

Broodmare Diet Basics

by: *Brett Scott, PhD, Dipl. ACAN*

April 01 2003 Article # 4264

The body condition of a broodmare can affect reproductive performance and milking ability. Recent research has indicated that mares should be kept in a minimum body condition score of 5.5 (see "Selected Body Condition Scores and Descriptions," below or [download this Body Condition Score poster here](#)). This body condition is referred to as moderately fleshy, and mares in this condition can be expected to cycle earlier in the year, have fewer cycles per conception, have a higher pregnancy rate, and maintain pregnancy more easily than thin mares. Additionally, research supports that mares maintained in body condition of less than 5 do not have sufficient stored body fat to promote efficient reproductive performance. Reproductive performance can be improved by feeding thin mares to gain weight; however, care must be taken to avoid digestive disturbances. There is no reproductive advantage to having a broodmare in obese body condition (8 or 9). Therefore, broodmares maintained in a body condition of 5.5 to 7.5 appear to be in the ideal body condition for gestation, lactation, and rebreeding. The nutritional status of the mare must be constantly monitored and changes in the feeding program (concentrate and hay) must be considered.

Roughage

Good-quality roughage is a major source of nutrients for mares and can be obtained from grazing or hay. Mares which are being fed hay should receive at least 1% of their body weight per day in order to provide adequate long-stem roughage. In addition, this amount of forage has been important in minimizing behavioral problems such as cribbing, and in promoting optimal digestive function.

The type of forage that a mare consumes while grazing or eating hay is very critical. There are many types of forages that can be hazardous to gestating mares. Certain types of hybrid sorghum/sudan grasses have been reported to cause cystitis syndrome or prussic acid poisoning, which can cause death due to respiratory paralysis. Alfalfa hay can have blister beetles that contain the compound cantharidin, which is extremely toxic to

horses. Blister beetles cause inflammation and blistering of the skin within hours of contact. If ingested, the cantharidin is absorbed and rapidly excreted in the urine, causing inflammation of the digestive and urinary tracts. Horses seem to be particularly susceptible to blister beetles and can suffer severe poisoning from even a few beetles, alive or dead, lurking in a bale of hay. Decreased feed intake, frequent drinking and urination, colic, and depression are signs of blister beetle poisoning. At its worst, blister beetle poisoning can cause horses to suffer severe pain, shock, and death within a few hours. Alfalfa hay from early cuttings is less likely to contain beetles than hay put up later in the year.

Fescue can be good roughage for horses; however, it can contain an endophyte fungus that can completely shut down milk production, cause foaling complications, and kill the foal. Remove pregnant mares from pastures that contain fescue at least 90 days prior to expected foaling.

Hay should be selected on these criteria:

- Cleanliness;
- Leafiness;
- Aroma; and
- Color.

Hays with a high leaf-to-stem ratio are more desirable for horses. Hays should be evaluated for the presence of foreign materials, blister beetles, and mold. In some situations, producers might use large, round bales of forage. Round bales can be safely used by producers provided they evaluate the hay very closely based on the above criteria and remove any weathered forage on the exterior of the bales.

Concentrate Feeds

In addition to forage, most mares must be fed a concentrated feedstuff to meet the energy demands placed on them during late gestation and lactation. There are many choices of concentrates available to producers. In most cases, a commercially prepared concentrate grain is the most cost-effective and efficient method of meeting this increase in energy demand. Generally, if concentrates have been formulated by reputable feed companies, they have been formulated to contain adequate concentrations of energy, protein, calcium, phosphorus, vitamins, minerals, and salt to meet the increases required by the broodmare in late gestation and

lactation.

If a producer decides to have his/her own concentrate mixed by a company, care should be taken to choose high-quality ingredients that are free from molds and other foreign material. Some cereal grains will contain mycotoxins that can kill horses. Additionally, the mix should stay fresh enough to ensure that the horses will eat the product. In some cases, the minimum amount of grain that companies will custom mix is an amount that a producer can't feed in a timely manner. Unless there are many horses on the farm, there will be spoilage and loss of the product.

How Much to Feed?

Total feed intake in mares is a topic that receives a great deal of discussion among producers. Research data has identified the average expected feed consumption for mares based on body weight (see "Expected Feed Consumption by Mares" above). As seen in the table, the average intake can range from 1.5 to 3.0% of body weight, with 2.0% being average. For example, a 1,000-pound (454-kg) broodmare in early gestation might consume (on average) 15 pounds (6.8 kg) of forage or hay and five pounds (2.3 kg) of a balanced concentrate for a total of 20 pounds (9.1 kg) of total intake. Individuality among mares must be considered when evaluating diet consumption.

Mares with difficulty maintaining weight might need more total intake than more efficient mares. In most situations, mares are considered to be in early gestation for the first eight months of pregnancy. Generally, mares in early gestation can be maintained in adequate body condition by consuming forage or high-quality hay and having free access to water and a mineralized salt block. This type of management usually will maintain a mare in moderately fleshy condition; however, thin mares might require a concentrate to increase body condition. When needed, mares can usually eat a 10% crude protein concentrate fed at 0.5% body weight to increase body condition or maintain good body condition.

Late Gestation

The majority of fetal development occurs in the last three months of gestation, and mares will require more nutritional supplementation during this time as indicated in the potential increase in concentrate intake seen in "Expected Feed Consumption by Mares" on page 88. If mares have not been consuming a grain concentrate,

producers should exercise care when introducing a concentrated grain mix into the diet, which should be done gradually. Producers should divide the total amount of concentrate being fed into at least two feedings per day.

A mare in late gestation should receive approximately 1.5-2.0% of her body weight in total feed daily. If mares are consuming typical-quality grass hay or grazing on typical grass pasture, they will require a 14% crude protein concentrate. If high-quality alfalfa hay or legume pasture is being fed, mares can be supplemented with a 10-12% crude protein concentrate. Producers should pay attention to the amino acid balance (look for lysine and threonine in the ingredients) at this stage of development to promote adequate foal growth.

Recent research has indicated that concentrate grain mixes with supplemental feed grade fat can safely be fed to pregnant mares with no adverse effects. The advantage of feeding a fat-supplemented concentrate is that the feed is more energy-dense. Thus, a producer can feed a smaller volume of concentrate to the mare and achieve good results. A fat-supplemented concentrate usually contains 6-8% added fat.

Mother's Milk

On average, mares experience a 44% increase in their energy requirements once lactation begins. The protein, calcium, and phosphorus requirements also go up significantly. All of these increases are required to produce milk, recover from foaling stress, and prepare them for rebreeding. During the first three months of lactation, high-

producing mares give approximately 3% of their body weight daily in total milk production. For a 1,000-pound (454-kg) mare, this would be approximately 30 pounds (13.6 kg or 3.75 gallons) of milk produced per day.

Underfeeding mares during early lactation can result in decreased milk production, loss of body weight and condition, and compromised reproductive efficiency.

Most mares will experience some weight loss after foaling and when beginning lactation; however, if the mares were in fleshy to fat condition prior to foaling, this weight loss shouldn't pose a problem. Mares which foal in thin condition can experience reproductive efficiency problems such as delayed ovulation and lower conception rates.

In most cases, a lactating mare needs 2-3% of her body weight in total feed (hay and grain) daily. The amount of grain fed can be decreased by feeding a fat-supplemented grain diet. The increased energy density in these

fat-supplemented grains can help maintain weight. Typically, a lactating mare's requirements can be met with a 14% crude protein grain mix; however, as the foal begins to eat the grain mix, a 16% crude protein concentrate should be fed to avoid potential growth and developmental abnormalities in foals. This will result in a slight overage of nutrients for the mare; however, this won't hurt her.

Regardless of the type of concentrate offered, the increase in intake should be gradual to avoid digestive upset or metabolic disorders in the mare. In some cases, heavy milking mares might need more than 1.5% of their body weight per day in grain to meet the demands on their bodies. This amount of grain must be fed in at least two (preferably three) feedings per day. The smaller the amount offered at any one time, the better it is for digestive function.

Late Lactation

Beginning in about the fourth month of lactation, the total daily milk production decreases to about 2% of body weight in mares. Thus, the nutritional requirements of the lactating mare begin to decrease with the decline in total milk production. Additionally, the energy content of the milk begins to decline. By the fourth month of lactation, the milk's energy content only provides about 30% of the foal's total energy requirement, and the foal should be consuming a creep feed by this time. When the foal is weaned, the mare can then be nutritionally classified as an idle or early gestating mare again, and her feed intake can be adjusted accordingly. Hopefully, if she has been rebred, the cycle begins again.

Ideally, broodmares must be maintained in moderate to fleshy condition during gestation and lactation to help the producer ensure healthy foals and to optimize reproductive performance. Also, a producer should constantly monitor the nutritional state of the broodmare and should make necessary changes in the feeding program to ensure optimal body condition.

For more information on supplementing broodmares, see "Pregnant Mares and Supplements" on page 101.

SELECTED BODY CONDITION SCORES AND DESCRIPTIONS	
SCORE	DESCRIPTION

4	Moderately Thin--The horse has a negative crease along its back and the outline of the ribs can just be seen. Fat can be felt around the tailhead. The hook bones cannot be seen and the withers, neck and shoulders do not look obviously thin.
5	Moderate--The back is level. Ribs cannot be seen but can be easily felt. Fat around the tailhead feels lightly spongy. The withers look rounded and the shoulder and neck blend smoothly into the body.
6	Moderate to Fleshy--There may be a slight crease down the back. Fat around the tailhead feels soft and fat over the ribs feels spongy. There are small deposits along the sides of the withers, behind the shoulders and along the sides of the neck.
7	Fleshy--There may be a crease down the back. Individual ribs can be felt, but there is noticeable fat between the ribs. Fat around the tailhead is soft. Fat is noticeable in the withers, the neck and behind the shoulders.
8	Fat--The horse has a crease down the back. Spaces between ribs are so filled with fat that the ribs are difficult to feel. The area along the withers is filled with fat, and fat around the tailhead feels very soft. The space behind the shoulders is filled in flush and some fat is deposited along the inner buttocks.
<p><i>SOURCE--ADAPTED FROM NUTRIENT REQUIREMENTS OF HORSES, NRC-NAS, 1989.</i></p>	

EXPECTED FEED CONSUMPTION BY MARES (% OF BODY WEIGHT)			
	Forage	Concentrate	Total
Early Pregnancy	1.5-2.0	0.0-0.5	1.5-2.0
Late Pregnancy	1.0-1.5	0.5-1.0	1.5-2.0
Early Lactation	1.0-2.0	1.0-2.0	2.0-3.0
Late Lactation	1.0-2.0	0.5-1.5	2.0-2.5
SOURCE: ADAPTED FROM NUTRIENT REQUIREMENTS OF HORSES, NRC-NAS, 1989.			

Readers are cautioned to seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.



Copyright © 2009 BLOOD-HORSE PUBLICATIONS. All rights reserved. Reproduction in whole or in part in any form

or medium without written permission of BLOOD-HORSE PUBLICATIONS is prohibited. THE HORSE,

THE HORSE logo,

THEHORSE.COM and THEHORSE.COM logo are trademarks of BLOOD-HORSE PUBLICATIONS.