Forage News

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

Adjusting Winter Feeding Strategies

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One of the strategies when feeding hay is to maximize utilization. Most hay producers in MS usually leave their hay standing in the field, giving them the opportunity for utilizing a system called "Positioning Bale Grazing." This approach works by fencing narrow strips where the bales had been previously placed with electric fences. It is recommended having approximately the same number of bales in each strip to maintain a constant rotation. Always calculate the daily forage consumption of the livestock class to determine the number of bales needed for a specific grazing period (days). The amount of feeding labor is reduced by just moving the electric fence back and exposing the next set of bales. This is a very similar process to the strip-grazing technique. This approach will allow livestock to utilize hay that has been exposed to the environment more quickly and reduce storage and quality loses. By using this system instead of feeding hay in a confined place, livestock can also provide better nutrient distribution (especially manure) back into the pastures. There could be a better nitrogen capture in the soil profile compared to feeding hay in a one place in then farm. Selecting the proper site(s) and bale density could ensure a more uniform distributions of the nutrients from manure and urine for livestock feeding on the hay.

Placing of the bales is important part of this using this feeding strategy to your advantage. When bales are transported to the site(s) for winter feeding, bales should be placed 40-50 ft apart in a grid system and bales should bale density should be decided on the number of animals to be fed, their daily dry matter intake and the length of the feeding period. For example, if 30 heads of cattle weighing 1200 lbs and requiring a 2% dry matter intake for 5 days, then 4 bales should be placed with or without bale feeders in the feeding area at a time. The rest of the bales of the grid then can protected with a temporary electric fence (Fig. 1). Because of the amount of nutrients that can be release back to the soil, using this feeding method is recommended for areas that might need reseeding or renovation with a perennial grass in the spring and allowing the utilization of the nutrients by the new sod.

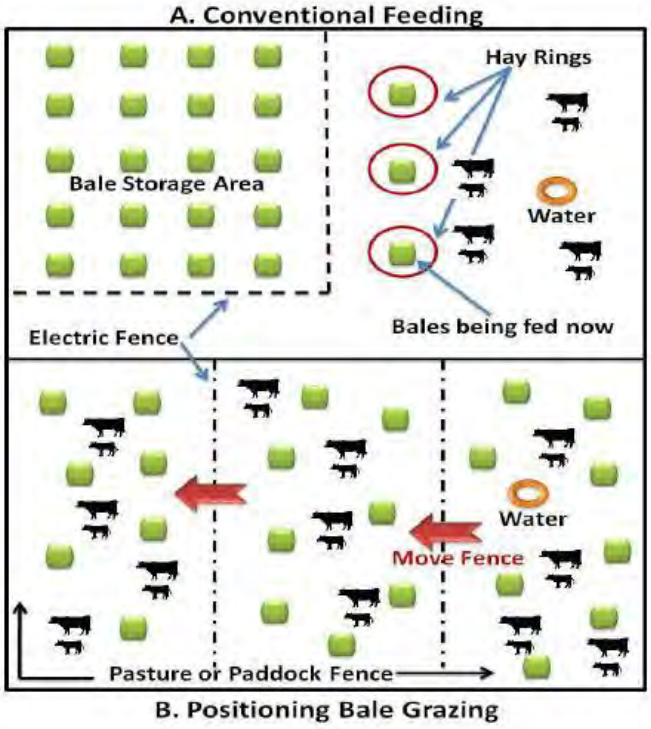

Figure 1. Comparison of (A) "Conventional Feeding" and (B) "Positioning Bale Feeding".

Colder weather slows growth of winter pastures forcing livestock producers to increase supplemental feeding. Experienced livestock producers are well aware of the toll low temperatures can have on animal health and performance. As the temperatures begin to fall in the early winter months, livestock require additional energy to stay warm (**Table 1**). This additional energy requirement usually calls for changes or alterations in feeding practices. Under cold conditions, livestock require additional energy to maintain their internal body temperatures and keep warm. The exact amount of energy depends on the severity and extent of the cold period. It is important to know the quality of the hay being fed as well as the livestock body score condition (BCS).

When environmental temperatures drop below the critical livestock temperature (**Table 2**), significant amounts of energy are used by livestock to maintain their internal body heat. It has been estimated that for each 1 °F decrease below the critical temperature, livestock might require a 1% increase in the livestock energy requirement [total digestible energy (TDN)] to maintain a consistent body temperature. It is also estimated that for every ten degrees below the critical temperature, the digestibility of the ration decreases by 1 percent. This means that when the temperature drops below the critical temperature, the cattle need to be fed better (**Table 3**). It may be that more or higher quality hay needs to be fed. Moreover, drier hay (compared to pasture) has a lower rate of passage, thereby staying in the rumen longer, which allows for more prolonged digestion and heat generation from that process. Provide minerals at all times for the cattle based on requirements for your area. Forages may provide the energy and protein that a cow needs, but they are almost always deficient in one or more minerals. Water should be available at all times, easily accessible, and kept free of ice cover. Restricted water consumption will decrease the intake and digestibility of feed. Provide windbreaks and shelters to reduce wind speed.

Table 1. Changes in daily dry matter intake (DDMI) when affected by temperature.

Temperature (°F)	Intake (% Change)
<5	1.16
5 to 22	1.07
22 to 41	1.05
41 to 59	1.03
59 to 77	1.02
77 to 95	0.90
>95	0.65

Source: Boyles and McCutcheon. 2009. Winter Cold Stress on Cattle. The Ohio State University.

Table 2. Estimated lower critical temperatures for livestock.

Livestock Class	Coat Description	Lower Critical Temperature[1,2]
Beef Cattle	Wet or summer coat	60°F
	Dry fall coat	45°F
	Dry winter coat	32°F
	Dry heavy winter coat	19°F
Horses	Dry heavy winter coat	15°F
	Dry winter coat	45°F

[1] The lower critical temperature is defined as the effective ambient temperature at which energy intake must increase in order to minimize reduction in weight gain or to prevent weight loss in mature livestock.
[2]Critical temperatures depending largely on hair coat length and hair coat condition (dry, wet, muddy, etc.).
Sources: Anonymous. 2009. Cold Weather Feeding Practices for Horses. eXtension; Boyles and McCutcheon. 2009. Winter Cold Stress on Cattle. The Ohio State University.

During prolonged periods of cold temperature (several days to weeks) below the critical temperature, both the supplemental feed and the forage portion of the diet should increase in equal portions. Feeding additional amounts of supplemental feed or increasing the energy density of the supplemental feed is especially important if the livestock has poor body condition. For beef cattle accustomed to a high roughage diet, the amount of energy change should be made gradually to avoid rapid changes in the rumen microbial population and to avoid severe digestive disorders such as acidosis. A second commonly used approach is to reserve the highest quality hay for feeding during cold weather periods.

Table 3. Increase in energy and feed supply needs for beef cattle when affected by changes in temperature.

		Additional Supplementation Needed	
Temperature (°F)	TDN[1] (%)	Hay ---------- (lbs/cow/day) ----------	Grain
50	0	0	0
+30	0	0	0
10	20	3.5 to 4.0	2.0 to 2.5
-10	40	7.0 to 8.0	4.0 to 6.0

[1]TDN = Total Digestible Nutrients.
Source: Boyles and McCutcheon. 2009. Winter Cold Stress on Cattle. The Ohio State University.

Low temperatures in the winter could have a great impact in livestock production systems (both grazing patterns and hay/feed supplementation). Producers implementing management strategies to cope with environmental condition could be very successful at reducing their livestock wintering costs. It will be helpful to monitor weather forecasts to determine cold periods in advance and be able to increase the dry matter content of the diet and to adjust the digestible energy accordingly.

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http://forages.pss.msstate.edu/events.html
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