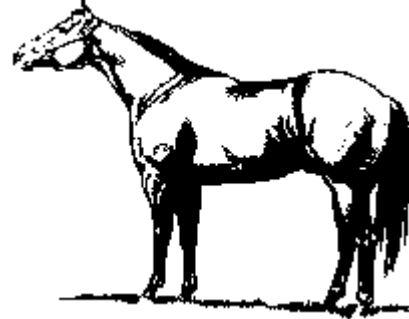


Animal Science Horse Information Series

Phone: 865-974-7294
Fax: 865-974-7297
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STRETCHING YOUR HORSE HAY SUPPLY

**Dr. Frederick Harper
Extension Horse Specialist
Animal Science Department
University of Tennessee**

Winter is horse hay feeding time in Tennessee. Horses are natural forage (pasture and hay) consumers. Hay is normally fed when pasture is not available or is limited as it is normally in winter. Hay provides the horse with varying amounts of energy, protein, minerals, vitamins and fiber depending on its quality. Fiber is important for normal functioning of the gastrointestinal tract.

This winter's hay is in short supply in some areas of the state, and the hay that is available may be of lower than desired quality. The current situation can be a serious problem for horse owners, especially those who do not have enough space to buy hay during the hay growing season and store it for winter.

There are several management practices which horse owners can take to address this serious issue.

The first step is to evaluation your horse(s). The second step is to evaluate your winter hay supply or possible hay supply. The third step is to match the horse(s) with the most appropriate quality of hay available. The fourth step is to determine the amount of hay to feed. If you do not have adequate hay or its quality is undesirable to feed to your horses, a fifth step is to use alternative feed sources and management practices.

The owner must determine the nutritional needs of each horse based on the physiological state of that horse (Table I). All horses must be fed a properly balanced ration. Generally speaking, horses are in either a maintenance (idle), growing, reproducing or performance state. The good news with the current predicament is that many horses, approximately 75%, are owned for personal or pleasure use. Of these horses, several will be idle or basically do nothing during the winter but eat. Idle horses may be ridden sporadically a few times in the winter. Another group of horses have a low level of performance in winter; they will be ridden occasionally for pleasure such as trail rides. Other horses will be ridden more often but not at a demanding level of performance.

Weanlings, yearlings and pregnant broodmares are in a special need category.

Performance horses nutritionally are classified at light, moderate or intense levels of activity. Most horses performing at moderate or intense levels in winter are likely at training facilities that normally buy their hay in large quantities by the trailer loads or have a local dependable hay supplier.

Once the status of a horse is determined, it is essential to determine its weight. Feeding guidelines are so many pounds of feed per 100 pounds of body weight (Table I). Horses can be weighed on commercial scales by weighing the horse in a trailer then weighing

the empty trailer. Another option is a weight tape that is usually available at feed or tack stores. While not as accurate as actual weight, weight tapes are better than a visual estimate of body weight. If a weight tape is unavailable, you can measure the horse's heart girth and length in inches and use a formula to estimate weight. The formula, heart girth x heart girth x length (in inches) divided by 330, gives an estimate of weight similar to that determined with a weight tape.

Once the horse's weight is known, it needs to be body conditioned score. Body condition score (BCS) is a visual, hands-on evaluation from 1-9 with 9 being obese down to 1 which is emaciated. BCS is an estimate of body fat. A 5 BCS is considered adequate for most mature horses at this time of year. When a horse has a BCS of 5, its ribs cannot be seen but can be felt with slight pressure.

Once this information is obtained on your horses, the hay supply needs to be evaluated (Table II). Hays can be rated into five general categories: excellent, very good, good, fair and poor. Excellent hay has a bright green color, lots of fine leaves, a high leaf-to-stem ratio and is soft to the touch. Good or average hay is somewhat green with no mold or musty odor. Its leaves are large but in good supply, and its stems are moderate in size but not coarse. It is moderately soft to the touch, being neither rough nor coarse. There are no seed heads or only a moderate number of blooms. Hay that is greener, finer, leafier and softer would be classified as very good hay. And, hay that has less green color, actually only a slight amount of green, more stems and fewer but larger leaves, would only be rated as fair hay. Poor hay is stemmy, brown, contains weeds, may be overly dusty and/or moldy.

Under no circumstances should poor hay ever be fed to horses, even under the

current hay situation. It is highly unlikely that much excellent hay is available locally. Currently in some areas, any quality of hay is limited and high priced. Even very good hay, or above average hay, may be limited and more expensive than normal.

Hopefully, average-quality hay will be available but will probably cost more than usual. More fair-quality hay will be fed to horses this winter than normal. Hay of fair-quality is not moldy but may have more dust than is desirable.

Moldy hay should never be fed to horses. Dusty hay can be wetted slightly before being fed or fed outside.

How can one reconcile the needs of horses and the quality of hay available?

TABLE I. Energy Needs of Various Classes of Horses per 100 Lbs. Body Weight¹

Classification	Weight, lbs.	Energy, Mcal/100 lb. BW	Hay, lb. /100 lb. BW daily
Weanling	475	3.64	0.5-1.0
Performance, Intense	1100	2.98	.75-1.0
Yearling	715	2.97	1.0-1.5
Lactation, 1-3 months	1100	2.57	1.0-2.0
Performance, Moderate	1100	2.23	1.0-2.0
2 Year-Old	990	1.90	1.0-1.5
Performance, Light	1100	1.86	1.0-2.0
Pregnant, 11 months	1100	1.79	1.0-1.5
Pregnant, 10 months	1100	1.68	1.0-1.5
Pregnant, 9 months	1100	1.65	1.0-1.5
Idle	1100	1.49	1.5-2.0

It is obvious from Table I that young, growing horses; weanlings, yearlings and two-

¹)National Research Council. 1989. Nutrient Requirements of Horses. National

year-olds; have higher energy needs than mature idle or light performance horses. The magnitude or level of performance determines the energy needs of performance horses.

Moderate and intense performance in winter constitutes a limited number of horses. Therefore, the focus will be on idle horses; light performance horses; young, growing horse and pregnant broodmares. If mares foal before adequate spring pasture, early lactation (first three months) demands for energy places nursing mares in a high need's category.

Above average (very good) hay should be fed to young, growing horses and pregnant mares in their last trimester. It is advisable to reserve some very good hay for the last two to three months of pregnancy and for mares that will lactate before spring pasture is available if hay is really limited. In a tight hay situation, average quality hay can be fed to pregnant mares in their 9 months but above average hay should be fed in their 10-11 months of pregnancy. Some mares in late pregnancy have a reduced capacity in late pregnancy and cannot eat enough feed for the growing fetus and their own body demands. They actually use stored body fat as an energy source normally after about 270-days of pregnancy. Feeding a lower-quality hay, such as fair-quality hay, would be counter productive especially in the last 45-60 days of pregnancy.

Idle horses which do not have a high energy need and even light performance horses can be fed fair-quality hay if average-quality hay is not available.

The next consideration is how much hay to feed. Normally about 2 pounds per 100 pounds of body weight of grass hay is fed. About 1.75 pounds of legume hay per 100 pounds of body weigh provides an equivalent amount of energy and usually more protein.

From these guidelines, the amount of hay needed can be estimated. A 1,200-pound horse needs about 24 pounds of grass hay daily. Horses will also waste as much as 18% hay. If one is able to reduce wastage to only 10%, the average 1,200-pound horse needs to be fed about 26 pounds of hay per day. With an estimated five months of hay feeding, you will need 3,900 pounds of hay for a 1,200-pound horse for the remaining hay feeding period.

TABLE II. A Practical Method to Evaluate Hay Quality

Hay Quality	Green Color	Leaves	Stems	Feel (To Touch)
Excellent	Bright Green	Very Leafy, Fine Leaves	Small, Fine Stems	Very Soft
Very Good	Mostly Green	Good Amount Leaves	A Few Slightly Larger Stems	Soft
Good (Average)	Moderately Green	Moderately Leafy	More, Moderate Size Stems	Moderately Soft
Fair	Slight Tint of Green	Fair Amount of Slightly Coarse Leaves	Somewhat Stemmy	Firm
Poor	Brown	Few Leaves, Coarse Leaves	Very Coarse Stems	Coarse

Knowing the energy needs of various horses (Table I), their weight, BCS, the quality and amount of available hay that is needed, you can develop a management program to stretch your hay supply.

If an adequate amount of the quality of hay(s) needed is available, the major decision is to allocate the various hays to the right horses using the guidelines noted above. This may require that some hay be set aside for pregnant mares when they reach the last 45-60 days of pregnancy and when they begin lactating if that occurs before spring pasture is available.

If there is not an adequate amount of hay on hand or available later in the winter,

you must begin to conserve hay now. The first step to take is to reduce the amount of hay fed. Hay intake can be lowered to one pound per 100 pounds of body weight for mature horses. This is the lowest safe level of hay that should be fed to mature horses.

As noted, 3,900 pounds of hay are needed for a 1,200-pound idle horse for five months. Reducing hay intake from 24 to 12 pounds daily results in only 1,800 pounds of hay required. This management decision results in more than 2,100 pounds of hay being available for other horses.

When the amount of hay fed is reduced, the nutrients' loss must be met by other feeds, which is normally extra grain. A general rule is one pound of grain will replace 2-3 pounds of hay. If the hay is of average or better quality, one pound of grain will replace two pounds of hay. One pound of grain will replace three pounds of fair or below average hay.

If the mature idle horse (1,200-pounds) is only fed 12 pounds of hay daily, an additional 4 pounds of grain needs to be fed. Normally, idle horses need only one-two pounds of grain a day. Rather than 26 pounds of hay (24 lbs. hay needed + 2 lbs. that will be wasted) and 2 pounds of grain, the idle horse is now fed 12 pounds of hay and 6 pounds of grain. It is not advisable to feed more than 6 pounds of grain at one time. There may be situations where feeding extra grain in place of hay may be cheaper.

If the amount of hay is reduced to one pound per 100 pounds of body weight for pregnant mares, at least only very good-quality hay should be fed. In late pregnancy, feeding more grain is an advantage since the pregnant mare has to eat less feed to get more energy and protein.

As noted from Table I, the hay intake of young, growing horses is less than that of

mature horses. Reducing their hay intake does not save much hay, and it is not recommended to reduce the level of hay fed to young, growing horses.

In some situations, round bales of hay are fed to horses. It is essential if you feed round hay bales that they are stored inside, out of the weather, and off the ground on wood pallets or old tires. There is more risk of colic type problems when horses eat round bales of hay compared to hay from square bales. Botulism has recently occurred when horses were fed round hay bales that had been stored outside on the ground. Rotting hay (vegetable matter) was observed inside these round hay bales.

Alternative Feeds. Matching nutrient needs with hay quality and reducing the amount of hay fed as noted, may not solve your hay problems. This problem is multiplied if the amount of hay is limited and the hay quality is low.

Oats may be a viable alternative feed when the amount of hay fed must be reduced. Oats are a high fiber feed that may be advantageous to help offset the fibrous nature of hay. Oats are a higher energy source than hay and have more protein. With mature horses, whole oats can be fed. There is no advantage of feeding crimped or rolled oats to mature horses. The exception would be older horses or any horse that has a tooth problem. As noted later, it is important that mature horses have any teeth problems addressed each fall, especially with the current hay situation.

It is a common practice with some horse owners to feed corn in winter. Corn is not as a high fiber grain. It is a cooler feed and is better fed to horses in the summer than in the winter. Whole, shelled or coarsely cracked should be limited to about 3 pounds per day. Corn on the cob can cause choke.

There are some other alternate feeding management strategies that you can use. Alfalfa cubes are readily eaten by horses and have been observed to be preferred to long, stemmed alfalfa hay. Weanling horses gained satisfactorily when fed alfalfa cubes. Alfalfa cubes can replace hay pound-per-pound. Because of the need the horse has for the physical effect of long stem hay, it is always recommended to feed at least 3-4 pounds of long stem hay along with any of these other fiber source feeds.

There are all-in-one feeds which contain extra forage or fiber sources. Some of these feeds are pelleted or cubed. The addition of higher fiber feeds, such as beet pulp or soybean hulls which have a good source of highly fermentable fiber, can be an advantage. Beet pulp and soybean hulls are being added to performance horse feeds. It has been suggested that beet pulp can replace about 25% of the hay fed on a pound-per-pound base. Large amounts of beet pulp should be mixed with the grain fed or at least fed wet. Soybean hulls can make up to 20% of the grain mix. Cottonseed hulls have been fed at 30-35% of the ration. Rice hulls and wheat straw are not recommended for horses because of their high risk of colic.

Another energy source is fat added to a horse's ration. It has been observed that when horses consume fat added feeds, they eat less. Fat can be added to the grain mix, making up 9-10% of the grain mix. It takes about a month for horses to adapt to a high fat diet.

Cool-season winter pasture if of adequate quantity provides some energy even if it is brown. Do not graze these forages down to 2-3 inches. Overgrazing will result in another dirt pen rather than a pasture in the spring.

Body condition score can be used on a monthly basis to evaluate the energy intake of

the feeding program. If the BCS increases over time, the horse is being fed more energy than it needs to maintain its body condition. In the current situation, you can reduce the amount the horse is fed. With a short hay supply, it may be advisable to reduce hay intakes as noted previously before lowering the amount of grain fed. As noted, 5 is a moderate body condition and very acceptable. Pregnant mares are preferred to be at least 5.5 to 6.5.

If a horse loses BCS, it is not getting adequate energy to maintain its body condition. For the idle horse and the pleasure horse ridden occasionally during the winter, it is not going to be detrimental if their horses' body condition score declines even to a 4, especially if it is 4.5 or higher. If the BCS gets near a 4.0, the energy intake of the ration needs to be increased by either feeding more grain, a better quality hay or a combination of both. With good spring pasture and a small amount of supplemental grain, a horse with a BCS of 4 should go up to a 5 within 30-60 days.

All horses should have a supply of clean, fresh water at all times, except if the horse is hot from strenuous performance. A trace mineralized salt is also recommended. Loose salt is better than a salt block; however, a salt block is better than no salt.

This discussion assumes that these horses are healthy, on a scheduled deworming program, and their teeth do not require floating.

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