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FEEDING CATTLE DURING EXTREME COLD WEATHER

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December, 2003, was relatively mild, but the January thermometer has shown temperatures well below freezing, and winds have created “wind chills” which pushed the effective temperature to approximately single digits. More cold weather is probably on the way, which will create stress for cattle.

Many cattle producers are not aware of the added nutritional needs of cattle that cold weather brings. Or, if they recognize that their cattle are stressed, they aren't sure how, or if, they should compensate for the stress.

Cold stress occurs when an animal is exposed to weather conditions that put them below their lower critical temperature. For cattle with a normal winter coat that's dry, the lower critical temperature is 32 degrees F. If the coat is extra heavy, it drops to 18 degrees F. If the normal coat is wet, however, the lower critical temperature may become 60 degrees F.

When conditions result in an effective temperature below the animal's lower critical temperature, the animal must increase the rate of heat production to maintain a constant body temperature. In order to produce more heat, the animal must receive an increase in ENERGY from the ration or “draw” on body stores. Protein, vitamin, and mineral requirements are not altered.

To compensate for the energy deficit created by the cold stress, the following rule of thumb can be followed: Increase the amount of feed 1% for each degree of cold stress. Use the temperature as result of wind chill.

Believing that "keeping hay in front of them will take care of the problem", may not be true all the time. If the quality of hay is good (good being hay harvested before it is mature and baled before it is rained on) cattle will probably make it through cold weather in good condition. But if hay quality is not good, the cattle may be in trouble, both short term and long term.

That 1200 pound cow, in good body condition, needs a ration that has a minimum total digestible nutrient (TDN) value of 50% and crude protein (CP) value of 7.8% under neutral environmental conditions. The TDN value is quite often used to indicate the energy level of a feed and concentrates have higher values than forages.

Mature orchardgrass hay runs about 54% TDN and 8.4% CP, so that will work. Mature Kentucky 31 fescue won't work, however, because of a TDN value of 44%. The cow's energy balance will be negative.

In comparison, shelled corn has a TDN of 90% and soybean hulls are 80%. If hay falls below the 50% TDN minimum, producers should consider supplementing with a few pounds of an energy dense feed.

If protein levels are too low, rumen microbes cannot efficiently digest fiber. In that case, adding supplemental protein can increase hay consumption and digestion. Common feedstuffs that are high in protein include soybean meal (49% CP), cottonseed meal (41% CP) and corn gluten feed (19% CP). Many cattle producers lack facilities for feeding these products and have found that high protein blocks are more convenient. This convenience may be somewhat more expensive per pound of nutrient delivered, but may be well worth it if cows are able to maintain condition.

In some cases, both energy and protein are low. In such cases, the supplement

should contain a balance of both. Again, the producer faces the decision of preparing their own mixture or buying a commercial blend.

What are the long term consequences for not adjusting to these negative energy balances? Research from Kansas State University indicates that cows fed adjusted rations had an 89 pound weight change advantage during the last 135 days of gestation over cows where rations were not adjusted. In addition, those same cows produced an average of 2.8 more pounds of milk per day, had 17% advantage in the number cycling in 60 days from average calving date, and had a 10 day advantage in the average conception date the following breeding season.

So what's the bottom line of all this? Following are some additional recommendations and summary comments.

1. Cold stress occurs when climatic conditions (temperature, wind, moisture) create an effective temperature that is below an animal's lower critical temperature.
2. Beef cows exposed to cold stress require more energy for maintenance. Increase energy amounts 1% for each degree of cold stress.
3. Emphasize to producers the importance of forage testing. A forage test will help producers to know hay’s true nutritional quality.
4. If hay doesn't provide the needed level of energy, supplement the ration with an energy dense feed stuff like shelled corn or soybean hulls. If protein is low, supplement with a high-protein supplement.
5. Provide some type of shelter such as woods, hills, or buildings to protect cattle from winds.

6. Attempt to reduce mud in and around feeding areas. Cold mud on cattle really “draws” on their energy stores and body temperature. This is especially critical for young calves.
7. Keep a mineral supplement with significant levels of magnesium to help to reduce the incidence of grass tetany. Stress due to weather conditions can trigger the tetany condition.
8. Learn to body condition score cows and monitor body condition. There is no better method for assessing the success of your feeding / management program than routine body condition scoring.