Determining Horses' Nutritional & Forage Needs

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Horses are non-ruminant herbivores designed to utilize forages as the primary component in their diet. Horses have a noncompartmentalized stomach and an enlarged hindgut that accommodates fiber digestion. When fresh forages are unavailable, or when horses are confined to stalls or dry lots, conserved forages (hay) may be fed to meet nutritional needs. Equine nutritional needs are based on requirements for digestible energy, and the six major classes of nutrients: carbohydrates, fats, proteins, minerals, vitamins, and water.

Nutrient requirements depend on physiological status (age, metabolism, weight) and level of production (maintenance, growth, exercise, reproduction, and lactation). Selecting hay and incorporating it into the ration should be done with the individual horse's needs in mind. Most classes of horses can meet all or a large majority of nutritional needs from good quality hay alone. However, hay alone may not meet the nutrient requirements of horses with increased needs required for growth, reproduction, and exercise.

Horses require 2-3% of their body weight in feed (includes hay and grain) each day. At least half of a horse's daily feed intake should be in the form of roughage such as fresh forage or hay to optimize digestive health. The amount and type of hay a horse needs ultimately depends on the nutrient requirements of the horse and the quality of hay. Hay quality should be determined by laboratory analysis. Following are three examples of how to correctly incorporate forage into horses' diets.

Example 1 - Adult Idle Horse (not working, not reproducing). The nutrient requirements of idle adult horses can be met by good quality grass hay alone. The following is an example of a feeding program including hay requirements for an adult idle horse.

Horse Weight: 1,000 lb; Required Daily Feed Intake: 2% Body Weight; Total Intake/Day: 20 lb; Percentage of Hay in Daily Ration: 100%; Percentage of Concentrate in Daily Ration: 0%; Amount of Hay Required in Daily Ration: 20 lb; Amount of Concentrate Required in Daily Ration: 0 lb.

Hay should be analyzed for nutrient content to identify any deficiencies. For example, many hays are low in some vitamins and minerals, and supplementation is often necessary. Most commercial feed companies offer a vitamin and mineral supplement that is low in digestible energy and complements the nutrient content of forages. These supplemental concentrates are typically fed at a rate of 1 lb /day for idle adult horses.

Example 2 - Working Horse: Moderate Exercise. The nutrient requirements of working horses are determined by the intensity and duration of exercise. Exercise increases the nutrient requirements of horses, and hay alone may not be sufficient to meet their needs. To meet the increased requirements of working horses, cereal grain based concentrates are often included in the daily ration. The following is an example of a feeding program including hay requirements to meet the needs of a horse in moderate exercise. Moderate exercise is classified as 3-5 hours/week.

Horse Weight: 1,000 lb; Required Daily Feed Intake: 2% Body Weight; Total Intake/Day: 20 lb; Percentage of Hay in Daily Ration: 75%; Percentage of Concentrate in Daily Ration: 25%; Amount of Hay Required in Daily Ration: 15 lb; Amount of Concentrate Required in Daily Ration: 5 lb.

Grass hay alone may not be sufficient to meet the needs of working horses. Alfalfa hay is typically higher in digestible energy and nutrients and may be sufficient in meeting the needs of working horses, particularly those in light or moderate work. Heavy and very heavy exercise will require an increased percentage of concentrates in a horse's diet, but forage or hay should make up at least 50% of the daily ration.

Example 3 - Growing Horse: 12 months of age. The energy and nutrient requirements for growing horses are greatly influenced by age and rate of growth. For young horses in training (18-24 months of age), intensity of exercise also affects nutritional needs. The following example outlines a suggested feeding program and hay requirements for a 12-month old horse at a 1 lb average rate of daily gain.

Horse Weight: 700 lb; Average Daily Gain: 1 lb; Required Daily Feed Intake: 2% Body Weight; Total Intake/Day: 14 lb; Percentage of Hay in Daily Ration: 75%; Percentage of Concentrate in Daily Ration: 25%; Amount of Hay Required in Daily Ration: 10.5 lb; Amount of Concentrate Required Daily Ration: 3.5 lb.

Good quality grass hay and grass/alfalfa mixed hays can be used in feeding programs for young growing horses. Young horses with increased nutrient requirements (from showing or exercise) will require an increased percentage of concentrates, but forage should make up at least 50% of the daily ration.

Conclusion. Good quality hay provides ample nutrients to meet the needs of most horses. Horses with increased nutrient requirements due to work, growth, and reproduction may require additional cereal grain-based concentrates to meet needs. Regardless of class of horse, forages should make up at least 50% of the daily ration. Optimizing forages will result in a healthier horse and can also result in significant financial savings (i.e., not feeding grain if additional energy is not required).