

## FEEDING THE MARE IN FOAL By: Dr. William Tyznik

To discover that a favorite mare is in foal to a favorite stallion brings on a sense of euphoria. It is at this time a great concern is generated concerning the well being of the mare along with the hope that a strong, healthy foal will result – foal that is strong of skeleton, well muscled and alert.

There is no doubt that the nutrition of the mare does have an influence on the well being of the foal, and are more adversely affected by over-nutrition than they are by under-nutrition. It is well established that overweight mares are less likely to conceive than mares that are in trim condition. In addition, mares that carry excessive weight will invariably have more problems during foaling.

Most pregnant females have a tendency to become sedate. Combining the tendency of humans to feed the female “for two” plus a lack of exercise will produce a fat mare with minimal muscle tone. Mares in foal can be worked without problems up until about the last trimester of pregnancy. As the mare becomes heavy with foal, mild exercise should be continued. Pregnant mares that are put in stalls will usually “stock up” as pregnancy progresses.

When you consider that a 100 lb. foal contains about 80% water at birth, it certainly is no stress on the mare to deposit that much dry matter during an eleven-month gestation. The only excuse or reason to put fat on a mare is to give her some energy reserve for the ensuing lactation. Lactation in most mares is relatively limited and thus does not require her to carry very much extra weight. A mare that has enough fat to cover the ribs and no more is usually in adequate condition.

Since muscle and protein are considered to be synonymous, considerable concern is directed toward increasing the protein content of the ration. Next to water, protein is the second most prevalent nutrient in the body of the foal. Two-thirds of the foal’s growth occurs during the last one-third of gestation and it is this time that increases in dietary intake should be considered.

The requirements for mares after conception are only slightly higher than for maintenance. Hay that will keep a mare in good condition will generally also provide adequate protein. Therefore, if a mare is allowed all the hay she will eat and can maintain weight, 90% of her requirements will be met. When I speak of giving hay to a mare, a good quality hay will be consumed at the rate of 3% of the body weight per day, or a 1000 lb. mare will consume 30 lb. of hay daily. It really does not matter whether the hay is grass, legume or any combination of the two types. Quality is determined primarily by the proportion of leaves to stem – 80% of the nutritive value of hay is found in the leaves. The younger hay is at the time of harvest, the greater is the percentage of leaves and as a result higher digestibility, more energy and more protein. Should the hay be of

mediocre quality that does not permit the mare to maintain or indeed gain some weight, then a grain mixture containing 14 – 16% protein can be fed. The mare will need a 16% protein grain mix when begins lactating and the same ration can also be used for the foal. Although the 16% protein mixture may result in a bit higher cost per pound, the cost is insignificant when one considers the convenience of keeping only one grain mixture. The belief that protein causes kidney damage to horses is without basis in fact. If a mare is eating more protein than she requires, the excess nitrogen will be excreted through the kidney into the urine providing she always has an ample supply of fresh, clean water.

As stated previously, the foal contains considerable amounts of water at birth, which would indicate that the mare must receive additional water during pregnancy. In areas where temperatures drop severely during the winter, it is advisable to keep some sort of heating device in the waterer to prevent freezing. A mare should never be without water. Mares that are given watering buckets will need about 10 – 15 gallons of water daily. Automatic waterers are ideal, providing attention paid to keeping waterers cleaned on a daily basis.

At times when it is found necessary to increase grain intake, it should be increased at a rate of one pound every two days.

Minerals can be provided – more for the well being of the mare than for the foal. The mineral content of hay varies from one part of the country to another and even between fields. For this reason, it is difficult to formulate a mineral that will work under all conditions. Mares that are provided calcium (feed grade limestone) and phosphorus (either dicalcium phosphate, Biophos or monosodium phosphate) free choice in separate containers seem to do a respectable job in meeting their needs.

Relatively new data would suggest that certain trace elements play a critical role in developing a strong healthy foal as well as improving reproductive performance.

Selenium is generally deficient in the far west and east of the Mississippi River. A lack of selenium will result in poor reproduction, increased susceptibility to disease and white muscle disease in foals. Since skeletal development in horses is critical it is imperative that the foal be born with an adequate store of trace elements in the body to carry them until weaning. A problem of “knuckling over” at birth is a strong indication of copper deficiency.

Three trace elements have been shown to be critical in the production of connective tissue (cartilage, tendons and ligaments). Copper is involved in an enzyme system, which allows amino acids to be properly oriented so that these tissues can be properly formed. Zinc also functions in a similar manner. The third element is manganese, which is actually a component of cartilage. None of these elements are found to any extent in mare’s milk. To ensure adequate quantities for the foal, the mare ration must be fortified during pregnancy so

that a surplus is present for depositing in the foal. In addition to levels of minerals, proper balances are also critical because excess of any one mineral can make other minerals unavailable. Because trace mineral salt is designed for all animals, the levels of trace elements are not high enough to meet the demands of the horse.

Because of the great concern about vitamins in humans, there is a tendency to over supply certain vitamins. The vitamins are classified into two major groups. This classification is on the basis of solubility rather than function.

The fat-soluble vitamins namely vitamins A, D, E and K are not synthesized in adequate amounts by the bacteria in the intestinal tract of horses. Vitamin A is involved with maintenance of all tissues exposed to the outside (gut, respiratory system, skin, reproductive system and to a degree, skeletal development). The requirement for vitamin A is between 2,000 and 5,000 IU per 100 lbs. of horse daily. Animals have a unique ability to store vitamin A in the liver for periods of up to six months. Thus, if a mare comes off good pasture she will probably have an adequate supply of Vitamin A until spring forage is again available. Green grass is an excellent source of carotene, which the horse can readily convert to Vitamin A.

Vitamin E has become a relatively popular vitamin recently. The primary function appears to be in the maintenance of muscle tissue. Vitamin E functions along with selenium in preventing white muscle disease in foals and improving immune response. A deficient mare is much more likely to give birth to a foal with white muscle disease. A level of 20 to 50 mg of vitamin E per 100 lbs. of horse daily seems to be adequate.

Vitamin D is probably the vitamin most understood because it has long been known to be involved with skeletal development. Vitamin D allows some freedom in the calcium and phosphorus levels of horses without causing skeletal deformity. The level of Vitamin D required by horses is 200 to 500 IU per 100 lbs of the horse's bodyweight daily. Feeding large excesses (tenfold) will cause toxicity, which manifests itself as calcification of soft tissue. Mares fed 5,000 to 10,000 IU per 100 lbs. daily during pregnancy give birth to foals that have severe calcification in the heart as well as the blood vessels.

As a general rule, fat-soluble vitamins are not excreted if fed in excess. If supplementation of the fat soluble vitamins are desired, one can obtain a vitamin A, D, E, supplement.

The water-soluble vitamins will usually be supplied by bacterial synthesis in the intestinal tract of the horse.

There is no need to feed any tonics, jugs, etc., to the pregnant mare.

From time to time, mares give birth to unusually large foals that look deformed. In some cases, this is due to a lack of uterine space and the foal will straighten up in a week or so. The size of the foal at birth is determined by uterine space and has little to do with nutrition of the mare.

In conclusion, mares should be given all of the fresh, clean water they will drink and good quality hay. It is many times best to feed a product that has already balanced the vitamins and minerals for the consumer, therefore, providing a broodmare feed with a ration formulated for the pregnant and nursing mare is recommended. Exercise is imperative and whenever possible the mare should be allowed to be outside with a shelter during inclement weather. Horses are excellent judges of when they are uncomfortable.

Best wishes for a healthy foal!