

## **Nutritional Management of Broodmares**

Preston R. Buff, PhD; Extension Horse Specialist, Mississippi State University

Last month's Horse Sense focused on the reproductive management of broodmares. This installment will focus on the nutritional care of broodmares throughout the year with special attention to the pre- and post-partum periods.

The nutritional needs of broodmares vary throughout the stages of production and range from maintenance levels to the greatest nutritional requirements of any class of horse. For broodmare owners to be successful in producing healthy foals, the nutritional requirements must be met for all stages of production. Broodmares with the lowest requirements are barren and non-lactating mares during the first five months of gestation. The nutrient requirements for these classes of horses are the same as horses only requiring maintenance levels of nutrients. After the fifth month of gestation the nutrient requirements gradually increase until foaling. At foaling, lactation begins and the nutrient requirements dramatically increase for the mare due to the enormous drain on nutrients and energy by the suckling foal. As the foal increases consumption of feed the nutrient requirements of the mare decrease slightly until the foal is weaned. Most producers wean between four and six months of age. For strategies on minimizing weaning stress see the Horse Sense article from the September 2007 issue of Cattle Business in Mississippi.

It is important that producers understand the body condition scoring system in horses to be successful in determining if horses are receiving the proper plane of nutrition. A forthcoming information sheet will soon be available at your county Extension office and [www.msucare.com](http://www.msucare.com) on body condition scoring in horses. The target body condition of broodmares should be moderate to moderately fleshy throughout the production cycle. Mares should be in a body condition of moderately fleshy prior to foaling. This will ensure that the mare has enough energy reserves to provide for her foal without compromising reproductive efficiency. Research from Texas A&M has illustrated that thin mares are less likely to conceive than mares in moderate to moderately fleshy condition. Once a mare has foaled and lactation has begun the mare will pull from her body reserves if her nutrient and energy requirements are not met. It is often a challenge to meet the mare's requirements during lactation and even more difficult to increase body condition in the mare during lactation.

Most Non-lactating pregnant mares in the first five months of gestation and barren mares can be managed on pasture and/or hay alone to meet their nutritional needs. As pregnancy advances from the fifth month the nutrient requirements gradually increase. The concentrations of digestible energy (DE), protein, calcium (Ca), phosphorus (P), Vitamin A (Vit A) and vitamin E (Vit E) in the total diet needed to meet the requirements for the various stages of pregnancy are outlined in Table 1. Additionally, body weight changes and average daily gain (ADG) of an average size horse are listed in Table 1.

During the period of lactation the nutritional demands are dramatically increased and thus the nutrient density needs to be increased. This can be done by replacing a portion of the hay with a concentrated feed source such as grain. The concentrations of digestible energy (DE), protein, calcium (Ca), phosphorus (P), Vitamin A (Vit A) and vitamin E (Vit E) in total diet

needed to meet the requirements for the various stages of lactation are outlined in Table 2. Additionally, expected milk production is given for each stage of lactation for an average size horse is listed in Table 2. The values in Tables 1 and 2 are estimated based on 90% dry matter (as fed) with a dry matter intake of 1.5% of body weight. The feeding rate should be adjusted based on the nutrient concentration of the feed. Feed intake of horses range from 1.5% to 3.0% of body weight per day on a dry matter basis. With poorer quality feed the nutrient requirements may not be met if the maximum intake is reached before nutrient requirements are met.

Meeting the nutrient requirements can be done by matching the nutrient concentrations of feeds with the required daily amounts of nutrient for horses. Nutrient concentrations of selected feeds are listed in Table 3 and are “book” values that should be used only as a guide. To accurately determine the nutrient concentration of your feed they must be tested by a laboratory or can be estimated by the guaranteed analysis on the feed tag. Contact your county Extension office for assistance with testing your feeds. The quality of the feed sample is determined by the State Equine Specialist and nutritional formulation based on test results and is provided at no extra charge by the Mississippi State University Extension Service.

Table 1. Approximate nutrient concentrations of total diet to meet minimum requirements of pregnant mares<sup>a,b</sup>

Month	Weight Lbs	ADG lbs/day	DE Mcal/lb	Protein %	Ca %	P %	Vit A IU/lb	Vit E IU/lb
< 5	1100	-	.91	7.5	.24	.17	1650	44
5	1108	.30	.93	8.2	.24	.17	1650	44
6	1118	.40	.95	8.4	.24	.17	1650	44
7	1133	.53	.98	8.7	.34	.24	1650	44
8	1150	.70	1.0	9.1	.34	.24	1650	44
9	1175	.90	1.0	9.6	.43	.32	1650	44
10	1206	1.1	1.1	10.1	.43	.32	1650	44
11	1545	1.4	1.2	10.7	.43	.32	1650	44

<sup>a</sup>90% Dry matter or as feed basis

<sup>b</sup>Based on expected intake of 1.5% of body weight

Table 2. Approximate nutrient concentrations of total diet to meet minimum requirements of lactating mares<sup>a,b</sup>

Month	Weight Lbs	Milk lbs/d	DE Mcal/lb	Protein %	Ca %	P %	Vit A IU/lb	Vit E IU/lb
1	1100	35.86	1.7	18.4	.71	.46	1650	44
2	1100	36.64	1.7	18.4	.71	.46	1650	44
3	1100	32.89	1.7	17.6	.67	.43	1650	44
4	1100	29.81	1.6	16.8	.50	.31	1650	44
5	1100	26.84	1.5	15.9	.47	.30	1650	44
6	1100	23.98	1.5	15.2	.45	.28	1650	44

<sup>a</sup>90% Dry matter or as feed basis

<sup>b</sup>Based on expected intake of 1.5% of body weight

Table 3. Nutrient composition of selected feeds<sup>a</sup>

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	DM %	DE Mcal/lb	Protein %	Ca %	P %	Vit A IU/lb	Vit E IU/lb
Bermudagrass hay	87.1	.87	10.4	.49	.27		
Coastal							
Legume hay	84.2	1.2	20.5	1.56	.31		
Horse Concentrate	91.6	2.5	14	.8	.5	1594	36

<sup>a</sup>Values from Nutrient Requirements of Horses, 2007