NUTRITION NOTES
Innovation + Research from Kent Nutrition Group SEPTEMBER 14, 2012

FORAGE ALTERNATIVES FOR HORSES

Whether it's excessive rain and flooding or drought in the headlines, a limited supply of nutritious forage, can force horse owners to seek "forage alternatives" to stretch or replace their hay supply.

Long-stem forage (2" or longer) is the most important part of a horse's diet and is essential for the health and motility of the hindgut. Therefore, it is not practical to replace all hay with short-fiber particles, such as that found in pelleted products. Ideally, a horse should consume 1.5-2% of his body weight per day as roughage or long-stem fiber (Table 1). At minimum, a horse should receive no less than 1% of his ideal body weight in traditional hay, pasture or other long stem forage. In addition to gut health and function, forage helps to satisfy a horse's need to chew. Horses secrete stomach acid 24/7 and the frequent intake of forage or forage products will help to buffer the acid.

There are several options horse owners can consider to supplement a dwindling supply of quality hay (Table 2). Remember that to be considered a roughage source; a feedstuff must contain at least 18% crude fiber. Complete feeds, beet pulp, hay cubes and total mixed rations such as eCube™ are readily available options. Feedstuffs such as round bales and haylage can be economical and nutritious options, but must be fed with extreme caution. Horses consuming these products should be vaccinated for botulism.

Complete feeds have been discussed here before. Briefly, a complete feed is commercially manufactured and formulated to provide all the nutrition a horse needs without the addition of hay or other fiber products. Complete feeds can certainly help stretch hay, but it is rarely recommended that hay or other long-stem fiber sources be completely removed from the diet. A combination of a high-fiber complete feed such as Blue Seal Trotter or Dynasty Pride, plus either hay or hay cubes, can help stretch a hay budget while maintaining a consistent source of fiber.

Beet pulp is a highly digestible fiber source that is available in shreds or pellets. A byproduct of the sugar beet industry, beet pulp is very low in starch and sugar (less than 10%). Beet pulp is considered a "pre-biotic" or a feedstuff that promotes a healthy hindgut and the proliferation of "good" bacteria. It is recommended that beet pulp be soaked prior to feeding. (Note that pellets must be soaked.) Soaking beet pulp helps get water into the horse's digestive system and may help prevent choke. Shredded beet pulp may contain fiber of sufficient length and both shredded and pelleted forms are very useful forage substitutes for feeding horses with poor dentition. Beet pulp is commonly used to help a horse gain weight, but is also safe to feed to horses with metabolic conditions. Beet pulp is high in calcium and should not be fed to horses with a history of kidney or urinary stones. If high amounts of beet pulp are included in the diet, a vitamin/mineral supplement may be needed to balance the ration properly.

Hay cubes offer a consistent, nutritious source of roughage for horses. Usually available as timothy, timothy/alfalfa or alfalfa varieties, hay cubes may be offered dry or soaked. Soaking will help increase the horse's water intake and soften the usually tightly packed cubes and will help horses with poor dentition chew and swallow. Hay cubes provide a consistent source of fiber and protein. Thus, hay cubes are a suitable forage supplement or substitute, but alone do not provide a completely balanced ration. If hay cubes are being fed without additional grain, a vitamin/mineral supplement such as Min-A-Vite Lite, Sunshine Plus, Topline 12 or Topline 32 should accompany the ration.

continued

With the crunch for finding good-quality forage products, many horse owners have been inquiring about haylage. Haylage can be a nutritious forage source for horses with the understanding that the risk of botulism and mycotoxin contamination is considerably higher if it is not cut, stored and preserved under ideal conditions. Horses being offered haylage should be vaccinated for botulism to ensure at least some protection from these potentially deadly bacteria. In the process of making haylage, grass and/or legumes are cut at the peak of nutrition (before flowering or seed heads appear) and stored under anaerobic (without oxygen) conditions. Moisture may be as high as 30-50%. Under anaerobic conditions, molds, yeast and bacteria that require oxygen die while anaerobic microorganisms ferment soluble carbohydrates. The result is highly nutritious, clean, pleasant-smelling haylage. However, the anaerobic conditions in wrapped haylage are also ideal for botulism growth if the pH is not sufficiently low (below 4.5). In addition, should oxygen enter the environment, or if moisture is too low, yeast, mold and bacteria will proliferate resulting in spoilage. While spoiled haylage will typically be foul-smelling, not palatable and may appear black, brown, caramelized or charred-looking, not all spoilage is visible to the naked eye and careful scrutiny is advised when feeding to horses. Spoiled haylage should never be fed to horses. It is usually recommended that haylage not make up more than 50% of the total amount of forage fed to horses.

Finally, total mixed ration hay cubes such as KNG's Blue Seal ēcube™ can fill the need for quality forage products in the coming year. ēcube ™ is a complete hay cube consisting of a variety of grass hays and some alfalfa. It has been fortified with a vitamin/mineral premix to provide a completely balanced diet for the horse and can be fed as the sole ration without any additional grain or hay. ēcube ™ can also be a forage supplement for horses on low-grain diets or who only have poor-quality hay. In this case, the Equine Ration Evaluator should be used to make a proper recommendation on feeding rate. As a supplement to stretch or improve hay supply or as a sole ration, ēcube ™ can help horse owners provide proper nutrition to their horses while stretching every dollar.

In summary, there is a variety of options to help horse owners provide nutritious forage sources at a time when quality traditional hay may be difficult to find. Suitable choices may vary by geography, management, or most importantly, the individual horse, but several choices are available to help you make suggestions appropriate for your customers' needs.

*****Table 1**

Expected Daily Feed Intake as a Percent of Body Weight*

Class of Horse	Roughage	Grain	Total
Mature, Idle	1.5 – 2.0	0 – 0.5	1.5 – 2.0
Working Horses**	1.0 – 2.0	0.5 – 1.5	1.5 – 2.5
Mare, Late Gestation	1.0 – 2.0	0.5 – 1.0	1.5 – 2.5
Mare, Lactation	1.0 – 2.0	0.5 – 1.5	2.0 – 3.0
Weanling	1.0 – 1.5	0.5 – 1.5	2.0 – 3.0
Yearling	1.0 – 1.5	0.5 – 1.5	2.0 – 2.5

**Adapted from NRC (1989) Nutrient Requirements of Horses*

***Depends on intensity of work.*

KENT NUTRITION GROUP

***Table 2

Alternative Roughage Sources That Can Be Used to Totally Replace or Partially Replace Your Horse's Hay/Pasture

Alternative Roughage	Can Be Used For TOTAL Replacement of Hay	Can Be Used For PARTIAL Replacement of Hay	Replacement Value*		Comments on Roughage Alternative
			Amt. Needed to Replace 1-Lb Grass Hay	Amt. Needed to Replace 1-Lb Alfalfa Hay	
Alfalfa Hay	✔	✔	0.85 lb	1.0 lb	Higher protein and calcium than grass hays so will feed less.
Grass Hay	✔	✔	1.0 lb	1.2 lb	Many types of grass hay: timothy, brome, orchardgrass, prairie, etc.
Bermudagrass Hay	✔	✔	1.0 lb	1.2 lb	Type of grass hay imported from southern U.S.; hay similar nutrition as other grass hays.
Millet Hay	✔	✔	1.3 lb	1.6 lb	Usually contains some millet grain; less nutritional value than most grass hays; may have a laxative effect if feed is the only roughage.
Sorghum Grass	Not recommended				Includes Johnsongrass, Sudangrass, and sorghum-Sudan hybrids; may cause neurological problems in horses.
Alfalfa Hay Cubes	✔	✔	0.85 lb	1.0 lb	Alfalfa that has been chopped and cubed; similar nutrition as alfalfa hay (see above).
Alfalfa/ Timothy Hay Cubes	✔	✔	0.95 lb	1.1 lb	Combination of alfalfa and timothy forages; less protein and calcium than straight alfalfa, but more than plain timothy.
"Dehy" Alfalfa Pellets	✔	✔	0.85 lb	1.0 lb	Pelleted alfalfa hay; similar nutrition as alfalfa (see above).
"Complete" Feed	✔	✔	0.70 lb	0.85 lb	Contains a mixture of grains and roughage sources; designed to be fed without hay; should contain at least 15% fiber if no hay is fed.
Haylage	✔	✔	1.55 lb	1.85 lb	Hay preserved by ensiling rather than traditional drying; higher moisture than hay, so will have to feed more; can spoil (mold), so feed contents of bag within two to three days.
Oat Hay	✔	✔	1.0 lb	1.2 lb	Nutritive value similar to grass hays.
Straw	✔	✔	1.25 lb	1.5 lb	Oat straw more palatable than wheat or barley straw; bulky, high fiber, low in other nutrients; will require protein supplementation.
Beet Pulp		✔	0.70 lb	0.85 lb	Good source highly digestible fiber; relatively high in calcium; may require soaking before feeding; limit to 10 lb (dry weight) or less.
Soy Hulls		✔	0.8 lb	1.0 lb	High fiber, but more digestible than other hulls.

**Replacement values based on average digestible energy content of feeds.*

Feed amounts may have to be adjusted due to variation between sources of feed and horses.

****From L.K. Warren & P.D. Siciliano, Colorado State University Extension, Dec. 2010. http://www.ext.colostate.edu/PUBS/livestk/01625.html*