

Research Brief

#27 Outwintering dairy cattle: animal health issues

Can dairy cattle stay healthy and comfortable outside during a Wisconsin winter? The answer appears to be yes, with careful management, according to findings from the first year of a two-year CIAS outwintering study. Ed Brick, a civil and environmental engineer, studied 33 management intensive rotational grazing dairy farms across Wisconsin during the winter of 1996-97 to observe conditions and interview farmers about outwintering.

Of the 33 dairy farms that he visited, 16 outwinter milk cows. The farms range in size from under 20 to over 1,000 milk cows. Brick visited

most of the farms twice, during early and late winter 1996-1997. He made observations and interviewed farmers about animal condition and comfort and recorded outwintered stock numbers and types,

feed and water sources, bedding types, location of cattle, and windbreak type.

Participating farmers “feel they can demonstrate their cattle were healthier and happier outside than in,” said Brick. But many farmers and researchers believe outwintered cows are more likely to become thin, sick, suffer udder damage, or be more uncomfortable than cows in a barn.

The winter of 1996-97

In general, cold rain and wind are the main challenges faced by outwintered animals. Other winter difficulties include icy conditions and deep snow. “The farmers said this winter was milder than the last, with more frequent thaws,” according to Brick. Thaws can lead to icy conditions, a potential hazard for outwintered cows. On one of the farms in Brick’s study, a pregnant cow died from injuries sustained from a fall on the ice.

“One farmer felt strongly that cold rain causes the highest weather-induced stress for animals kept outside, and most others agreed with him,” said Brick. Cold rains were infrequent during the winter of 1996-97, but northern Wisconsin had deep snows. Snow tended not to be a problem for the cows, and some depended on it for water.

Deep snow did cause problems for farmers rotating animals and feed through paddocks because it limited the mobility of round bale feeders. To prepare for winter, some farmers placed feed (surrounded by a portable electric fence) throughout the paddocks during fall before the

inclement weather occurred. Animals traveling from a distant area to a central watering area had to confine their movement to trails in deep snows.

According to Brick, “Winds were not as severe during the winter of 1996-97 as they were the previous year. Spring winds were more of a factor than winter winds.” Over half of the farms in the study used natural windbreaks, such as stream bottoms, woods, and draws. Some farmers used constructed windbreaks, such as outside walls of buildings and post-and board-walls. One farmer used chopper wagons as a windbreak, while another used stacked round bales.

Each farm used different strategies for helping outwintered cows contend with snow, wind, rain, and ice. “Some of the farmers used buildings and bedded packs during the harshest weather, such as extreme cold or cold rains, and turned the cattle back outside after the weather improved,” states Brick. This solution was not an option on other farms which lacked such structures, and these farmers had to rely on whatever protection they could find on their farm. Each farmer developed an outwintering system based on the unique characteristics of their property.

Nutrition and the outwintered cow

All classes of stock—milk cows, dry cows, bred heifers, and calves—need to be prepared nutritionally for winter outdoors. While each farmer had different ideas on the ideal body condition for a cow heading into winter, all of the farmers in the study planned ahead by feeding their stock so they could reach the desired body condition before winter. Some farmers kept their cattle thin, while others liked to see their cattle more filled out before winter.

Farmers matched their management system to cow condition, so both approaches resulted in healthy, productive cows. Brick measured body condition of the farms’ milk cows in November. The average score was 2.5, with a low of 1.75 and a high of 3.5 on a scale from zero to five.

Because the outwintered animals used more energy keeping warm and exercising than cows in the barn, farmers provided 15 to 20 percent more feed to their cattle in the winter above what would be needed for animals kept in the barn. “Farmers want to take especially good care of their calves during winter so that they are not disadvantaged compared to the bigger cattle,” reports Brick. Farmers kept calves separate from other cattle until they reached 400 pounds. If body condition

FARMERS ARE FINDING THAT DAIRY CATTLE ARE A LOT TOUGHER AND MORE RESOURCEFUL THAN THEY HAVE BEEN GIVEN CREDIT FOR. —ED BRICK



Conditions for outwintering success

- Bring animals into winter in good condition.
- Provide outwintered animals with additional feed as compared to their housed counterparts.
- Provide windbreaks for cattle.
- Keep cattle clean and dry so they stay warm.

of any of the animals started to decline during the coldest weather, farmers responded by adding to rations, including feeding more grain. This approach effectively restored body condition to the desired level.

Outwintered cattle ate hay, haylage, baleage, Sudan grass, and stockpiled grass as roughage sources. Corn and corn silage were the most common energy sources, but some farms used cotton seed, pizza crust, and sweet corn waste.

Frostbite phobia

One commonly held belief is that outwintered milk cows are more likely to suffer from frostbitten teats, a condition that can hamper milk production and lead to mastitis. Milk cows can be susceptible to frostbite and chapping in winter, given the moisture remaining on the udder and teats after milking, but the farmers in this study reported that preventative measures can minimize frostbite.

They used a variety of frostbite prevention methods, including daubing milk off the teat end, wiping the teat with mineral oil and a teat dip or with a commercial product designed to protect against frostbite. Cows on one of the 33 farms had teat-end frostbite. This occurred where cattle were kept outside in an unsheltered location all the time except during milking.

According to Brick, "Drying off cows at the end of their lactation in winter also requires that special attention be paid to assure that the animals don't continue to drip milk during extremely cold weather, which could lead to frostbite problems."

Animal comfort

Brick observed two conditions affecting animal comfort: the length of the animals' hair coat and the extent to which the animal was coated with mud and manure. Long hair coats grow in response to day length; they shed or remain on the animal in response to external temperature.

All classes of stock kept outside developed a thick long hair coat in preparation for winter. Brick observed that while breeds did vary somewhat in length of hair coat, all appeared capable of growing a long enough coat to stay warm. Dairy cows kept inside part of the winter then turned outside at the end of their lactation quickly developed a long hair coat.

A long hair coat provides good insulation because of the warm air trapped in and around the hairs. Mud and manure coated on the animal prevent the hair coat from trapping the warm air, letting body heat out and cold outside air in.

Farmers reported that providing adequate clean space in which the animal can lie down is the key to keeping them clean. One farmer told Brick that "cattle fed high quality hay will eat it all up rather than bed on it," so he felt that farmers should provide access to more clean space in that situation than where cows are eating and scattering lower quality hay. The scattered hay provides clean bedding for the cattle. Hay and snow were the most common forms of bedding, but farmers also used straw, stalks, and sawdust.

Winter water sources

Water supply on the farms included: snow; springs or streams kept open by animals or the farmer; insulated, and sometimes heated, waterers in the barnyard or paddocks; barnyard tanks with ice broken manually; or conventional water cups in stanchion barns.

Brick found that animals accustomed to snow as their water source did fine, but this approach only works where there is a consistent, clean snow cover.

Outwintering philosophy

Outwintering fits in well with the management-intensive rotational grazing philosophy that animals will take care of themselves if allowed to do so. One of the participating farmers reports that since beginning grazing, his cull rates have been halved and his veterinary bills cut to a quarter of their previous level. He attributes this difference to grazing providing a lifestyle that is more in tune with how nature designed the cow. Participating farmers believe outwintering is something to which dairy cattle are well adapted.

A steering committee consisting of farmers and UW-Madison faculty and researchers felt that the first year outwintering strategies overview set the stage for a focused, quantitative approach in the second year. Brick will examine heifer condition and manure management at five of the farms included in the first year of the study. These farms represent a broad spectrum in terms of outwintering strategies and farm topography.

See *Research Brief* #28, "Outwintering dairy cattle: manure management issues," for more information on this study.

The Center for Integrated Agricultural Systems (CIAS) brings together university faculty, farmers, policy makers, and others to study relationships between farming practices, farm profitability, the environment, and rural vitality. Located at the University of Wisconsin-Madison, it fosters multidisciplinary inquiry and supports a range of research, curriculum development, and program development projects. For more information on the center or on the research in this brief, contact:

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