



Nutritional Considerations For Broodmares

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The successfulness of any breeding program depends partially on correct nutritional management of broodmares. Past history reveals the common use of many different nutritional management practices for broodmares. Many of these have contributed to increased cycles per conception, low foaling rates, and below average foal growth. Studies provide information which enables nutritionists to refine recommendations of nutrient requirements for maximum broodmare performance. The broodmare owner should supply the amount and balance of nutrients that will aid in maximum conception rates and best meet the needs during gestation and lactation. Nutrients of concern include energy, protein, minerals, and vitamins.

The Open Mare

The mare owner's objective for this group of mares is high conception rates early in the breeding season with a low ratio of cycles bred per conception. The sooner a mare has conceived, the quicker she can be removed from the breeding program, and the more economical it is to the mare owner. This is especially true when mares are taken to a breeding farm. Mares that are settled on the first cycle will cost the owner less in mare care, and better enable the stallion manager to make efficient use of labor and available stallion semen.

Body Condition and Energy Needs. A major problem with open mares is that many enter into the breeding season in poor body condition. Body condition is visually identified by observing fat cover along the neck, withers, back, shoulder, ribs, and tailhead (See ANSI-3920 Body Condition of Horses). Mares in a low body condition have little to no fat cover along the sides of the neck or withers, behind the shoulder, or around the tailhead. Also, the backbone and a faint outline of the ribs can be seen. Mares entering into the breeding season in low condition require more cycles per conception, have lower conception rates, and are later in their transition into the ovulatory season as compared with open mares in a fleshy condition. Mares in fleshy condition will have a slight crease down the back and will have fat covering the outlines of the ribs. Noticeable amounts of fat can also be seen along the sides of the neck and withers, and the fat deposited around the tailhead feels soft.

Energy content of the ration is of major concern because of the influence of body condition on reproductive performance. The amount of energy needed per day will depend largely on how much the mare weighs, and whether she needs to gain weight before the breeding season. A 1,200 pound mare maintained in fleshy body condition may meet her energy needs on an all forage diet. If access to pasture is unavailable and/or hay is limited, needs could require a high quality grass hay

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at 1 percent of her body weight in combination with as much as 6 to 7 pounds of a typically formulated grain mix daily.

Grain needs for mares on pasture will vary widely due to quality and quantity of available forage. It is important to observe grouped mares individually as those in low body condition may need to be removed from the herd and fed supplemental grain. It is important to remember that mares in a marginal or thin condition can quickly lose condition when moved to the new surroundings and activities of a breeding farm. Increasing body condition on these mares prior to moving to the breeding farm will help avoid delays in the onset of estrous and conception.

Protein needs. The open mare's protein requirements is no different than for other mature horses at similar weights. A

1,200 pound mare will need about 1.5 pounds of crude protein per day. This relates to feeding 15 pounds of a 10 percent crude protein ration. One must consider both hay and grain sources of protein when determining fed levels, so it is good practice to have the hay source analyzed for protein. For example, if 11 pounds of bermudagrass hay which analyzed to be 10 percent crude protein is fed with 6 pounds of a 12 percent crude protein grain mix, one would be feeding about 1.8 pounds of crude protein. Usually, protein requirements are met when feeding adequate grain to maintain energy levels for a fleshy condition in mature, open mares.

Calcium and Phosphorus Needs. Calcium and phosphorus are the major minerals of concern. Calcium and phosphorus requirements of open mares are dependent on the body weight and digestibility of minerals in the feed. A 1,200 pound mare will need about 22 grams of calcium and 15 grams of phosphorus per day. This level relates to feeding a grain-hay ration with .3 to .4 percent calcium and .15 to .2 percent phosphorus. Calcium levels should be 1.5 to 2 greater than phosphorus levels in the total ration. Hays are usually higher in calcium than phosphorus, but levels of available minerals will vary greatly from different hay crops. Most commercial grain mixes contain equal amounts of calcium and phosphorus to ensure a proper ratio. Grain mixes should contain a minimum of .5 percent calcium and .4 percent phosphorus when combined with grass hays to ensure adequate amounts of these minerals.

Vitamin Needs. Vitamin requirements are generally met in open mares when feeding high quality grain and hay. Most commercially available grain mixes have added vitamin sources to ensure adequate vitamin levels. Vitamin premixes can be fed to supplement questionable feed sources but should be fed only at recommended levels.

Mares in Last 90 Days of Gestation

The mare in late gestation differs nutritionally from the open mare. Her nutrient requirements are slightly higher because she is maintaining her body and supplying nutrients to a rapidly growing fetus.

Body Condition and Energy Needs. The mare requires an additional 3 to 4 megacalories of digestible energy above maintenance requirements. This increased energy need can be met by feeding more of the same grain mix she was consuming when open and during early gestation. A 1,200 pound mare will need about two to three pounds of additional grain mix per day when she enters late gestation to meet her increased energy requirement. It is important that she remain in fleshy condition if she is to be rebred following foaling. The added nutritional stress brought on by early lactation can cause mares in a marginal condition to drop in condition to the point of affecting rebreeding efficiency. Also, many pastures are in their lowest nutritive value this time of year, so close inspection of mare condition is necessary so grain and hay levels can be adjusted accordingly.

Protein Needs. The gestating mare has a slightly increased need for protein above her requirement in the open state. Crude protein requirements will increase about $\frac{1}{2}$ of a pound when mares are in late gestation. This increased need above maintenance is usually met when feeding more grain mix to supply adequate energy, so a higher percent protein grain mix is usually not necessary.

Calcium and Phosphorus Needs. As with other nutrients, the amount of calcium and phosphorus required during late gestation is increased above the amounts needed in the open state. These mares require approximately 20 more grams of calcium and phosphorus than when in an open state. As with protein, these amounts are usually more than adequately met when increasing the amount of grain mix for energy purposes.

Vitamin Needs. The major vitamin of concern during late gestation is vitamin A. Vitamin A requirements are doubled when mares are in late gestation and lactation. Most commercially prepared grain mixes have sufficient levels of added vitamin A to adequately meet requirements; however, many producers routinely feed a vitamin premix to gestating mares consuming feeds of questionable vitamin levels. It is important that the premix contain about a 9 to 1 ratio of Vitamin A to Vitamin D, a 6 to 1 ratio of Vitamin D to Vitamin E, and be fed at levels recommended on the label. Overfeeding of several of the vitamins can cause irreversible damage to the mare and fetus.

The Lactating Mare

The wet mare's nutrient requirements are greatly influenced by the amount of milk produced to supply the nutrient needs of the foal. Milk yields range from two to three percent of the mare's body weight per day, so it can be easily seen that nutrient needs are greatly increased.

Body Condition and Energy Needs. Energy requirements will nearly double following foaling. It is usual for a 1,200 lb. mare to need 12 to 15 pounds of an average energy density grain mix in addition to 10 to 12 pounds of a good quality hay to meet her energy needs. Careful management is necessary in this class of mares because individual requirements will vary greatly. A foal can quickly lower condition in the mare, and wet mares in a thin body condition may take longer to rebreed and have lower pregnancy rates than mares in a moderate to fleshy condition. Also, the mare may be moved to a new location for breeding soon after foaling, which can create a loss in condition due to stress. It is extremely difficult to increase condition in lactating mares because the amount of feed that would be necessary can lead to higher incidence of founder and colic. As such, it is important that the mare is adequately conditioned before foaling.

Protein Needs. Protein requirements are also of importance during lactation because of the large amounts of protein leaving the mare in the milk. Mares not receiving adequate protein have decreased milk production resulting in lowered foal growth. Requirements double in heavily lactating mares, and an increased percent protein ration is usually necessary. Most hay-grain combinations dictate that the grain mix be at least 14 percent crude protein. Grain mixes with 10 to 12 percent crude protein should be fed with a hay high in crude protein, so many producers feed a high quality alfalfa with this type of grain mix.

Calcium and Phosphorus Needs. Calcium and phosphorus needs will also double in the lactating mare as compared with her requirements for maintenance. The calcium and phosphorus density of the grain ration will depend on the amount of grain and hay that is fed. The mineral density of most rations should be increased to levels of 0.6 percent calcium and 0.4 percent phosphorus to meet the added requirement. Mineral

needs can be met when increasing the amount of grain mix fed for energy needs. If grain and hay sources are marginal in their mineral densities, it is advisable to add a mineral premix to rations for this class of mares. Mineral premixes, like vitamin premixes, should be added only at recommended levels.

Vitamin Needs. Most classes of horses will meet their vitamin needs by feeding high quality grains and hays. Vitamin requirements increase in lactation to the point that it is a good practice to add a vitamin source to grain mixes. Feed sup-

pliers and feed tags should provide information on whether grain mixes have been fortified with vitamins during the feed manufacturing process. If not, it is recommended to add a vitamin supplement on-site to the grain mixes for lactating mares. Vitamin premixes should contain about a 9 to 1 ratio of Vitamin A to Vitamin D, and about a 3 to 1 ratio of Vitamin D to Vitamin E, and be fed at levels recommended from label directions to ensure proper levels of these vitamins.

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