

10 Things Everyone Should Know About Nutrition for the Mature Horse

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1. Always supply unlimited quantities of clean, fresh water.
2. Maximize forage intake
3. Minimize concentrate consumption
4. The Calcium to Phosphorous ratio (Ca:P) should be between 3:1 to 1:1
5. Supplement minerals and vitamins
6. Balance a horse's ration in the following order: energy, protein, minerals, vitamins
7. Monitor your horse's body weight and body condition score
8. Maintain your horse's teeth in good "chewing condition"
9. Change feedstuffs gradually
10. Feed each horse as an individual

Water is the most important nutrient needed by the horse. A horse should always have available a fresh, clean supply of water maintained at a tepid temperature to encourage maximum water consumption. A 1,000 pound horse at rest in a moderate or cool environment and eating dry forage will drink anywhere from 10 to 12 gallons of water a day. The need for water will increase with an increase in ambient temperature, humidity, activity and/or a change in physiological condition. Water is typically supplied via automatic waterers, buckets or water troughs. Waterers, buckets and troughs need to be cleaned on a weekly basis, even in winter.

Forages, either fresh or harvested, are the ideal source of energy. Forages, such as legumes and/or grasses are the mainstay of a horse's diet. Most mature horses should be fed a minimum of 1% and ideally up to 1.5 to 2.5% of their body weight in forages each day. Eating 2.5% of their body weight in forage would approach the maximum voluntary feed intake for most horses, and depending on the form of the forage, maintain some gastrointestinal tract fill at all times. Consuming forages can provide much of the energy needs of the horse, help maintain gastrointestinal tract function and keep your horse from becoming bored. Harvested forages should be provided in a way to minimize the horse eating directly

off the ground where it would potentially consume sand, dirt, and/or parasites. Hay should not be elevated too high as it increases intake of molds and dusts that can lead to respiratory and potential teeth problems.

Frequently, when more energy than can be supplied via forages is needed, cereal grains such as oats and corn are increased at the expense of the forage component. However, there is a very real and practical limit to how much cereal grain can be fed to a horse without causing serious nutrient-related ailments. A mature horse should be fed no more than 0.3 to 0.4% of its body weight in cereal grains per feeding. Alternatively, you may choose to substitute fats, which have been shown to be an excellent source of energy for horses, for a portion of the cereal grains. This way, it is possible to increase the energy density of the feed without incurring many of the negative side effects of too much cereal grain. Although fat is beneficial for growing, hard working, special needs, and senior horses, it is not usually necessary for the maintenance of idle horses. You want to meet the horse's energy needs but avoid overfeeding which would result in an unhealthy, overweight horse.

The horse requires a number of different minerals in its diet. Some of the minerals, especially the major minerals, may be supplied in adequate amounts via natural feedstuffs. Common feedstuffs are not usually a reliable source of the required trace minerals and so supplementation would be recommended. Salt or sodium chloride (NaCl) should always be provided free choice as a horse will regulate their own intake. Of particular importance in managing your horse's mineral needs, is the ratio of calcium (Ca) to phosphorus (P). Because of the interaction between calcium and phosphorus and their differing sites of absorption in the gastrointestinal tract, a minimum Ca:P ratio of 1:1 and an ideal Ca:P ratio of 2:1 is recommended.

Vitamins are essential nutrients needed in very small quantities and may be provided in adequate quantities via natural feedstuffs, endogenous production by the horse, and microbial production in the horse's gastrointestinal tract. Under certain conditions, it may be necessary to supplement some vitamins in the horse's diet. For example, mature, rained-on, and/or older hay may be deficient in vitamins. It is recommended that vitamins be supplemented to most horses.

In general, an economical and nutritionally wise approach to feeding your horse would be to consult a reference

such as the National Research Council's (NRC) Nutrient Requirements of Horses publication (<http://www.nap.edu/books/0309039894/html/R1.html>). Revised NRC nutrient requirement for horses will be available in 2007. It provides information concerning the nutrient requirements for horses of different sizes and in different physiological conditions. It also lists the common feedstuffs and their nutritional content. Ideally, you would have your forage feedstuff analyzed for nutritional content. Using those two major pieces of information i.e., what your horse needs nutritionally and the nutrient content of the feedstuffs available, you can design a ration for your horse by meeting its nutritional requirements in the following order: energy, protein, minerals and vitamins. Energy requirements are usually more easily met than protein, vitamins and minerals, hence special effort should be made to ensure minimum requirement of these categories are met. Alternatively, you can purchase prepared commercial feeds, such as grain mixes to supplement selected forages or complete feeds that have been nutritionally balanced to meet your horse's needs. Using the above information as a basic guideline, it may be necessary to modify the diet of your horse based on individual characteristics to maintain optimal body weight and condition.

You will need to know your horse's body weight and body condition score when you are determining its nutritional requirements. Body condition scoring is based on the location and amount of fat stores underneath the horse's skin, e.g., along the neck, withers, over the ribs, behind the shoulder, around the tailhead and the crease on the back. The descriptive language of what to look and feel for at each of the 9 different score levels can be found at: <http://animalscience.tamu.edu/ansc/publications/horsepubs/hrg013-nutrmgmt.pdf>. The ideal score for each horse will vary, depending on differences in energy expenditure, frame size, physiological condition, diet history and the owner's personal preference. However, a body condition score of 5 is usually ideal. Visually and physically examining your horse is the best way to establish its body condition score. Assessing your horse's body condition score on a routine basis allows for dietary adjustments to be made. How much you need to feed your horse will vary over time and is strongly influenced by changes in exercise, environmental conditions and quality of feedstuffs.

Although your horse's teeth erupt continually for 20

years, they are also continually being worn down by the grinding action associated with chewing of feedstuffs, especially forages. Because the upper and lower teeth are not in complete alignment with each other, over time sharp points can form on the teeth. If not filed down or "floated," the points on the teeth can make chewing painful and interfere with how well the feed is chewed. If the discomfort is severe enough, it will reduce a horse's willingness to eat at all.

The horse is a hind-gut, fermenting herbivore that relies extensively on the microbes present in its gastrointestinal tract to be able to process forages. The microbes are a mix of different organisms that work together to the benefit of the horse. If the feedstuffs the microbes are utilizing are changed suddenly, there may be too little time for the microbial populations to adjust to the change. Instead, large numbers of them die, while other flourish, setting up a situation where toxins may be absorbed by the horse, resulting in digestive dysfunction. A gradual change from one feedstuff to another provides enough time for the microbial populations to adjust. For example, when changing either the type of hay or grain that is being fed, replace only about 20 to 25% of the current feed every other day, so that it takes a week or more for a complete change.

All horses have nutritional needs in common. They all require water, energy, protein, minerals and vitamins. How much of each of these nutrients and in what relation to each other will vary with the age, activity level, and physiological condition of the horse. The NRC requirements are the minimum amounts of nutrients for normal health, production, and performance. Use them as a starting point to fine tune the needs of your individual horse.

Reviewers: Harland Anderson, DVM; Ron Genrick and Abby Duncanson, Assurance Feeds; Roy Johnson, Cargill Animal Nutrition; and Sue Nerud, Waconia Farm Supply.

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