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Cold Temperatures, Wind and Rain Increase Hay Intake for Horses

Cold temperatures combined with wet and windy conditions increase the amount of feed necessary to maintain proper body condition in horses, especially those that are kept outside. Extra calories necessary to meet the increased energy requirements of horses should first be provided by good quality hay. Feeding large amounts of cereal grains can lead to digestive disorders and upset. Feeding alfalfa or alfalfa-grass mix hay will provide more calories than grass hay alone and is safer than feeding large quantities of grain. The average horse requires about 20 lb of forage per day and winter weather can increase the amount of hay needed by 30 to 50%.

The lower critical temperature (LCT) is the lowest temperature at which horses require no additional feed to maintain core body temperature. Horses with moderate and heavy winter hair coats have lower LCT and are well suited for cold temperatures (Figure 1). Heavy winter hair coats act like insulation by trapping air. If the coat is wet from rain, the ability to insulate is reduced, thus increasing the LCT. Horses that have heavy winter hair coats should not be blanketed in most cases because it mats down the hair and reduces the horse's natural ability to insulate against cold weather.

Figure 1. The lower critical temperature depends on the type of hair coat.

Hair Coat	Lower Critical Temperature (°F)
Short or wet	60
Moderate	50
Heavy	30

The best way to create heat for the horse is by increasing the amount of hay fed. As temperatures fall below the LCT hay intake should be increased (figure 2).

Figure 2. Example of the effect of temperature on the increase in hay intake for a 1,000 lb horse (based on average quality grass hay).

Difference in Temperature Below LCT (°F)	Increase in Hay Intake (lb/day)
0	0
10	2
20	4
30	6
40	8

Wind and rain significantly reduce the insulating ability of horses. The amount of hay fed to horses should be increased to meet the energy requirements necessary for maintaining body temperature (Figure 3).

Figure 3. Example of the effect of wind and rain on the increase in hay intake for a 1,000 lb horse (based on average quality grass hay).

Temperature (°F)	Wind/Rain	Feed Intake Increase (lb/day)
32	10 to 15 mph wind	4 to 8
32	Rain only	6
32	10 to 15 mph wind and Rain	10 to 14

Other considerations:

Large bodied horses are more tolerant because they have a lower relative body surface area per unit of weight

Newborn foals have very poor cold tolerance

Horses up to one year of age are less cold tolerant than adult horses

Mares in late pregnancy/lactation have reduced cold tolerance