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Nutrition Notes

Hay Quality: Good vs. Bad

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Long-stem fiber in a horse's diet is critical to maintain healthy gut function by promoting motility and microbial balance [1]. However, finding quality hay can be a challenge, depending on time of year and geography. Laboratory analysis of the nutritional value of hay may be of limited value to a horse owner who buys small quantities of hay, or it may simply not be cost-effective. A few simple guidelines can help sales reps, nutritionists and owners determine if the hay a particular horse is consuming is suitable for its needs.

The two main types of hay are grasses and legumes. Grasses may include species such as timothy, brome grass, orchard grass, fescue, or bluegrass. Legumes tend to be higher in energy and calcium and include alfalfa and clover (Table 1).

Table 1

Estimates of Forage Analysis Based on Dry Matter Intake, As Published in the NRC Nutrient Requirements for Horses [8]

Forage Type	Mcal/kg	% Crude Protein	% Fat	% Ca	% P
Mostly Grass *Immature*	2.35	18.4	2.4	1.01	0.31
Mostly Grass *Mid-Mature*	2.19	17.4	2.6	0.88	0.36
Mostly Grass *Mature*	2.08	13.3	2.3	0.73	0.27
Mostly Legume *Immature*	2.49	20.5	2.0	1.30	0.30
Mostly Legume *Mid-Mature*	2.35	19.1	2.0	1.17	0.30
Mostly Legume *Mature*	2.20	17.2	1.7	1.09	0.28

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Several factors influence quality of hay, including stage of maturity at harvest, leafiness, color, and the presence of foreign materials [2]. Alfalfa hay harvested at peak nutritive value should have no evidence of bloom (purple flowers) and grass hay should not show large seed heads [2]. Leaves contain about 60% of the total digestible nutrients, 70% of the protein, and 90% of the vitamins contained in hay [2, 3]. Thus, bales containing forage with an abundance of leaves and low stem content have high nutrient value for the horse. Bright green is a desirable color for hay [3]. Sun-bleached hay has lost vitamins and appears light golden yellow, where dark brown or black colors indicate exposure to too much moisture [3]. Brown hay may have been overexposed to heat or may have undergone fermentation, while yellow hay indicates the plants were over-mature when cut [3]. Foreign material, such as weeds, garbage, or carcasses should be avoided [2, 3]. Examining several bales from a given lot of hay for these factors is important for assessing the quality of hay.

Good-quality hay often has an attractive, sweet smell. It will be low in moisture (15-18%), reducing the risk of mold growth [4]. Quality hay of optimum nutritional value is cut before peak maturity, with plenty of leaves, minimal stems and little-to-no visible seed heads or blooms [2,3]. For horses with limited access to pasture, good-quality hay is essential for well-being. In addition to providing all-important fiber, the availability of hay gives the horse "chew time," and may help reduce undesirable behaviors such as wood chewing or weaving. In addition, free access to hay and/or forage can help to reduce gastric upset, especially in horses prone to equine gastric ulcer syndrome (EGUS) [5].

Poor-quality hay may be damp and moldy with a musty or fermented smell. Hay that appears weathered, straw-like or brown is likely low in nutritional value. If hay has been cut late in maturity, seed heads will be apparent in grass hay and blooms will be evident in alfalfa hay. In addition, hay cut late in maturity usually shows a large percentage of stems, with fewer leaves [2]. Moldy hay can be toxic to horses and should be discarded. Foreign material may sicken the horse or damage internal organs and should not be fed.

Mature hay with lower nutritional value may be quite appropriate for horses with metabolic issues, such as insulin resistance, obesity, or equine Cushing's syndrome. However, even late-maturity or yellowed hay should be free from mold and debris. In this way, the affected animal can still ingest important long-stem fiber, without adding as many extra calories. Hay can also be soaked to remove starches and sugars. However, soaked hay should be fed within a few hours, especially in warm climates, to reduce the risk of spoilage.

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When considering the purchase of hay, bear in mind your horse's needs. For example, remember that pregnant mares and young growing foals are susceptible to fescue toxicity caused by endophytes (molds that grow inside the plant) [6]. These horses should not be grazed on pasture containing fescue or fed fescue hay. On the other hand, because of its generally higher calcium content, alfalfa is often recommended for horses with EGUS [7]. Calcium serves as a buffer for stomach acid and may help ease the symptoms of EGUS in affected horses. Legumes tend to be higher in energy compared to grasses. Therefore, overweight horses may be better off with predominantly grass hay. These suggestions are not an exhaustive list, but some common concerns to horse owners.

In situations where quality hay is limited, Kent Nutrition Group **Hay Stretcher**, **DYNASTY®** **Forage** or **Lucerne's Hi-Fiber Gold** products are excellent supplements to a horse's diet. Dust and mold are low, making them ideal options in the diet of horses with allergies or respiratory concerns. To maintain consistency in fiber intake, any of these products can be fed to animals that travel frequently. **Hay Stretcher** can also be soaked into a mash for animals with poor dentition.

Horses are grazers – evolved to continuously consume small amounts of forage. Humans have domesticated horses into a modern equine lifestyle that is quite different from this. By providing adequate, quality forage, we can help maintain proper gut health and nutrition over the lifetime of a horse.

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