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Cold Weather Calf Care

Audio Podcast Located at <http://fyi.uwex.edu/heifermgmt/calf-management/>.

Moderator: Liz Binversie, UW-Extension Brown County Agriculture Educator
Panelists: Sarah Mills-Lloyd, DVM, UW-Extension Oconto County Agriculture Educator
Matt Akins, PhD, UW-Extension/UW Madison Dairy Specialist
Vicky Lauer, DVM, Animart Professional Services Veterinarian

Audio Time: 14:06 minutes (total)

0:00 min	Intro and temperatures or conditions that cause cold stress in calves: How cold is too cold?
2:45 min	What can producers do to prevent calves from getting frost bite?
5:01 min	When should calf jackets or ear muffs be put on calves?
7:11 min	How to determine bedding score and what is appropriate to combat winter weather
9:39 min	Feeding recommendations for winter months

Transcript:

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Liz Binversie: Greetings from Wisconsin. I am Liz Binversie, UW-Extension Brown County Agriculture Educator. With me today is Matt Akins who is the UW-Extension Dairy Specialist, Sarah Mills-Lloyd, our UW-Extension Oconto County Agriculture Agent, and Dr. Vicky Lauer, Professional Services Veterinarian with ANIMART.

It's another cold day in Wisconsin and we're going to talk about what's probably on everyone's mind right now: how can I best manage calves during this cold winter season? We all know that calves are particularly vulnerable to cold stress, but how cold is too cold? Sarah, what temperature or weather conditions cause cold stress for young calves?

UW-Extension Dairy Team's Heifer Management Workgroup is a joint effort between UW-Extension & UW-Madison Dairy Science which aims to make Wisconsin's calf and heifer industry strong & competitive through university-based research.



Sarah Mills-Lloyd, DVM: Liz, that's a great question. Calves are much more sensitive to cold temperatures than cattle. They have a larger surface area, relative to their body weight. And so this can result in rapid loss of heat if not managed properly. It works against a calf's program goal to develop a strong and healthy calf. Every animal has what we call a "thermal neutral zone". This thermal neutral zone is a range of ambient or outside temperature that an animal does not need to spend extra energy to keep warm or stay cool. For newborn calves, the thermal neutral zone is between 50 to 78 degrees Fahrenheit, but changes to 32 to 73 degrees Fahrenheit for calves that are one month of age. So for newborns, as the temperature drops below 50 degrees Fahrenheit, the calf's energy is diverted from growth to metabolic heat to maintain their body temperature. Matt do you have any additional comments?

Matt Akins: Yeah Sarah, so the critical temperature when the calf uses extra energy for heat, they need to have about 1% increase in energy for every degree below critical temperature—that 50 degrees. So early fall, they can even have some need for extra energy, and this is also going to be dependent upon the facilities too—whether there's a draft or other potential cause of lower temperatures on the calf and also bedding and other impacts that might cause heat loss.

Liz Binversie: So when we do have days that it gets too cold for calves to keep themselves warm, those calves need a little extra help. Dr. Vicky, what can producers do to prevent calves from getting frost bite?

Vicky Lauer, DVM: Well, the most important thing to do to prevent frost bite is to get those calves dried as soon as possible after birth. Once they're dry, then of course, we're going to try and get them warm. So if you are there when the calf is born, try and use some nice, warm blankets, dry that calf off, scrub them really well, make sure you get the ends of the ears, and their feet. Some people like to use mom to help lick that calf, which is great. It's great stimulation for the calf. It will help warm it as well, but if it's out in the cold freestall barn, you might have to move that calf to a warmer area once mom's done licking it. As soon as you get that calf to a nice, warm area, get it dry, then that's when you can go ahead and apply the calf jacket. Matt, do you have any additional comments?

Matt Akins: I think the only thing I can really add is to make sure you have good, clean bedding so they can nest in there and try to reduce any draft or air currents on the calf so they're not losing more heat. Sarah do you have anything else to add to this?

Sarah Mills-Lloyd, DVM: So we need to remember that frostbite is localized. It's uncommon in healthy, well-fed, sheltered animals but animals less than 48 hours old, or with a pre-existing condition that are at the greatest risk for developing frostbite. The areas most at risk are the ears, tails, and distal parts of limbs just as Dr. Vicky talked about—especially the hooves. Hind limbs are more likely to be affected since cattle's normal posture is to draw their front legs under their chest, while the hind legs protrude from under the body. Remember, wind is often the biggest factor. The effect of wind is often referred to as the wind chill and that tells how living things feel the temperature. Wind chill is often many degrees colder than the actual temperature, so if they must lie on snow, ice, or frozen ground, they're going to lose a lot more body heat [compared to] if they can rest on dry bedding, preferably.

Liz Binversie: So how about calf jackets, ear muffs, or other outer wear? Sarah, when should they be applied?

Sarah Mills-Lloyd, DVM: Calf jackets are a great way to keep calves warm in the winter. Not only are calves born with a low percentage of body fat, but the fact that they are small with thin skin makes them the perfect candidate for losing body heat. It's important to realize wet calves lose heat to their environment, so warming calves soon after birth is important. Wet hair cannot insulate the calf, and as then the water evaporates, it takes that heat with it. So why not consider putting a blanket or jacket on a newborn calf? Research has actually shown that calves who wore calf jackets gained 0.22 pounds more per day compared to calves who did not wear calf jackets at all. Calf jackets do an excellent job of keeping calves warm. As a general rule, using a calf jacket should be if the ground is frozen and the calf

is less than 21 days of age. They should really get a calf jacket. In addition, there are some management considerations to using them. They should only be applied after the calf is dry, the straps should be adjusted weekly, and when that calf jacket is removed or adjusted perform a health evaluation for body condition score and respiration rate, as these are difficult to see when the calf jacket is on. In extreme cold conditions, some producers have even outfitted their calves with 2 calf jacket layers. And remember for biosecurity and sanitary reasons, calf jackets should be washed between calves and dried thoroughly. Be careful in fluctuating temperatures, as calves may be sweating underneath the calf jacket during the day. And this can cause them to develop chills in the low overnight temperatures. The calf jackets can be purchased or if somebody is handy in sewing, they can be made with some discounted, breathable material from a fabric store. Dr. Vicky do you have any further comments to add to this?

Vicky Lauer, DVM: Just one little addition. If you do have a calf that is scouring and let's say is happening to lay down right where it's scoured and that calf jacket gets wet, it's very important that you switch that calf jacket out because we don't want that calf sitting in a cold jacket because that will chill it further.

Liz Binversie: We talked about outer wear for calves, but bedding is also very important to manage in cold weather. Dr. Vicky, how do you determine bedding score and what is appropriate to combat winter weather?

Vicky Lauer, DVM: So according to the University, there are 3 different nesting scores. Nesting score 1 would be when a calf is lying down, you see basically all of the legs are visible from the knee all the way down to the foot. So a nesting score of 1 would be adequate during the summer, but for the winter there's nothing for that calf to nest in so the calf is going to get very chilled. So we consider a nesting score 1 to not be appropriate in the winter. Then we have a nesting score 2, and this would be when a calf is lying down part of its leg is visible—so say up to maybe the middle of the back leg when the calf is lying down. So that would be considered acceptable in the winter if the calf also has a calf jacket. But if the calf does not have a calf jacket, again, this is not going to be appropriate for the winter. The best nesting score would be a nesting score of 3. With a nesting score of 3, when the calf is lying down all of its leg is completely covered by bedding. So now that calf can nestle into the deep straw and really insulate itself with that good bedding. That is considered adequate and what is recommended for winter. Sarah do you have anything to add?

Sarah Mills-Lloyd, DVM: The ideal substrate for bedding should be able to soak up liquid, provide insulation, and allow for nesting. In the Midwest, wheat straw is the preferred bedding substrate for calves in the winter. However, chopped or ground wheat straw increases water absorbency which will keep calves drier, but in general, chopped straw will get packed down by the calf and reduce the ability for the calf to nestle in that straw for insulation. Soybean stubble hay and corn stover are two alternative bedding sources but should be used for older calves as they do not offer the same insulation or water absorbency of straw and often contain high microbial counts—so bacteria counts. In reality, the amount used is more important than specific material used. You need to use enough to keep the calves dry. If you question if they're dry, perform the knee test. Kneel on the bedded surface, rocking back and forth on one knee to see if this pressure feels comfortable to your knee and whether or not the bedding is wet.

Liz Binversie: So we've talked about what we can put on the calf like calf jackets and ear muffs, and what we can put around the calf for bedding, but let's talk about what we can in the calf. Matt, how should feeding schedules be altered during winter months?

Matt Akins: Good question Liz. So actually the amount of feed that a calf typically gets is about 4 quarts as a typical feeding regimen. But it's actually not enough to even cover the requirements of a calf at about 40 degrees Fahrenheit. So at that temperature, the calf would actually have to start using its body reserves to create heat. So we basically need to start increasing the amount of milk that we're feeding to these calves at that temperature—at about 32 to 40 degrees—especially for the newborns up until about 3 weeks of age. So there's a few different options that we can use to increase the amount of milk intake, so we can increase the number of feedings, we can increase the feeding

amount per feeding, or we can increase the solids content of the milk or milk replacer that we're feeding. So increasing our feedings we can go from 2 to 3 feedings is pretty typical so we can add an extra feeding in the middle of the day. So we'd go from a 4 quart daily feeding amount to 6 quarts or else we can just increase the feeding amount, so go from 2 quarts to 3 quarts to get to about 6 quarts per day or we can increase the solids. So typically the solids percent is between 10 to 12% in milk or milk replacer and we can increase that to 16% for milk replacer or we can use a balancer or supplement for whole milk to get the solids content higher. Really what we're trying to do is just trying to get more nutrients into the calf, especially energy so the calf can maintain its body temperature and also have extra nutrients for growth. The producer also needs to ensure the calf has warm water available, so after the milk feedings they should be giving warm water within about 30 minutes of feeding. And that'll help the calf to digest the milk and also encourages starter intake for that calf. The producer needs to make sure to adjust the calf over time to this increased feeding amounts, otherwise they can have some scouring issues. So they should try to adapt that calf over a few days rather than just a drastic change. Hopefully using these 3 different options, they can increase the amount of energy into the calf and maintain growth. Dr. Vicky, do you have anything to add to this?

Vicky Lauer, DVM: Going along with the warm water, if you are increasing your total solids by using a balancer or adding additional fat, it's very important that if you get the total solid percentage to above 16 or 16.5% you definitely have to offer free choice, warm water after milk just to make sure you don't dehydrate that calf. And then many people ask me if they should really pay attention to that feeding schedule—if they have to a third feeding and if it's every 8 hours and really it doesn't matter as long as you're adding in a third feeding. You could feed in the morning and then say around lunch time and then repeat it again in the afternoon. As long as you stay on a consistent schedule, it doesn't have to be every 8 hours.

Liz Binversie: We've heard some great recommendations to manage cold stress in calves. I'd like to thank our panelists: Matt Akins who is the UW-Extension Dairy Specialist, Sarah Mills-Lloyd our UW-Extension Oconto County Agriculture Agent, and Dr. Vicky Lauer, professional services veterinarian with ANIMART, for sharing their expertise with us today.

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