Welfare and Safety of the Racehorse Summit
Sponsored by the Grayson-Jockey Club Research Foundation
Issue 3 January 2008

Horsemen's Update

Managing the Thoroughbred Diet

If you were to ask five different veterinarians or trainers: What should the Thoroughbred eat? You would likely receive answers with five different strategies for keeping the racehorse healthy through nutrition. Still, none would argue the important role good nutrition plays in the well-being of the Thoroughbred. The unique racing lifestyle places high demands on equine athletes, and proper care through feeding is a crucial consideration in terms of their wellbeing and performance.

Nutrition's Role

As with most athletes, daily nutrition plays a significant role in the way the Thoroughbred adapts to exercise, responds to training, and fulfills its potential on the track. Lately, research has increased focus in the realm of nutrition. Along these lines, the recently revised 6th edition of the National Research Council's Nutritional Requirements for horses — the latest updates since 1989 — brought changes in feed recommendations.[1]


Photo: Dell Hancock
The National Research Council has altered some equine feeding recommendations.

Whereas the older version allotted a concentration in percent of the daily diet for proteins, fats, etc., the new requirements boast a daily feeding rate based on body weight, energy requirements and lifestyle, making the general regulations for feeding more customized to the individual horse.

The Thoroughbred has been bred for speed and endurance. While these traits have been acquired, some researchers argue that the unnatural environment in which racehorses are raised has yielded some consequence.[2] Dr. Amy Gill, an equine nutritionist in Lexington, Ky., believes "certain negative physical and psychological traits have been intensified in the breed as a result of selective breeding." The muscle and respiratory problems, metabolic disorders related to carbohydrates, digestive upset, skeletal instability, and general mental stress leading to behavioral problems may be in part attributable to domestication, diet, and feeding behavior of the stabled racehorse, argues Gill.

Today's racehorse occupies an environment very different from that which is considered natural. The horse is by nature a herd creature that might graze 16 to 18 hours a day in a large, free-ranging social group.[2] The wild horse has evolved and adapted to a grazing and browsing existence, in which it selects succulent forages containing relatively large amounts of water, soluble proteins, lipids, sugars and structural carbohydrates, but little starch.[3] In this setting, a horse rarely develops metabolic or behavioral disorders, according to Gill.

On the other hand, confined and isolated for most of the day, the stabled horse may spend two hours feeding. Further, behavioral problems are often attributed to the large time between meals. Racehorses are fed high-energy feeds dense in nutrients, greatly reducing their intake of fibrous foods and forages. With increased knowledge, however, of the nutritional needs and feeding characteristics of the racehorse, there are resources by which feeding and management can minimize problems and maximize potential. To be sure, it is an art.

One of the most common concerns with racehorses is that their intense energy output during exercise will exceed their caloric intake: Do they consume enough of the right feed to match their energy demands? Muscle stores of glycogen, which is burned during training and racing, must be renewed. For this reason, many racehorses are fed large quantities of energy-rich grain, containing soluble carbohydrate or starch.

According to Dr. Gill, grains are "palatable and high in digestible energy and, if managed correctly, should be incorporated in reasonable amounts in the racehorse diet, as glycogen repletion and storage following maximal exertion is somewhat dependent on glucose provided in the diet."[2]

It is important not to add too much grain because it may change the sensitive environment of the digestive system. Excess grain is not digested in the small intestine and passes to overload the hindgut, increasing discomfort in a horse that is more likely to founder or colic. The solution? Feed smaller amounts of grain more frequently.[2,4]

Also, ingredients that lack high levels of starch, such as beet pulp and rice bran, can be used to increase soluble fiber (digestible energy) content without altering the digestion, suggests Dr. Gill. As a fiber, beet pulp is fermented into fatty acids in the hindgut and yields high energy levels upon digestion. Rice bran is also digested in the hindgut, but yields more energy and contains a sterol called gamma oryzanol, which is thought to increase lean muscle mass[2].

In addition to soluble fiber, the starch content of feed can be decreased by adding fat, which may also decrease excitability and nervousness and the tendency to "tie up." Vegetable oil increases calories without requiring additional metabolism of starch because oils are easily digested by the small intestine.

"Therefore, when high fat products are fed, less feed needs to be consumed by the horse to achieve the same caloric density of a feed containing the same amount of starch…high fat diets have been shown to improve the performance in high intensity, short duration activities such as racing when horses have adapted to the fat," says Dr. Gill. The fat is used before glycogen during activity and leaves a glucose reserve, which is needed at the end of a race.

The Thoroughbred diet, or any equine diet for that matter, cannot ignore the fundamental ingredient of forage. "Racehorses should always have the best quality of hay available at all times," insists Dr. Gill, who suggests a grass and legume mixed hay.

Forage is beneficial because it yields production of saliva, necessary to buffer the high acidic content of the stomach lining. Finally, a source of clean water must always be available to the horse. The average 1,000-pound horse will drink about 18 liters per day[3].

The goals for feeding and management of racehorses should include high quality forage and concentrates high in fat and soluble fiber, and should, according to Dr. Gill, incorporate a routine that minimizes digestive, metabolic, and psychological problems. The new recommendations for feeding attempt to glean energy from all metabolic systems of the racehorse. Keep in mind that changing the diet of the horse takes time for adaptation.

It is crucial to know what is in the daily diet of your racehorse in order to help assist the exquisite athlete maintain wellness, soundness, and its full racing potential. While the feeding options seem endless today, with supplements and fad feeding trends emerging constantly, maintaining the basics of equine nutrition can be made easier with the assistance of literature, and/or nutritionists and veterinarians.

[1] National Research Council. Nutrient Requirements of Horses. 6th revised edition. Washington, D.C.: National Academies Press, 2007.
[2] Gill, Amy M. PhD. "Feeding Racehorses." 2005.
[3] Frape, David, Ph.D. Equine Nutrition and Feeding. 3rd edition. Blackwell Publishing, 2004.
[4] Hintz, Harold F. "Nutrition and Equine Performance." The Journal of Nutrition. Vol. 92: 2723S-2729S. 1994.
Cordes, Tim, DVM. 2000. "Equine Identification: The State of the Art." AAEP Proceedings. Vol. 46.