❖ SPECIAL REPORT ❖

Cold Weather Shelter For Grazing Dairy Cattle

Dan F. McFarland
Extension Ag Engineer
Penn State

A few years ago, I worked with some longtime dairy graziers to expand their stall barn. Grazing proved very successful for them. Their experience indicated that when the cows were on pasture, production increased, animal health improved, and injuries were greatly reduced compared to when the cows were confined.

In order to expand the milking herd they needed more room, so they decided to extend the building, install new stalls, and renovate the existing ones. Along with the stalls, the ventilation system, feeding area, and water system were also improved. Not too long into the cold weather season they noticed that milk production did not drop, animal health remained good, and injuries were minimal.

Pasture offers the advantages of space, fresh air, and a confident footing. These things should not be compromised in shelter. Our climate allows the opportunity for producers to take advantage of grazing for a significant portion of the calendar year. However, there are times when cows should be protected from weather extremes, and pastures protected from cows. Therefore, it is important to develop suitable shelter to protect the herd from weather extremes, maintain good animal health, and not compromise the benefits gained from grazing.

Producers are often disappointed when I explain that the space requirements for seasonal confinement are similar to those for total confinement. Space requirements are determined by the cows — not the calendar. Overcrowded space and/or uncomfortable stalls will soon lead to dirty conditions and increased injuries.

Loose housing or bedded packs have become a popular alternative for some grazing systems. Approximately 80 to 100 feet of bedded space per cow should be provided. This does not include the area adjacent to the feeding area. Producers find that it is difficult to keep their cows clean when less space is provided. Generous amounts of sawdust, shavings, straw, paper, and/or corn fodder are needed to ensure comfort and cleanliness.

Naturally ventilated buildings should be oriented to block prevailing winds during cold weather and provide adequate shade during hot weather. Side walls should be of adequate height (12 to 14 feet) and have the ability to be opened 75 to 100 percent during warm weather and closed to block cold winds. Gable roof systems should have a ridge opening of 2 to 3 inches per 10 feet of building width.

Bank barns converted to bedded pack shelters typically require fans to ensure an adequate air exchange in the animal area.

Two or more water stations are required per group. Water access should be convenient, but placed so that cows do not have access while standing on the bedded pack, since the area around waterers can be sloppy. Providing adequate feed space is also important. Producers using TMRs find that 18 inches of bunk space per cow is adequate as long as all cows have enough time to get to the feeding area. If all cows must eat at once, then 27 inches to 30 inches per cow is preferred.

When building a new structure, consider dimensions that will allow a bedded pack to be easily converted to freestalls (or vice-versa) in the future.

Common obstacles to good production and health in stall barns are the stall structure and ventilation. In most cases, stalls can be modified to provide adequate space for the cows to recline, rise, and rest comfortablely without striking the stall structure or interfering with adjacent cows. Comfort and footing of the stall bed can be improved by adding more bedding or adding a more resilient surface, like a rubber or water-filled mattress.

Improving the ventilation can be a challenge, but well worth the effort. The importance of fresh, dry air cannot be understated. Good air quality is one of the main benefits of grazing; why compromise it during weather extremes? Properly sized, installed and managed fans, inlets, and controls can provide an excellent air exchange to remove moisture, gases, dust, and other pollutants during all seasons. Tunnel ventilation is an excellent hot weather system, but is not suitable for cooler weather. The rapid air exchange and breeze at lower temperatures can increase stress on dairy cows. Reducing the capacity of a tunnel ventilation system during cooler weather usually results in non-uniform temperatures and air quality in the animal space. Your nose and eyes can be a good monitor of ventilation system performance. If the air quality is undesirable, take the necessary steps to improve it.

Seasonal confinement of dairy cows should not compromise animal health and production. Good shelter design and management will provide a dry, comfortable resting area, good ventilation, good access to feed and water, and a confident footing. Don't let the shelter available to grazing herds during cold (and hot) weather have a negative affect on production and profitability.

For more information on cow comfort and shelter design, contact Dan McFarland at (717) 840-7560.