

Feeding Racehorses

By Karen Briggs | August 1, 1999

On several occasions in the past year or two, we've discussed in this series the intricacies of feeding young horses for optimum growth. We've also walked you through the pertinent points of fueling the high-performance equine athlete, for maximum output with minimum fatigue. But there's one category of performance horse which combines both of these concerns in one package—and that makes feeding them a complicated issue.

It's generally agreed that racehorses, whether they be Thoroughbreds, Standardbreds, Quarter Horses, Arabians, Appaloosas, Paints, or even Trottingbred ponies, represent one of the hardest-working, most fit, and most stressed group in the equine population. Not only that, but they labor under a unique handicap—they are almost always asked to hit a performance peak while their bodies still are immature and growing. It's a double whammy that from a feeding point of view is a serious challenge.

How do you provide lots of energy for performance, without risking developmental bone and joint problems? How do you ensure correct bone growth while still offering enough "octane" in the diet to allow your racehorse to perform at his peak?

If you're going to compete a racehorse, it's important to recognize the dramatic stresses he's going to experience while pursuing a racing career. The very least you can do is provide him with the right fuel so that he can do his job to the best of his ability. A balanced feeding program might not, on its own, prevent injuries, but it can help prevent fatigue and ensure that your young go-getter not only races well, but continues to grow correctly until he reaches maturity. (With luck, that good bone growth will also help keep him sound and allow him to go on to a second career at stud or in the show ring).

Stressed In The Shedrow

SIGN UP FOR BLOODHORSE DAILY

A typical Thoroughbred or Quarter Horse destined for the track gets a very early start to his education. Most are first saddled as yearlings, and they begin galloping under saddle before they reach the age of two. Standardbreds are a little more fortunate, both because they generally are started as 2-year-olds and because pulling a jog-cart is significantly less stressful to young bones and joints than carrying a rider. (Arabians, because of the widespread belief that the breed matures late, often are started later.

MOST POPULAR

-  **Trainer Delany Seriously Injured at Delta Downs**
-  **No More Time Holds Off Agate Road in Sam F. Davis**
-  **Ward Lawsuit Against Ramsey Settled**
-  **'Face of The Jockey Club' Kelly Dies at Age 71**
-  **In Seasonal Debut Endlessly Takes El Camino Real Derby**

BLOODHORSE DAILY



No More Time Holds Off Agate Road in Sam F. Davis

Sibelius Dubai-Bound After Repeat Pelican Score

In Stakes Debut Kinza Rebuffs Kopion in Las Virgenes

Plus News, Analysis, Entries, Results & Replays

[Download Today's Edition](#)

[Subscribe FREE Today!](#)

BLOODHORSE+



Stakes Preview: Sam F. Davis and Heavenly Prize

Stakes Recap: Southwest & Withers

Champion Older Turf Male Up to the Mark at Lane's End

Stakes Preview: Southwest and Withers

By the age of two, most racing Thoroughbreds, Standardbreds, and Quarter Horses are being aimed for their first start, and when they become resident at a racetrack, they experience a drastic change in their environment.

Instead of roaming in lush pasture, they're confined to a stall 20 or more hours a day. Their diet changes from sweet grass to dry hay and (usually) copious amounts of grain. They're frequently subject to barns with poor ventilation and little or no chance for turn-out. Their only chance for exercise comes at morning work-out time. It's little wonder many of them become stressed, lose weight, and develop compensatory vices like cribbing or health problems such as small airway disease, ulcers, or recurring bouts of tying-up.

We're not likely to change the economic realities that send horses off to the track. But it behooves us as horse owners to do our best to help these young racing stars continue to grow and thrive as we place more and more physical demands on them. Keeping the diet as close to optimum as possible is one way to accomplish that.

Protein And Performance

Protein remains one of the first concerns of horse owners and trainers when they're buying feed, even though as a nutrient, protein really doesn't merit all that attention! For years, the racing community labored under the misconception that more protein in the diet equaled more energy for a racehorse. Fortunately, we now know that just isn't the case. Not only is protein a poor energy source, but some researchers believe a protein excess in the diet actually can compromise a young horse's performance by creating higher respiratory and heart rates with exercise, increasing sweating, and possibly even affecting his respiratory health (because his urine will contain higher levels of ammonia than normal, and he'll inhale those fumes in his stall!).

Nonetheless, young growing horses do need slightly higher levels of protein in their diets than mature horses because protein delivers amino acids, the building blocks for new tissue growth. Any horse which is still increasing in height or weight needs good-quality protein in order to support the correct growth of his bones, muscles, tendons, ligaments, and other supportive structures. Hard exercise, such as race training, also increases the need for protein, to support increased muscle development and mass, and to replace nitrogen lost in sweat. This increase, however, is small—only 1%-2%.

As a rule, a 12-month-old youngster requires about 12.5% crude protein in his diet, a long yearling (18 months) about 12%, and a 2-year-old, 11%. If we factor in hard exercise for the long yearling and 2-year-old, we can bump those requirements up to 13%-14%, and 12%-13%, respectively. Any more protein than that is not needed by the horse, and it's a waste of money (because protein generally is one of the more expensive ingredients in a grain ration).

More important than the actual amount of protein in your racehorse's diet is its quality. All protein is not created equal. Different forms have different arrangements of the 22 amino acids, and your horse needs more of some amino acids than others for optimum growth.

The best-quality protein sources for horses contain high levels of the amino acid lysine, which is the "first limiting" amino acid (which means it is the one most likely to be deficient in the diet). A protein source that contains high amounts of lysine is said to have a "good amino acid profile," and finding that good profile is far more important for a young, growing horse than for a mature one. Soy protein probably has the best profile among plant sources palatable to horses, so when you are shopping for grain rations, seek out a feed with soybean meal as its protein source, rather than lower-quality cottonseed or linseed meal.

Alternatively, if you're feeding straight grains, such as oats or corn, you can top-dress soybean meal as a protein supplement; but whether that's necessary depends on the hay you're feeding. Young racehorses can benefit from a hay that is fairly high in protein (a good proportion of legumes—such as alfalfa or clover). You're unlikely to need protein supplementation in your horse's diet if you feed a legume-rich hay, as they generally contain between 14% and 25% crude protein. If you feed a grass hay (average 6%-14% crude protein), however, you'll probably need to consider adding some additional protein to the overall ration. Or you can supplement your horse's hay ration with another legume-rich form of forage, such as alfalfa cubes or pellets.

Protein And DOD

Protein's role in ensuring correct, optimum growth has been the source of much confusion over the years. In the mid-1970's, it was considered the major player in cases of developmental orthopedic disease (DOD), a catch-all term for bone and joint abnormalities in growing foals.

In one study, for example, weanlings and yearlings fed a diet 25% higher in protein than normal suffered slower growth rates and higher incidences of developmental bone and joint problems. This theory, though never proven, prompted many owners and veterinarians to restrict the protein intake of their growing youngsters, either as a means of correcting a DOD problem already in progress or in the hope of preventing one from developing. We now know that this approach isn't the answer; protein does appear to have a role to play in the complicated picture that is DOD, but it's a bit player, if you will, not the star and more likely to be a contributor if deficient than if in slight excess.

Few equine nutritionists recommend restricting protein in the diet, as this approach will almost guarantee that the foal suffers a slower growth rate and reaches less than his full potential in addition to compromising proper bone mineralization. Simply put, no colt or filly can build correct new bone or muscle if the building blocks aren't in his diet.

So, how do you prevent orthopedic problems from cropping up? There are no definite answers, as environment, genetics, and other factors all seem to play a role in DOD. From a nutritional standpoint, you can provide correct mineral support, which now appears to have a significant effect on bone and joint health.

Strength Through Chemistry

A young racehorse needs a serious dose of minerals in order to keep building healthy new bone and muscle while he's exercising to the limit. Calcium and phosphorus are the two macrominerals that have the biggest impact on his

growth. If both are not present in sufficient quantity, and in the correct proportions (at least as much calcium as phosphorus), your youngster won't be able to construct sound, dense, resilient legs.

Forages and hay, as a whole, tend to be high in calcium and low in phosphorus, while most cereal grains (oats, corn, barley, milo, and so forth) are the reverse. Because racehorses eat such grain-dense diets (more on that in a minute), they frequently run the risk of taking in more phosphorus than calcium, so it's often necessary to balance things out by feeding a supplement that is high in calcium. Calcium carbonate, or limestone, is one of the simplest solutions; it can be added to the grain at a level of 60g a day (approximately two ounces) if necessary. Even molasses can be a minor source of calcium, so if you have a picky eater, don't hesitate to top-dress molasses on his feed — it's not just sugar!

To determine how much calcium and phosphorus really are being delivered in the diet, you'll need to run a lab analysis on your hay—a simple procedure we've recommended on a number of occasions in this column. Your local feed store or agricultural extension service should provide this sort of testing for somewhere in the \$20 to \$40 range. Once you have the printout, calculate what percentage of your horse's diet is made up of hay (by weight), what percentage is grain (by weight), and calculate the average calcium and phosphorus by combining the two. (Calcium and phosphorus values in a mixed commercial ration usually will be printed on the feed label or bag. If not, you can get it analyzed at the same laboratory as the hay.) Don't forget to compare the overall calcium and phosphorus values to make sure there is at least as much calcium as phosphorus in the overall mix.

Two other minerals that seem to play a significant role in the growth and development of healthy bones, cartilage, and connective tissue are zinc and copper. Like calcium and phosphorus, these two minerals have a synergistic effect in the body; the level at which one is present in the diet affects how well the other is absorbed. Iron and molybdenum, two other trace minerals also seem to be involved in the absorption equation.

Although opinions differ as to exactly how much copper and zinc are needed by young horses for optimum growth, the usual recommendation for yearlings and 2-year-olds is at least 10 parts per million of copper, and 40 ppm or more of zinc (zinc's absorption rate varies widely, so it's a particularly difficult one to pin down). By far the easiest way to ensure that your racing youngster is getting enough of these two minerals is to feed a commercially formulated grain ration specifically designed for young, growing stock.

Other Minerals, And A Few Vitamins

Even those of us for whom chemistry was never a strong subject know that iron is an essential component of hemoglobin, the molecule in the blood that helps carry oxygen to the cells. It's common, at the racetrack, to supplement iron in the name of "blood-building" for optimum performance. However, true iron deficits are unlikely unless the horse is experiencing chronic blood loss. Whether most racehorses actually need this supplementation isn't clear. We do know that iron's absorption rate across the gut wall is quite low (only about 15% to 18% of the iron delivered in the diet actually is absorbed by the horse), but we also

know that horses lose relatively little iron when they sweat. Most forages contain far more iron than the average horse could ever use, so real iron deficiencies are pretty rare.

If, however, your horse's poor performance prompts you to run a blood test, and he is shown to be clinically anemic (has a low red blood cell count even when a bit excited—beware falsely low hematocrits due to splenic sequestration in fit horses), before jumping to iron supplementation check the horse's copper status. Copper deficiency will cause the same type of anemia commonly attributed to iron deficits. Excessive iron supplementation interferes with copper utilization and can actually make things worse. Though iron supplements do have a

reputation for enhancing athletic performance, but it's important to remember that the equine body has no way to excrete excess iron—and in addition to interfering with copper utilization, iron toxicosis can lead to depression, dehydration, diarrhea, an increased risk of bacterial infections (because some bacteria find an iron-rich environment particularly inviting), and even liver failure and death. If you do supplement, follow the package directions as to dosage and don't operate under the mistaken belief that "if some is good, more must be better."

One other note: corticosteroid drugs alter iron metabolism, so if your horse is being treated with these, it's best to stop iron supplementation.

Perhaps it's obvious to suggest that your young racehorse receive salt in his diet, but then again, it's easy to underestimate how much sodium and chloride a horse can lose when he is exerting himself and sweating. If your horse won't use a stall-sized salt lick, you'll want to offer loose salt free choice in a bucket. Salt is the one nutrient that horses will consume in amounts adequate to meet their needs if given a choice.

Finally, consider the value of providing a general vitamin supplement for your racehorse. Stress increases the need for B-vitamins, especially B-1. Digestive upsets due to the stressful atmosphere at the track also can lead to your youngster's not being able to synthesize sufficient quantities of B vitamins in his gut, making a B-complex supplement a good idea. (Brewer's yeast is an inexpensive way to provide B vitamins).

Vitamin D, the "sunshine vitamin," also might be in short supply in the system of a horse which spends most of his time inside. Beta-carotene, the precursor of vitamin A, is far more accessible when a horse is grazing fresh pasture than when he's eating cured hay. Remember, too, that the older your hay is, the more its vitamins probably have degraded. The same goes for grain; the longer it is stored (particularly if it is stored in damp or humid conditions or exposed to sunlight), the fewer nutrients are retained. Try feeding a couple of pounds of carrots a day, or some hydroponically grown grass in order to provide beta-carotene as well as folic acid (a B vitamin) and vitamin D. Or you might choose to feed a commercially mixed grain ration with a good overall level of vitamin supplementation. Buy it in small quantities to keep it fresh. (It goes without saying that you should feed the freshest hay you can obtain. By the time a bale is one year old, its vitamin content is practically nil.)

Fueling Performance

Providing enough energy for your youngster to race at his best probably is the biggest challenge you'll face when feeding a racehorse. In order to provide serious energy, you need to feed carbohydrates, such as are contained in grains. However, the design of the horse's digestive system limits the amount of grain you can feed in a given meal or on a given day. His small stomach and adaptation for slow digestion of fiber make him vulnerable to colic and laminitis when he's fed large quantities of carbohydrates in a short amount of time. So you'll have to incorporate several strategies simultaneously to deliver the fuel he needs, without sending his system into a backspin.

The first, and simplest, strategy, is to feed small meals, often. This is relatively easy to do when your horse is stabled much of the time, and might encourage a picky eater to clean up his feed. Four or even five small grain meals a day are preferable to one or two large servings of carbohydrates at one time; mixing the grain ration with a fiber source, such as soaked beet pulp or roughage chunks, will help your horse slow down, chew his grain thoroughly, and digest it efficiently.

The second strategy is to provide calorie-dense meals that pack a lot of energy for their weight. For example, instead of feeding oats, which because of their hulls contain only about 50% carbohydrates, you might switch to a hull-less, starchier grain such as corn or barley, each of which is 70% to 80% carbohydrates. Processing the grain to open up the seedcoat (cracking, flaking, or rolling it) helps make the carbohydrates more available to the horse. If you do feed something other than whole grains, buy the feed in small batches, because the processing also allows vitamins and minerals to break down on exposure to air over time.

As a rule of thumb, no horse, regardless of his occupation, should ever be fed more grain, by weight, than forage; to do so is to risk digestive upset, or even gastric ulcers (which have an extraordinarily high incidence in young racehorses). Keeping the ration at least 50% forage is an excellent idea. In order to provide enough energy for hard training and racing, however, you might have to walk very close to that 50/50 line. If you have a nervous youngster who tends to leave his race in the barn or at the starting gate, g the amount of forage and adding fat (see below) to his ration. If you have a horse that can not maintain adequate weight on the above recommendations, don't forget to check his teeth and deworming status. Remember that while forage might not provide the concentrated energy your racehorse needs to run and to win, it's the fuel on which he performs all of his day-to-day maintenance metabolism, and without it, his digestive tract can't function normally.

One way to provide some concentrated energy to your horse's diet, without increasing its bulk by very much, is to add fat. Fat (usually in the form of vegetable oil) is an excellent energy source, supplying almost 2 1/2 times as much energy, pound for pound, as carbohydrates. It's not as versatile an energy source as carbo, because the horse's body only can burn it aerobically (the energy pathway used for slow, steady exercise rather than high-intensity, short-term sprinting), but despite that limitation, it has proven a valuable addition to the

diet of many racehorses. Among the benefits of an added-fat diet are the following:

- Better muscle glycogen utilization during anaerobic (sprinting) activities, with less fluctuation of blood glucose and blood insulin concentrations;
- Less decrease in blood glucose during aerobic activities than shown by horses fed a traditional (high-carbohydrate) diet;
- Glycogen sparing (less depletion of stored glycogen), which has been shown to help delay the onset of fatigue.

In one study, horses fed a 15% fat diet performed better than those fed high-carbohydrate (40%) diets or high protein (25%) diets in racing-type activities and moderate-speed activities. The improvements were measured by their blood glucose concentrations (which decreased more slowly and for a shorter time period) and in terms of their blood lactate levels (which were substantially lower than in horses on high-carbohydrate diets). There is ample documentation as to the benefits of fat. Some research even suggests that feeding a high-fat diet might help horses reduce heat waste and dehydration when they're exerting themselves in warm weather.

High-fat diets are valuable for all sorts of racehorses, even sprinters such as Quarter Horses and Appaloosas. However, it appears that Standardbreds might have the most to gain. Young Standardbreds put in more training miles, and race more frequently, than any of their counterparts or any of the sprinting breeds. As a result, their energy needs are considerable. Feeding fat is a valuable way to increase the energy density of their diets without adding much more bulk (even a racehorse can only consume so much feed per day).

Nothing this promising comes without a caveat or two, of course. The biggest snag with feeding a high-fat diet is that the horse's system seems to need to "learn" how to burn fat in preference to carbohydrates, a process that sometimes can take a month or more. Although it's highly digestible, fat is not a natural part of the equine diet, and it appears, for reasons that aren't completely clear, that the horse's system takes time to adapt to the presence of vegetable fat. A little perseverance is required, because you won't see the benefits right away. In order to kickstart the fat burning, you have to challenge the horse's system with strenuous exercise (meaning, for the racehorse, that you can't just train him lightly to help his system adapt, you must train hard or race him).

It also has been found that a high-fat diet works best in conjunction with a high-carbohydrate intake. Therefore, while replacing some portion of the carbohydrates in the ration with fat is useful, there doesn't appear to be any benefit in offering more than 10%-15% fat overall.

How do you deliver fat to a racehorse? The simplest way is to seek out a commercial grain ration that has supplemental fat in it (look for a level of at least 6% crude fat, and preferably 8% to 10%). That way, the picky eaters in your barn can't sort ingredients or turn up their noses at the unfamiliar "greasiness" of their feed. You also can top-dress vegetable oil (corn or soy oil often can be purchased in bulk through your feed store), working up to 1½ to two cups per day in total. Or you might prefer to investigate rice bran (a powdered feed supplement containing an average of 22% fat, but, unless supplemented, has an

extremely reversed calcium to phosphorous ratio-beware and read the labels) or a commercial fat supplement such as Purina's Athlete (14% fat). As you gradually increase the proportion of fat in your racehorse's diet, you might be able to decrease the amount of grain he receives in small increments.

A Few Tips

Although a racehorse will perform to his best advantage if he's not carrying around any excess body weight, there's a big difference between being fit and being underweight and run down. Far too many racehorses are the latter, unfortunately, and far too many trainers mistake simple ribbiness for good muscle tone! Like any other type of athlete, a racehorse must have stored reserves to run on, or he'll run out of gas in the stretch. Be sure to provide your horse with enough groceries so that he's able to maintain some cover over his ribs and spine. If he's a picky eater, or the nervous type which walks his condition off in his stall, try making his diet more energy-dense by substituting corn or barley or a high fat extruded or pelleted feed for oats or an oat-based sweetfeed. (Don't neglect regular deworming and dental care, both of which can have a serious impact on a horse's ability to maintain condition.)

If your horse consistently has loose manure, his diet might be short on fiber. Try cutting back slightly on his grain and offering more hay. If he won't clean up any more than he's already getting, consider adding another fiber source, such as soaked beet pulp or roughage cubes, to his ration. Hard and pebbly manure, on the other hand, often is an indicator of dehydration. Since water probably is the most important nutrient your racehorse can get, take every opportunity to encourage him to drink (except, of course, immediately post-exercise). In hot weather, or after any serious exertion, you might want to offer him water with an electrolyte solution in it to help him replace trace minerals lost through sweat. However, be sure to offer him plain water as well.

Lastly, take every opportunity to allow your horse to escape the stressful environment of the racetrack and have some down time in a grassy paddock. The age-old prescription of Dr. Green still will cure many of a racehorse's ills, and that goes for mental disorders as well as physical ailments.

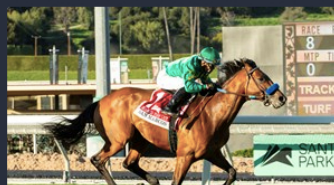
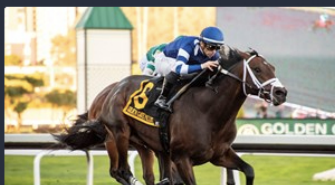
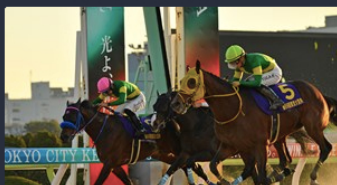
Disclaimer: Seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.

0 Comments



Horse Health

| MORE CONTENT



Wilson Tesoro Looks to Break Through in February Stakes

In Seasonal Debut Endlessly Takes El Camino Real Derby

Missed the Cut Defeats Planetario in San Marcos

COMMENTS

Comments for this thread are now closed

0 Comments

Karen Briggs ▾

♥ • Share

Best Newest Oldest

This discussion has been closed.

 Subscribe  Privacy  Do Not Sell My Data

ABOUT THE AUTHOR

Karen Briggs

More Articles

STALLION
REGISTER

AUCTION
EDGE

TRUE NICKS

BOOKS &
PRODUCTS

SUBSCRIPTIONS

Magazine
Magazine Tablet
Edition
BloodHorse Daily
Newsletters & Alerts
RSS

PRODUCTS & SERVICES

Our Company
Media Kit
Our Products

CONTACT

Contact Us
Editorial Staff
Advertising
Staff
Give Feedback

LEGAL

Terms of Use
Privacy Policy
Community
Policy
Cookie Policy
Site Map



Copyright © 2024 Blood-Horse LLC. All rights reserved internationally.