

Feeding the Broodmare

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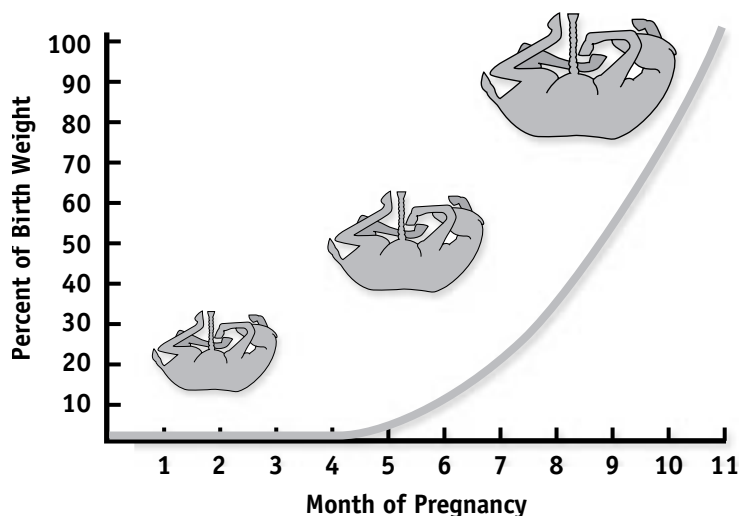
Stages of Pregnancy

A broodmare's feeding program should be divided into three separate stages. Stage one is early pregnancy, from conception through the first seven months of gestation. Barren mares and pregnant mares without foals by their sides fit into this nutritional category. Stage two encompasses the last trimester of pregnancy, which is from around seven months of pregnancy through foaling. Stage three is lactation, which generally lasts five or six months after foaling. The nutrient requirements for these three stages differ markedly and adjustments should be made in the mare's feeding program to accommodate these differences. The most common mistakes made in feeding broodmares are overfeeding during early pregnancy and underfeeding during lactation.

Early Pregnancy

To feed the mare properly during pregnancy, it is important to understand how the fetus develops throughout the gestation period. Contrary to popular belief, the fetus does not grow at a constant rate throughout the entire eleven months of pregnancy. Figure 1 illustrates a typical growth curve for a fetus expressed as a percent of birth weight. As is plainly

Figure 1. Fetal growth in the horse.



visible, the fetus is very small during the first five months of pregnancy. Even at seven months of pregnancy, the fetus equals only about 20 percent of its weight at birth. At this stage in pregnancy the fetus equals less than two percent of the mare's weight and its nutrient requirements are miniscule compared with the mare's own maintenance requirements. Therefore, the mare can be fed essentially the same as if she were not pregnant at all.

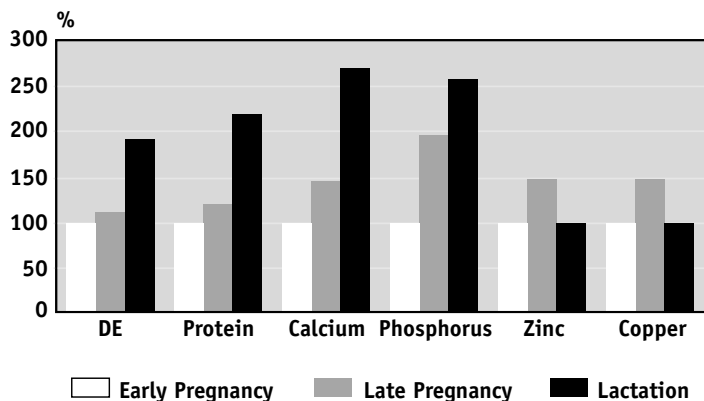
All too often the well-meaning mare owner greatly increases feed intake after the mare is pronounced in foal, reasoning that she is now "eating for two." This is not only unnecessary, but may lead to obesity and problems at foaling time. This is particularly true where pregnant mares have access to high quality pasture during early pregnancy.

Late Pregnancy

After seven months of pregnancy, the fetus begins to develop rapidly. At this point, its nutrient requirements become significantly greater than the mare's maintenance requirements and adjustments should be made in the mare's feeding program. Figure 2 shows the relative increases in several key nutrients during late pregnancy. Digestible energy (DE) requirements only increase about 15 percent over early pregnancy. Protein and mineral requirements increase to a greater extent. This is because the fetal tissue being synthesized during this time is quite high in protein, calcium and phosphorus. During the last four months of pregnancy, the fetus and placenta retain about 77 grams of protein, 7.5 grams of calcium, and 4 grams of phosphorus per day. Trace mineral supplementation is also very important during this period because the fetus stores iron, zinc, copper, and manganese in its liver for use during the first few months after it is born. The fetus has developed this nutritional strategy of storing trace minerals during pregnancy because mare's milk is quite low in these elements.

New Zealand researchers studied the effect of copper supplementation on the incidence of developmental orthopedic disease in Thoroughbred foals. Pregnant Thoroughbred mares were divided into either copper supplemented or control groups. Live foals born to each group of mares were also divided into copper supplemented or control groups. The

Figure 2. Nutrient requirements of broodmares (% of maintenance requirement).



four treatment groups therefore were: 1) mares supplemented with copper, but their foals were not supplemented; 2) both mares and foals were supplemented with copper; 3) mares were not supplemented, but their foals received supplementation; and 4) neither mares nor foals received supplementation.

Copper supplementation of mares was associated with a significant reduction in the physitis (inflammation of the bone growth plates) scores of the foals at 150 days of age. Foals from mares that received no supplementation had a mean physitis score of 6, while foals out of supplemented mares had a mean score of 3.7. A lower score means less physitis. There was no significant effect of copper supplementation of the foals on physitis scores. There was a significantly lower incidence of articular cartilage lesions in foals from supplemented mares. However, there was no significant effect of copper supplementation of the foals on articular and physeal cartilage lesions.

Mares in late pregnancy are often overfed energy in an attempt to supply adequate protein and minerals to the developing foal. If the pregnant mare becomes fat during late pregnancy, she should be switched to a feed that is more concentrated in protein and minerals so that less can be fed per day. This will restrict her energy intake while insuring that she receives adequate quantities of other key nutrients.

Lactation

After foaling, the mare's nutrient requirements increase significantly (Figure 2). During the first three months of lactation, mares produce milk at a rate equal to about three percent of their body weight per day. This milk is rich in energy, protein, calcium, phosphorus and vitamins. Therefore, the mare should be fed enough grain to meet her greatly increased nutrient requirements. Mares in early lactation usually require from 10 to 14 pounds of grain per

day depending upon the type and quality of forage they are consuming. This grain mix should be fortified with additional protein, minerals and vitamins to meet the lactating mare's needs. Trace mineral fortification is not extremely important for lactating mares because milk contains low levels of these nutrients and research has shown that adding more to the lactating mare's diet does not increase the trace mineral content of the milk. Calcium and phosphorus are the minerals that should be of primary concern during lactation. Grain intake should be increased gradually during the last few weeks of pregnancy so that the mare is consuming nearly the amount that she will require for milk production at the time that she foals. A rapid increase in grain should be avoided at foaling time because this may lead to colic or founder. After about three months of lactation, milk production begins to decline. At this time, grain intake can be reduced to keep the mare in a desirable condition.

In conclusion, mares should be fed differently during early pregnancy, late pregnancy, and lactation. By understanding the mare's nutrient needs during each stage of her reproductive cycle, an intelligent and cost effective feeding program can be designed and implemented. Remember, avoid overfeeding during early pregnancy and underfeeding during lactation. ☺☺



Photo by Mark Llewellyn