



Vol. 25, No. 4

October, November, December 2006

## Feeding Mares

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Mare owners should be concerned about the nutritional needs of pregnant mares and how to feed them properly because nutrition will impact their reproductive ability and the growth of their foals. As with all classes of horses, good-quality forage should be the basis of the feeding program. This includes pasture, which is extremely important to the mare and her foal, and hay in winter or at other times when pasture may be unavailable or limited.

A good nutritional program for the mare begins before she is bred. The future broodmare should be evaluated in the fall to determine the appropriate feeding regime. Feeding the broodmare can be broken down into several important time periods: fall evaluation and preconditioning; pre-breeding; breeding; early pregnancy; the first, second and third trimesters; and early and late lactation. Each period has special nutritional needs that can impact the ability of the mare to become and remain pregnant, have a healthy foal and properly nurse it.

**Fall Evaluation and Preconditioning.** Fall is the best time to evaluate mares and develop a preconditioning program. This allows owners time to adjust the mare's body condition before breeding in the spring. It is not advisable for mares to be too thin, with a Body Condition Score (BCS) of less than a 5, or too fat (over a BCS of 7.5) at the start of the breeding season. Thin mares can be fed to increase their BCS, and too-fat mares can be placed on a diet to reduce their BCS. Too little or too much energy is the reason that mares become too thin or fat, respectively. Some owners think protein is the nutrient that causes an increase of body condition, but it is energy.

All common horse feeds contain energy; however, grains provide more energy than forages. Feeding more grain than needed results in mares getting fatter. Fall pastures in the South are normally a good energy source.

Owners need to determine the desirable BCS for each broodmare and feed her to within a ½ BCS score of this about 45 to 60 days before breeding. If your mare should be a 6 at breeding, have her at a BCS of 5.5 at the start of the pre-breeding period. Management of energy intake, including pasture and grain, allows one to reach this goal.

**Pre-Breeding.** This is the 30 to 45 day period before breeding. Data have shown that mares increasing in body weight come in estrus (heat) earlier. Mares should be fed to gain a slight amount of body condition so they will be at the desired BCS for breeding. For this reason, thin mares must be preconditioned before this period. Normally, a small amount of grain with good quality grass hay will accomplish this goal. The amount of grain to feed depends on the mare's condition, the quality and quantity of hay being fed, and the results wanted. When forage is of good or better quality, a small amount of grain (2 – 4 pounds daily) may be adequate. If forage is of lower-quality or limited, provide 5 – 6 pounds of a 10 – 12 percent protein feed. Never feed more than 6 pounds of grain at one time.

Fresh, clean water and trace mineralized salt should be available at all times.

**Breeding.** Length of daylight is a key factor influencing when mares begin cycling in the spring; however, level of nutrition also effects when mares begin estrus. A low BCS (3 – 3.5) can delay estrus by two weeks and ovulation by three weeks. It is not normally necessary to increase the amount of feed above that used in the pre-breeding period, especially as spring pasture becomes available.

If mares increase in BCS, it is advisable to decrease or eliminate the amount of grain being fed. Good spring pasture may keep mares in the desired condition. It is

extremely important not to allow mares to become too fat during the breeding season.

**Early Pregnancy.** The National Research Council (1989) suggests a maintenance ration during the first trimester of pregnancy. However, data from South Africa indicates that protein quality may be more important in early pregnancy than previously thought. Mares receiving twice the amount of required lysine (the first limiting amino acid in young, growing horses) were more likely to become and remain pregnant, gained more weight, had heavier foals, ovulated sooner, and had considerably fewer Early Embryonic Deaths (EEDs). In the Southern United States, fescue is a major pasture forage. EEDs have been noted in early pregnancy when mares grazed endophyte-infected fescue pastures. With EED, mares diagnosed pregnant at 14 – 18 days are not pregnant at a 40-day test.

Feed a high-quality protein, such as soybean meal, that has adequate lysine. Feeding extra protein is not the answer.

This period may be more critical for thin mares below a BCS of 5, especially if they continue to lose BCS in early lactation. Data has shown that thin mares are likely to require more breedings per conception and have a lower pregnancy rate. With poor or limited pasture, feed ½ pound per 100 pounds of body weight of a 10 percent protein feed.

**First Trimester.** Once mares are diagnosed pregnant at 40-days post-breeding, they can be fed a maintenance diet. Good-quality pasture, water and trace-mineralized salt may be adequate as long as mares maintain their BCS. In this period, they should not gain too much body fat, BCS.

**Second Trimester.** The second trimester is more important in mares than previously thought. Pregnant mares gain about 70 percent of the weight of pregnancy between 110 – 220 days of pregnancy.

If a mare should have a BCS of 6.5 at foaling, it is important to have her at this level or slightly higher at the start of her last trimester or 220 days of gestation. It is not likely that she will gain in BCS during the last trimester and will possibly lose body condition.

Pregnant mares have been shown to gain twice as much weight as non-pregnant mares grazing the same pasture. Good-quality pasture may be adequate for mares to obtain the desired BCS. Mares will likely lose ½ BCS in late pregnancy and additional BCS in early lactation, especially if they are heavy milkers.

If the second trimester occurs in late summer on cool season pasture forages like tall fescue, which is less nutritious, hay and/or grain may be required.

**Last Trimester.** The fetus makes about 75 percent of its growth at a rate of about one pound per day during the last trimester. Physiologically, the rapidly growing fetus lies on top of the mare's digestive tract. The fetus also has priority for nutrients. Some mares cannot eat enough to meet the needs of their fetus and themselves. At about 270 days of pregnancy, or nine months, the mare starts losing BCS. Stored body fat is used as an energy source for the rapidly growing fetus and the maintenance of the pregnant

mare. Fat-added feeds are beneficial at this time as they provide more energy in a smaller amount of feed.

While fat can be stored in the second trimester for use at this time, the body does not store much protein. Therefore, it is extremely important to feed adequate amounts of high-quality protein as well as minerals and vitamins.

The third trimester is often in winter so a good-quality hay is needed along with a balanced grain mix. Above-average grass hay is adequate, but one might want to feed some alfalfa hay because of its higher nutritional value. Normally, a 1,200-pound mare would be fed about 24 pounds of grass hay daily. One could feed 15 pounds of grass hay and 9 pounds of alfalfa. If just grass hay is fed, also provide a 12 – 14 percent protein feed. If some alfalfa is fed, a 10 – 12 percent protein feed should be adequate. A mineral mix of ⅓ – ½ organic or chelated minerals should be available.

It is preferred that mares have a BCS of 5.5 or higher at foaling. Thin mares, below a BCS 5 but above a BCS 4, likely will foal normally and have foals of adequate size and development. The concern is that thin mares may not be able to maintain a pregnancy if rebred while lactating. On the other hand, there are no known reasons for mares to be too fat (BCS of 8 or 9). In fact, over-fat mares have a negative effect on their foals.

**Early Lactation.** Early lactation refers to the first 90 days of lactation. Mare owners need to realize that early lactation has a higher nutritional requirement than pregnancy. Mares may milk 2 – 3 percent of their body weight per day. Thus, a 1,200-pound mare will produce 24 to 36 pounds of milk daily. About 400 pounds of blood must circulate through the udder to produce a pound of milk. Good-milking mares usually lose BCS during lactation; thin mares that milk well are likely to get thinner. Mares with a BCS of 5 or less do not have adequate stored fat to support efficient breeding while lactating.

Mares foaling in spring are likely on good-quality pasture when they start lactating; but even with good pasture, lactating mares require grain to meet their needs for energy, protein, minerals and vitamins for milk production. Normally when mares are lactating, they are also being re-bred. Because lactation has a higher nutritional demand than pregnancy, thin lactating mares are less likely to remain pregnant. A review of the BCS data from Texas A & M University shows that being thin after foaling caused more re-breeding issues than being thin before foaling and properly fed afterwards.

As previously noted, mares known to be good milkers can be somewhat preconditioned by raising their BCS score. Stored fat will be used for fetal growth during late pregnancy and for milk production in early lactation. It has been documented that mares with a BCS of 8 to 9 do not milk as well as mares with a BCS in the 5 – 7 range. Less milk results in foals not gaining as much weight. It also takes high levels of grain to keep these mares at these levels of fatness. In addition to costing more to feed, these mares are at a higher risk of colic and laminitis.

Once an owner knows a mare's milking ability, the mare can be properly conditioned for that level of milk

production and re-breeding efficiency. This conditioning must occur in the second trimester of pregnancy.

If pasture forage is adequate, feed a grain mix with 12 – 14 percent protein during lactation. When pasture is limited or only grass forage is available, it may be necessary to feed  $\frac{3}{4}$  – 1  $\frac{1}{4}$  pounds of a 16 percent protein feed daily to maintain body weight. Protein quality is important during early lactation for mares being re-bred. Because of the high energy demands of lactation, fat-added feeds are recommended.

After 60 – 90 days of lactation, the amount of milk a mare is not normally adequate to meet the nutritional needs of the rapidly growing foal. This does not mean that a foal will be “stunted.” The foal will just grow a little slower than its genetic potential. To prevent setbacks in foal growth, owners can creep feed the foal, which is more efficient than feeding the dam after this point.

**Late Lactation.** Late lactation is from 90 days after birth to weaning. After 90 days, mares in good body condition do not need to be fed grain unless pasture is very limited or nonexistent. Mare owners need to remember that they have several months in which to get the mare in the required body condition before she will foal next spring. Unless a pregnant mare has a BCS of 4 or less, there is no need to feed grain at this time.

It is a common practice to wean foals between 4 and 6 months of age. If mares become excessively thin, below a 3.5 in late lactation, one must consider weaning a foal early, especially in mares older than 16 years. A review of each mare’s milk production as indicated by foal growth and body condition score at the time of weaning allows the owner to develop a feeding management system for each mare in the fall and winter.

It is important that mares dry up as rapidly as possible. Mastitis is not common in mares but may occasionally occur. It is usually best to eliminate all grain feeding after 90 days of lactation and provide the feed to the foal. If mares are fed grain, eliminate it at least a week before weaning. After weaning, place mares on lower-quality pasture without grain until they are completely dried up.

Fall pregnancy tests allow owners to fine-tune management of pregnant and non-pregnant mares. Determining a mare’s BCS at this time will aid in planning her feeding and management routine. Pregnant mares, below a BCS of 5, need to be fed to gain at least a BCS of 5.5 by 220 days of pregnancy.

Pregnant mares with a BCS of 5.5 – 7.5 should be maintained at this level, depending on their history of milk production and reproduction. One must be diligent in observation and adjustment of feeding programs to maintain these mares at the appropriate BCS. Fall pasture may be sufficient, but one needs to feed a small amount of grain if pasture is limited or of poor quality.

Mares above a BCS of 7.5 are more difficult to manage. Some individuals know how hard it is to lose weight, and this holds true in fat mares. A diet is okay for mares in the first trimester as they can be fed a little below their maintenance level. Place these mares on low-quality pasture with no grain, but provide trace mineralized salt or a combination mineral/vitamin supplement.

It is normally not advisable to diet mares in their second or third trimesters. Over-fat mares should not be allowed to gain additional body condition. These mares should be fed a maintenance diet. Good-quality pasture, if available, should be adequate. In winter with no or limited pasture, feed a medium-quality grass hay at 2 percent of body weight. Grain should not be fed or strictly limited to as little as one pound daily. Forage supplements with adequate protein, minerals and vitamins would be ideal, allowing owners an opportunity to view each mare daily.

Extremes are undesirable, pregnant mares should not be too thin (below a BCS of 5.5) or too fat (above a BCS of 7.5). Proper broodmare nutrition requires year-round adjustments in feeding to meet peak demands without overfeeding during less demanding times. Owners should not allow mares to become too fat before breeding or too thin after foaling while lactating and being re-bred.

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## **New Faculty**

Ms. Trinette Ross has joined the UT Department of Animal Science as an equine instructor after completing her M.S. in animal science at Texas A & M University. Her research investigated the influence of dietary omega 6 and omega 3 fatty acids on bone biochemical markers and indices of inflammation in exercising yearlings. Her B.S. degree is in livestock production and management from Montana State University.

Ms. Ross has responsibility for Animal Science 285, Horse Handling and Care, in addition to teaching horse sessions in several other courses. She will also be instrumental in recruitment for the department, faculty advisor for the UT Equestrian Team and redevelopment of the department's horse judging program.

Ms. Ross grew up in the Northwest area of the United States and has been an apprentice cutting horse trainer, riding instructor, teamster, wrangler, broodmare assistant and stable hand. She is a certified riding instructor through

the Certified Horsemanship Association and a member of the Equine Science Society, American Society of Animal Science and the American Quarter Horse Association.

Her academic background combined with her practical horse experiences allow Ms. Ross to bring a wealth of scientific and pragmatic information to the classroom.

Ms. Ross can be reached at 865-974-6390 or [tross7@utk.edu](mailto:tross7@utk.edu).



**Associate Professor, Extension Animal Science**

## **Tennessee Horse Express**

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