

# Feeding the brood mare

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**T**he brood mare goes through three phases of reproduction – early gestation, late gestation and lactation. The nutritional requirements of a pregnant mare depend mainly upon whether she has a foal at foot and is lactating, or whether she was previously barren and has only to satisfy the requirements of her maintenance. It also depends on the particular breed and whether the mare is a poor doer, or in some cases being ridden, these mares will need to be fed additional concentrate feed to ensure she can maintain their body condition.

During pregnancy a mare's body condition and weight should be carefully monitored to ensure that neither excess fat is laid down, nor does she have to mobilise her own body reserves to supplement inadequate nutrition.

## Early gestation

During early pregnancy the mare's nutritional requirements are more or less the same as for a barren mare. By providing the mare with good quality pastures and/or *ad lib* good quality hay, the total protein and energy intake can often be sufficient to maintain the mare's body condition. However, even these pastures and/or hays are deficient in minerals and trace minerals. When forage quality declines, mares need supplemental concentrate feed to maintain body weight. There are specific commercial supplements and concentrates available for these mares.

## Late gestation

The last trimester (third) of pregnancy, which amounts to the last four months of pregnancy,

is a crucial stage in the growth and development of the foetus. During this time, the foetus will gain half of its birth weight. This means that birth weight is dependent to a large degree on protein deposition at this time. The mare must therefore be able to supply the rapidly growing foetus with enough nutrients. During pregnancy (foetal growth) a large amount of good quality protein is required. The energy demands, however, only increase slightly. Obese pregnant mares should have their cereal grains (energy) reduced gradually, while the protein, mineral and vitamins should remain the same.

Even in situations where roughage is sufficiently maintaining the mares, it is important that pregnant mares receive a good quality concentrate to provide the protein, mineral, trace mineral and vitamin balance necessary to properly support growth and development of the foetus. The pregnant mare also needs additional protein to do her every day other body functions, including the growth of the placenta and amniotic tissues surrounding the foetus. The mare is also preparing for lactation (milk production). Her udder enlarges and develops in preparation.

It is vital that the minerals and trace minerals are well-balanced during the last trimester, as the mare's milk is deficient in trace minerals essential for proper bone development. Therefore adequate nutrition of the mare is critical for normal foetal development and to provide sufficient mineral reserves for the foal after birth.

## Lactation

Lactating brood mares have a higher nutrient demand than at any other stage of their lives. The most important component of a brood mare's diet, just like any other horse, is free access to good quality roughage, which can consist of pastures and/or hays. Pastures and hays are deficient in certain minerals, trace minerals, vitamins and good quality protein sources. The energy content of the pastures varies through the year and will not always meet the requirements of a pregnant or lactating mare.

One of the most common mistakes made by breeders, is to underfeed mares during lactation. Therefore an understanding of the mare's requirements (especially protein and energy

requirements) for milk production, is of utmost importance to reduce the occurrence of incorrect growth of the suckling foal. Poor nutrition has been associated with prolonged gestation, developmental abnormalities and decreased birth weights. These problems are exacerbated if low nutrition levels are evident in late pregnancy. Fungal contamination of feed can cause abortions. In contrast, mares in good body condition who cycle earlier in the year, require fewer cycles per conception, have a higher pregnancy rate, and are able to maintain pregnancies better than mares in poor condition.

The mare's milk-yield is influenced by her genetic potential, by feed during later stages of gestation and intake of energy, protein and other essential nutrients during lactation. Poorly nourished mares will not produce enough milk for their young regardless how much they are fed after foaling. They will never have an optimum milk yield. Mares' milk is composed of high protein, high fat and a small amount of carbohydrates with high calcium and phosphorous as well as other substances. During lactation, the mare needs energy for maintenance as well as for lactation. A 500 kg mare will need about 68 MJ of energy per day, just for maintenance, plus an additional 50 MJ for milk production. Thus a total of 118 MJ of digestible energy (DE) is needed per day.

A lactating mare needs twice as much protein as a barren mare. Because mares' milk is so high in protein (25% on dry matter basis) as well as lysine, the mare also needs good quality protein. Amino acids are the building blocks of proteins. Different combinations of amino acids make up different proteins, almost like puzzle pieces. Some have to be provided in the feed, because the body cannot produce them. These are called essential amino acids. The most important essential amino acids are considered to be lysine, methionine and threonine. High quality protein sources such as soy oil cake and full fat soy, contain the essential amino acids to meet the horse's requirements.

The mare produces, or should produce, about 3% of body weight (15 litres for a 500 kg mare) of milk, where 500 g is just protein during peak lactation. The mare will not change the

composition of her milk, no matter what she lacks in nutrients. She just produces less milk. This means that restricting or compromising the protein fed to the mare, will cause a decrease in milk production and thus foal growth.

The foal from birth to adult, goes through stages of development. These developmental

stages are preset by the biological clock set in motion at conception. In each phase of development the amount of growth hormone produced by the foal diminishes. The foal can reach 100% of development in stage one or 80% or less, depending on the mare's ability to produce milk.

### Effects of different feeds

- If given a **low protein, low energy** feed, the mare will use her body reserves for the energy and she will have a low milk production, which will result in retarded foal growth
- When a **low protein, high energy** feed is given, milk production will still be low, but the mare may maintain condition better than with the low protein, low energy feed. Low milk production will result in a smaller, possibly weaker foal
- A **high protein, low energy feed** will result in a higher but not optimal milk production, because the mare will use her body reserves for the energy needed to produce

milk. This will cause her to lose weight

- The ideal situation for a lactating mare is to feed her a **high protein, high energy** feed. This will ensure optimal milk production and foal growth, preventing the mare from losing too much weight.

It is critical that all the nutrients fed to a pregnant and lactating mare, is balanced with the mare's nutritional requirements at that stage of pregnancy and/or lactation. There are qualified nutritionists available to help provide your mare and foal with the best possible nutrition.

*(References available from the authors.) SAH*

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