

"Traditional" Horse Feeding Practices Are Being Challenged

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High Grain Rations Result in Digestive Disorders

It is ironic that, as we enter the new millennium, the way we feed horses is dramatically changing. In the early 1900s horses were first routinely fed cereal grains to provide additional energy for work. And, that was also the beginning of an era of metabolic and digestive disorders such as colic, founder, tying-up, etc. in horses. It is true that today's elite athletes need very specialized rations with all of the nutrients in the correct proportions if they are to perform at their best. But, cereal grains are no longer the best way to provide the needed calories and other nutrients.

Added Fat Provides Energy Without the Risks of Digestive Disorders

In the early 1970s the first personal computers were developed, and the first work was done on feeding fat to horses. In three short decades, personal computers have revolutionized the way we think and communicate, and fat has become a standard in rations for performance horses. This is because horses can be healthier and perform better when some or all of the grain in their rations is replaced by fat and good-quality forages. The world is changing at a tremendous rate, and those changes will benefit our horses.

Characteristics of "Traditional" Horse Feeding Programs

- Heavy emphasis on concentrate or grain portion of ration.
- Many horses fed 50-65% concentrate and only 35-50% forage.
- Large increase in 'all-in-one' bag feeding. These feeds are very expensive on a cost per horse daily basis. They are eaten more quickly than long-stemmed hays or pastures and result in vices related to boredom. (Horses that can eat good-quality forages don't need all-in-one-bag feeds.)
- Common use of multiple supplements from different companies that are not designed to be fed together (can lead to deficiencies, toxicities, and wasted money).
- Least-cost formulation results in vastly different contents, different palatability, and varying results from bags of the same product.
- Frequent incidences of metabolic and gastro-intestinal disorders like colic, founder, tying-up, ulcers, etc.
- 'Grain High' attitudes in horses that result in more required 'ride down time' and increased risk of musculoskeletal injury.
- Growing horses commonly have developmental orthopedic disorders.

Traditional horse feeding programs are contrary to the normal physiology of the horse's digestive tract. Horses are non-ruminant herbivores that are designed to best utilize good-quality forages. And, locally grown, good-quality forage is usually the most economical component of the total ration and can meet most of a horse's nutrient needs.

The fat in NATURAL GLO® is natural rice oil that meets human food standards. Other feed companies use feed grade animal fat or vegetable oils that do not meet NATURAL GLO standards. And, recent research has shown that corn oil can reduce the small intestinal digestibility of starches in high-grain rations and disrupt the population of bacteria in the large intestine.

FORAGE FIRST Programs:

- Designed with the benefit of the horse in mind.
- Based on the most current nutrition research.
- Based on the latest technology.

Benefits of FORAGE FIRST Programs:

- Natural for the horse's gastrointestinal tract.
- Based on good-quality forage.
- Supplemented with vitamin/mineral products.
- Utilize NATURAL GLO® stabilized rice bran (20% naturally occurring vegetable fat from rice oil).
- Cost effective — require less grain than traditional rations.
- Utilize fixed formulations for consistent nutrient content, palatability, and results.
- Total rations balanced for all vitamins and minerals and Ca/P ratio.
- Less risk of metabolic and gastrointestinal disorders, such as founder, colic, tying-up, etc.
- More long-term energy for work.
- Reported increased shine and 'glo' in the hair coat.
- Less risk of musculoskeletal and developmental orthopedic disorders.

Are You Feeding Your Horse Like a Horse?

by Judy Reynolds, PhD., P.A.S.

Traditional Horse Feeding Practices

Recently, equine nutrition research has revealed a link between traditional (grain-based) horse feeding programs and many health-related disorders in horses. Traditional horse feeding programs generally contain large amounts (over 6 lbs./day) of cereal grains (oats, corn, barley), poor-quality forages (less than 8 % protein and 0.8 Mcal digestible energy/lb), and salt, but not many other important vitamins and minerals. Also, many horse owners top-dress several different specific nutrient supplements like biotin, Vitamin E, and iron.

Unfortunately, these programs have led to a 'normal' state where horses are deficient in some nutrients and overfed others. And, horses fed these rations often suffer from disorders such as colic, founder, gastric ulcers and tying-up and have poor-quality hooves, skin and hair. In fact, data from surveys reveal that the main concerns of horse owners are colic, founder and poor hoof quality. This is because horses have digestive tracts that are designed to process good-quality grasses and hays, but do not do a good job of processing poor-quality hays or cereal grains.

Digestible Energy Requirements of Horses

Horses require between 14 and 32 Mcal of digestible energy (DE) per day, depending on the size, class and workload of the horse (Table 1). Horses are expected to consume about 1.5-3% of their body weight in feed per day. So, for example, an 1100 lb. horse can eat between 16.5 and 33 lbs. of feed per day. Since forages contain 0.6 to 1.0 Mcal DE /lb., a horse eating 25 lbs.

of hay with a DE of 0.9 Mcal/lb. can easily consume enough hay in a day to provide 22.5 Mcal of DE. That much energy is enough for all but hard-working horses and lactating mares. In fact, many horses can get most of their required energy from good-quality forages alone.

**Table 1. General Digestible Energy (DE) Requirements of Horses
adapted from NRC Nutrient Requirement of Horses, 1989**

Class of Horse	Weight (lb)	Daily Mcal DE
Maintenance	1,100	16.4
Intense Work	1,100	32.3
Lactation, 1-3 months	1,100	28.3
Growth	385-990	14-21
Growth & Training	990	26.4

Digestible Energy Content of Horse Feeds

Horse feeds can be classified, according to their DE content, into four categories; hays, fermentable fibers, grains and fat supplements (Table 2). In cases where additional energy is needed beyond what forages provide, fermentable fibers and high-fat feeds can be used, so that less cereal grains are required. Cereal grains are the basis of many feeding programs because of tradition and because of very efficient marketing campaigns of feed manufacturers. Grains contain 15-40% more digestible energy (DE) per pound than hays (Table 2). However, their higher DE content is usually not necessary, since many horses can eat enough good-quality hay to meet a majority of their energy needs and fats can supply the rest of the needed energy.

**Table 2. Digestible Energy Content of Horse Feeds
adapted from NRC Nutrient Requirement of Horses, 1989**

Feeds	DE Mcal/lb as fed
Hays	0.6-1.0
Alfalfa, early bloom	1.0
Grass, early bloom	0.8
Fermentable fibers	1.3
Beet pulp	1.3
Soybean hulls	1.3
Grains and Other	1.2-1.5
Corn	1.5 (1.3*)
Barley	1.5 (1.3*)
Oats	1.3
Molasses, sugar beet	1.2
Fat Supplements	1.9-4.1
Vegetable oil	4.1
Animal fat	3.9
Stabilized rice bran	1.9 (2.4**)

* Relative due to low pre-cecal starch digestibility

** Relative due to extra caloric effects

New Forage-based Rations

Research has also shown that if we feed horses more like the grazing, fiber-fermenters they are, we can reduce the risks of many of the common digestive disorders. And, the equine digestive tract can digest and absorb more nutrients from forages when they are not fed with grains. It only makes sense that horses should be fed their natural feed as much as possible. Jet planes don't do well on gasoline fuel, and your diesel truck won't run on unleaded car fuel.

This means we must start with the forage, not with grains, when formulating rations. And, fortunately, we now have more choices of feeds available for horse rations. Instead of just forages and grains, we now also have fermentable fibers (beet pulp, soybean hulls) and high-fat supplements (vegetable oils and stabilized rice bran) at our disposal.

Newer feeding programs are based on good-quality forage. Ideally, forage should be analyzed for nutrient content. However, if you don't have a consistent source of forage, book values for energy, protein and other nutrients can be used. When selecting hay, avoid mature grass hays with less than 8% protein, which tend to be very high in undigestible fiber and low in energy. The best hays for horse rations are immature grasses with some legume content (10-40%). Alfalfa and other legume hays are too high in protein and calcium to be the only forage in most rations, even when their high DE content would be of benefit.

Regardless of the type of forage you feed, if it is of questionable quality, you should find better forage. Adding grain to poor-quality forage is like putting a band-aid on a broken arm. You have not fixed the original problem, so it will not get better. Remember, since all forages are deficient in some minerals and vitamins for horses, a complete, balanced vitamin/mineral supplement, including salt, should be provided.

In cases where more energy is needed than forages alone can provide, high-fat products and fermentable fibers should be included in the ration. Horses can digest and use up to 12% added fat in the total ration. Finally, horse rations should be finished with the inclusion of grains, only when needed (Table 3).

Table 3. Percentages of DE Provided Per Feed Category in Forage-Based Rations

Classes of Horse	Forage	Vitamin/ Mineral	Fats/Fermentable Fibers	Grains
Maintenance	100%	YES	0%	0%
Light to Moderate Work	80-100%	YES	0-20%	0%
Growing, Lactating, Hard Work	60-70%	YES	20-40%	0-10%

Conclusion

In conclusion, traditional horse rations contain large amounts of cereal grains, which put horses at greater risk of colic, founder, tying-up and gastric ulcers. Most horse owners feeding traditional programs are very concerned about these digestive disorders. Forage-based programs can provide the nutrients required for optimum performance and reduce the risks of under-feeding, over-supplementing, and metabolic disorders associated with grain starch overload. The only requirement is that you turn your back on traditional feeding practices and start feeding your horse like a horse.