Equine Nutritional Management and Disease

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The first goal in assessing your nutrition program is to recognize when your horse has a problem. This requires that you know what a healthy horse should look like. While many of us are sure we can do this, here are some guidelines to aid you: first you should be able to estimate your horse's body condition. We scale horses from 1 to 9 (1 = very thin, 9 = extremely fat). An average horse should fall between 4 to 6 on the scale, depending somewhat on breed and function. A weigh tape can help you estimate changes in your horse's weight. While not completely accurate (as much as 100 lbs off!), weigh tapes when used every 2 to 4 weeks can alert you to changes (up or down) in your horse's weight. Secondly, assessment should be made of hair coat and hoof growth as an indicator of present or even past nutrition. A hair coat that is rough, patchy, and dull may indicate poor nutrition. The hoof can give you a detailed history of past nutrition. Hoof grows approximately 0.25 inches per month; consequently, evidence of "rings" on the hoof wall may indicate nutritional changes over the last 9 to 12 months. Remember that "rings" that are parallel usually do not indicate that the horse has had laminitis or founder in the past. Finally, the overall demeanor of your horse should be assessed. He/she should be bright, active, and energetic. Look for changes in behavior or attitude as an indicator of a potential problem.

When analyzing a nutritional feeding program a number of questions should be asked: Is the animal being presented with enough/too much food?, Is the animal able to ingest the food?, Is the animal able to digest the food?, Is the food of adequate quality for this animal? While certain diseases may be caused by excesses of certain nutrients, the opposite is also true. Many horses that are underweight may be presented with low quality feed, have bad teeth, or have a non-nutrional disease affecting them. Look at the whole farm management when a problem arises.

The framework for any nutritional program is to have good quality forage (hay). Hay should be free from excessive dust and mold, have plenty of leaves and fine stems, be green in color, have a pleasant odor, and be soft and pliable to the touch. Generally, when hay is harvested late during the year the quality decreases due to an increase in indigestible components (hemicellulose and lignin). It is extremely important that the person who is "putting-up" your hay pays attention to details in order for the product that you feed your horse to be of good quality.

There are a number of diseases and conditions that can affect your horse that are directly related to nutrition. Some common problems will be highlighted here and are meant not only to educate you in the prevention of these problems, but also to alert you to how important a role you have in influencing the outcome of your horse's health. The routine, sometimes mundane procedure of feeding your horse on a daily basis can result in disastrous health problems if not done properly.

The most common health related nutritional problem encountered by horse owners is probably colic. Causes include abrupt changes in feed, ingestion of large amounts of grain, sudden exposure to lush green pasture, or ingestion of moldy feedstuffs. Changes in your horse's diet should be made gradually over 1 to 2 weeks so that the population of bacteria within the digestive tract can change to reflect the type of feed ingested. When feeding large quantities of grain, try to feed small amounts multiple times per day so that the bacteria in the intestinal tract are not exposed to large "slugs" of grain which may kill off normal flora and result in the production of harmful products. Exposure to spring pastures should not be sudden. You should slowly increase the amount of turnout to better acclimate your horse's intestinal bacteria. Feeding hay prior to turnout can sometimes limit the over-ingestion of lush grass. Laminitis (founder) should also be mentioned here since it can be caused by the same kind of events which lead to colic. Again prevention and good management will decrease the chances of this devastating disease occurring.

A nutritional problem that primarily affects pregnant mares is fescue toxicosis. Fescue can become infected with an endophyte (fungus) called *Acremonium coenophialum*. Generally, fescue in southwest Virginia is infected with this endophyte. In addition, almost all pastures

in this area contain fescue. This makes it very difficult for most horse owners to find fescue free pasture or even fescue free hay. The endophyte affects a number of hormones in the mare's system, increasing dopamine and decreasing prolactin. This has the overall effect of decreasing milk production, prolonging pregnancy, and/or causing a thickened placenta with the possible end result of a difficult birth or stillborn foal. Prevention is aimed at the total removal of access to fescue grass/pasture for at least the last 45 days of pregnancy. There are also drugs that can be given to alleviate some of the signs noted above, but they may not be effective in every case, so prevention is still the best treatment.

Developmental orthopedic disease (DOD) is, as the name implies, primarily an event found in young growing horses. This disease is related to the development of the skeletal system. The formation of bone from cartilage is affected, resulting in various forms of lameness. Causes have been linked to excessive energy, protein, and zinc, and a deficiency of copper. There are many other minerals and vitamins that have been linked to DOD that are not mentioned here. The primary areas of the skeletal system affected are the joints, but growth plates (areas that result in normal lengthening of bone as an animal grows) can also be involved. Having a balanced diet without excesses in any particular area can help to limit this disease. Unfortunately, genetics and other management practices can still cause this disease to appear. The relative need to have large weanlings and yearlings for show is a primary reason why horses are fed to excess, resulting in an increased likelihood for this disease.

Dusts and molds present in feed, especially hays, can aggravate horses that have chronic obstructive pulmonary disease (COPD, heaves). This disease is like asthma in humans. In many cases the feed is the origin for allergens, although type of bedding, lack of ventilation, ammonia build up (from urine), and other respiratory diseases can worsen this disease. You should examine your hay by shaking a few flakes to determine the amount of dust present. Look at the hay for mold formation (grayish powder) and feel the center of the bale for heat which may indicate that the hay was baled wet. Round bales are especially prone to mold formation in the outer layers unless kept under cover and elevated up, off of the ground.

Exertional Rhabdomyolysis or "tying-up" is a disease primarily affecting the muscles of the body. Horses typically exhibit signs of reluctance to move or stiffness after exercise. Vitamin E and selenium deficiency have been suggested as possible contributing factors. The main nutrient linked to tying-up is energy, with excessive amounts of grain the main culprit. It is important to keep the relative amount of grain in the diet equal to the type of activity the horse is performing. This disease is especially likely to occur in horses that are given large amounts of grain and are working fairly regularly. It is when they are temporarily rested without a decrease in amount of grain and then put back to work that this disease could occur.

In addition to specific diseases that may have a nutritional cause, there are a variety of poisonous plants which, when eaten, could lead to problems for your horse. Below is a list of plants that have been implicated with health problems in Virginia. While not an exclusive list, these plants are the ones more commonly affecting horses.

1. Japanese Yew
2. Black Locust
3. Black Walnut.
4. Hoary Alyssum
5. St. John's Wort.
6. White Snake Root
7. Red maple.
8. Acorns
9. Yellow star thistle
10. Cherry, apricot, peach, plum
11. Bracken fern and horsetail
12. Mt. Laurel, Rhododendron
13. Tansy ragwort, groundsel, crotalaria, etc.

Dietary supplementation with minerals or vitamins is a fairly commonplace practice for horse owners. If there is good quality hay, a grain mix containing macro and micro-minerals, access to a trace-mineralized salt block, and plenty of fresh, clean water, the need for extra supplementation is usually unnecessary. Some specific conditions do warrant supplementation such as diseases responsive to vitamin E (equine degenerative myeloencephalopathy and equine lower motor neuron disease), white muscle disease (supplemental vitamin E and selenium), anemia (supplemental iron), and some types of hoof problems (supplemental biotin and methionine).

Please do not forget about the importance of providing good quality, free choice water. One of the major causes of winter time colic is the lack of proper water intake causing impactions within the intestinal tract. Make sure that the horse's water source is not frozen and remain fresh. If you would not drink from the bucket don't expect your horse to either! You can actually increase (3-4x) the amount of water your horse drinks in the winter by offering them warmed water. You can purchase a low level water heater ($15 - $20) at most feed stores.

You are directly responsible for what your horse eats. Diligence and the selection of good feed materials enables you to maintain the health of your animal. If you are unsure

of what to feed or how much to feed, contact your extension agent or veterinarian. Feed analysis and ration formulation are available to create a more accurate diet for your horse. Some basic guidelines are given below and may not be accurate for horses in all situations. Only through regular visual/manual inspection of your horse can you determine proper feeding levels.

Basic Rations:

A. Roughage guidelines: feed about 1.5 - 2% of horse's body weight in good quality hay per day.

B. Establish regular feeding times - two or three times daily, if possible.

C. Feed by weight of feed, not by volume.

D. Don't let the amount of grain exceed the amount of hay being fed.

E. Remember that you can provide adequate feed and still have a malnourished horse due to teeth problems, parasites, competition for food, and improper feeding areas.

Type of Work	Good Quality Hay (1000 lb horse)	Suggested Average Grain Mix (1000 lb horse)
No work	15 lbs	0 lbs
Mild Work	15 - 20 lbs	0 - 5 lbs
Pregnancy (last 90 days)	15 - 20 lbs	4 - 8 lbs
Lactation	15 - 20 lbs	5 - 10 lbs
Polo	15 - 20 lbs	4 - 8 lbs
Racetrack	15 - 20 lbs	5 - 10 lbs

Percent Protein in Total Diet*	
Creep Feed	16 - 18%
Weaned to 12 months	14 - 16%
Yearlings	12 - 14%
Lactating Mares	13 - 15%
Pregnant Mares	11 - 12%
Mature Horse	9 - 11%

*Percent protein values are given for use as a guideline only. (If you feed a large amount of a 10% protein feed, it may provide the same amount or more total protein in the diet as compared to feeding a small amount of an 18% protein feed.)