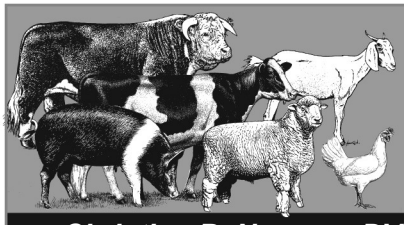

Ration Strategies for Hot Weather

Christine B. Navarre, DVM

One of the most difficult feeding challenges faced by dairy farmers is the drop in feed intake and milk production during the summer. During the peak of summer, consumption of dry matter typically falls by about 16% to around 42 pounds per day for a mature Holstein cow. During cooler months, a Holstein consumes 48 to 50 pounds per day. In addition, hot weather also increases the energy requirements of the cow because respiration and heart rate must be increased to cool the cow. When reductions in feed intake are coupled with increased nutrient requirements, loss of milk production and (or) body condition can occur.

To minimize these losses, rations must be formulated for hot weather. Hot-weather rations must deliver all the protein, energy and minerals needed by the cow in a smaller package than the standard ration. At the same time, these rations must still supply enough effective fiber to maintain rumen health.

Feeding Strategies

To accomplish this, use the highest quality forages and concentrates. Low-quality forages are usually low in both protein and energy, making it extremely difficult to balance nutrients while maintaining fiber at a level which prevents rumen acidosis and the related problems of depressed butterfat and laminitis. The use of byproduct feeds (beet pulp, cottonseed hulls, etc.) to supply additional ration fiber further complicates hot-weather rations. Although these feeds are high in chemical fiber, they contribute very little "chewable" fiber for maintaining rumen health. Also, high-fiber commodities provide less energy than grains but still produce considerable heat when fermented in the rumen.

Table 1 shows the nutrients required in a ration for a 1,200-pound cow producing 65 lbs of milk during hot weather.

Table 1. Required ration composition for a 1,200-lb cow producing 65 lbs of milk during hot weather

Nutrient	Requirement
Crude protein	18.1%
Net energy	.77 Mcal/lb
Fiber (ADF)	20%
Potassium	1.4%
Sodium	.45%
Magnesium	.3%

Assumes the cow can consume 42 lbs of dry matter

In addition to increasing ration protein and energy density, specific minerals must be increased during hot weather. Sodium and potassium are needed in larger amounts because of their loss in sweat. The cow's magnesium requirement must also be increased because magnesium absorption is decreased whenever potassium intake is increased. Care must be taken not to exceed chloride levels of 0.35% of the total diet dry matter when using salt and potassium chloride to raise the sodium and potassium levels in the diet. Higher amounts of chloride in the diet will cause a decrease in dry matter intake.

Sodium can be provided as salt or as sodium bicarbonate. Potassium can be added as potassium chloride, potassium carbonate or potassium bicarbonate. Potassium, sodium bicarbonate and potassium carbonate also have the added benefit of adding buffering capacity to the diet, as well as increasing dietary cation-anion balance. It should be noted that these ingredients can reduce the palatability and consumption of the grain mix if it is fed separately from the forage.

Besides these buffer and salt additives, the potassium requirement can also be met using common feedstuffs high in potassium. Ryegrass hay and haylage can increase the potassium content of the ration. Molasses is also high in potassium and has the added benefit of improving palatability of the ration, which may help maintain feed intake. Also, one of the newest feeding strategies to help combat heat stress is the addition of 6.0 to 12.0 grams of rumen protected niacin to the ration

Feeding management and timing are critical in hot weather. Cows are less interested in eating when their body temperature is elevated. Offering feed more frequently will lure cows to the feed bunk and help to maintain the freshness of wet feeds.

During the early morning hours, the air temperature and the temperature of cow's body reach their daily lows. This coincides with the morning milking time on many farms. If cows are cooled with fans and sprinklers during the milking process, cow temperatures will fall even further. To take full advantage of this, it is critical that fresh feed be present for all cows when they leave the milking parlor. This is the best opportunity during the day to increase the cow's feed intake.

Summary

During hot weather, it is critical to feed a high-quality ration that will maximize feed intake, which is critical in maintaining milk production and body condition. Feed should be fresh and available at times when cows are most comfortable and active.

Author

Joshua Ward, DVM
School of Plant, Environmental and Soil Sciences

Charles Hutchinson
School of Animal Sciences

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