this. While just two pens or hutches is better than none at all, I recommend kneeling in at least four or five locations to get a good picture of bedding adequacy.

If you kneel in a pen or hutch for roughly two to three minutes you should have a reasonable estimate of the heat loss rate experienced by a one-hundred pound calf. Now, remember that this is influenced by how you are dressed. If you are wearing your -40° insulated Carhart® coveralls over jeans and super-thermal underwear versus wearing just jeans you will have to adjust your experience.

While kneeling, you may feel your knees (1) getting colder, (2) no change in temperature, or (3) getting warmer). If you do this test on a cold day and your knees get warmer, you can be sure that the bedding is doing an adequate job of insulating calves from the base. If there is no change, you probably are in a marginal situation. The heat being transferred down through the bedding into the base (**conduction** losses) closely balances the rate of heat loss from your knees. However, if your knees feel cooler, the bedding is clearly not doing its job of insulating calves from the base of the pen or hutch.

When you stand up, it is helpful to inspect your knees. They should be dry. If they are damp and your knees felt cooler, you know one reason why so much heat is being transferred down into the base. Damp bedding is far more effective in transferring heat than that which is dry.

It is also important to estimate **convection** heat losses due to inadequate bedding. As before, a good estimate depends on observing more than one pen or hutch. I suggest for this measure that eight or ten hutches be checked. If the bedding type you are using allows the formation of a depression or nest when a calf lies down, check the depth of these nests. The deeper the nest, the smaller amount of air circulation in the microenvironment of the resting calf. For below freezing weather, I recommend a nest depth of approximately four to six inches (10-15 cm) for effectively reducing heat loss.

If you are using bedding that does not compress to form a nest (for example, gravel, crushed stone, sand, and fine sawdust), there is no need for performing this test.

Management Tips

1. Add enough bedding often enough to keep bedding dry 24/7. Regardless of the type of bedding, heat losses are enough greater in cold weather to deplete seriously the energy stores of young calves. Calves in negative energy balance (losing more energy than they consume) are good candidates for illness or even death.
2. Where possible avoid the use of gravel, crushed stone, fines and sand as the sole bedding during cold weather. These are okay for a base but calves need bedding on top of them.
3. When economically feasible, consider a layer of a wood-based bedding as the base layer for cold weather housing. Three or four inches of dry sawdust and dry wood shavings form a good insulating base. While both straw and chopped paper can form a good base, in practice I seldom see anyone add an adequate volume to do so. Stop and think about how much depth of shaken out straw or chopped paper it takes to form a three-inch thick layer when compressed repeatedly by a one-hundred pound calf.
4. Just as you and I wear insulated clothes in sub-freezing weather, let us not forget we have the same option for our calves. This option is especially attractive if you are using a bedding type that does not permit "nesting." A variety of calf blankets is available at reasonable prices. For a reference article and Internet links, go to www.atticacows.com and type blanket in the search box.

If you know of someone that doesn't currently receive **Calving Ease** but would like to, tell them to **WRITE** to **Calving Ease**, 11047 River Road, Pavilion, NY 14525 or to **CALL** 585-591-2660 (Attica Vet Assoc. office) or **FAX** (585-591-2898) or **e-mail** sladley@frontiernet.net. A limited number of back issues are on the Internet at either www.atticacows.com or www.calfnotes.com and clicking on the link, Calving Ease.

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