



Horse Care

Feeding And Exercise For The Hardworking Horse

by HEATHER SMITH THOMAS

Horses in strenuous athletic careers need high energy feeds. Owners and trainers also try to make sure these horses have optimum nutrition in terms of vitamins, minerals, etc. Brian Nielsen, PhD (associate professor of exercise physiology and nutrition at Michigan State University) did some of the research for the revised (sixth) version of the National Research Council's Nutritional Requirements of Horses. The new edition has a few changes in feeding recommendations, according to Nielsen.

"The old NRC guidelines (published in 1989) talked about feeds in concentration basis (such as a percent of the diet) as well as amounts needed per day. In this new version, we've gone away from this basis except in a few minor cases where there was not enough information to do so." This will be a big change for a lot of people, in how they think of certain parts of the diet (such as how much protein, fat, etc.), he says. The new recommendations look at feeding rates on a body weight basis—how much to feed per pound of body weight of the horse. This is quite simple—multiplying the nutrient requirement by the weight of the individual horse. In many instances (such as when feeding concentrates to a hard-working horse), the total amount fed is now less than in the past, because of added fat in these diets; a small amount of fat provides more calories than a larger amount of grain.

There are many hard-working horses who need grain to perform at their best or to meet energy requirements, but people tend to think of grain as the only part that matters. "This is one of the things people need to look at differently, and it will be healthier for the horse. The forage portion will hopefully come to people's minds a little more than it has in the past," explains Nielsen.

"The new version is a huge document, but a lot of the changes are not that dramatic. There are some changes, however, in feeding the hard-working athlete, and we have a whole chapter that deals with unique aspects of equine nutrition. We also discuss feeding behavior and general considerations for feeding management. There are some new guidelines for feeding the working horse. When we look at maintenance requirements, we add the horse's needs for energy (for work) on top of his maintenance requirements."

The new guidelines have different maintenance requirements than the previous version. The idea behind this change is that not all horses have the same maintenance requirements, even before you add on the exercise. Some horses are easy keepers and some are harder to keep weight on. "Much of this may be due to the activity the horse is doing on his own. The hard keeper may be one that's a little more active, more fidgety, and as a result there are some differences in energy requirements," explains Nielsen.

"For most other livestock species, researchers put the animals in metabolism crates and the animal doesn't do any activity at all, so you're getting true maintenance requirements. For horses, we assume maintenance requirements typify the mature animal that is not in training or work, but there is huge variation from the ones who are kept in stalls (and really limited as to what they can do) and the ones kept out on pasture, doing their own exercise. Some are more active than others," he says.

Now we take into account some of the differences in digestible energy intake, categorizing these as minimum, average and elevated. The nice thing about energy requirements is that you can look at the horse and get a pretty good idea whether you are meeting those requirements—by using body condition scoring. Body condition is scored one to nine, with one being emaciated and nine being obese.

Energy Requirements For Work

"For exercise, we're using different categories than we did in the past. The 1989 version broke it into light, moderate and heavy exercise. Now we've broken it up as light, moderate, heavy and very heavy exercise—to allow for more precision," says Nielsen.

A person must use their own judgment in deciding which category best describes a horse. "For instance, in the energy section where we have a very heavy work load, we give examples of types of events such as racing and elite three-day eventing. The eventing would definitely fit this picture, but not all racing is actually this strenuous. Probably the Standardbred and endurance horses would be in this category, but Thoroughbreds might be questionable, and Quarter Horses probably would not be in this group," he says. The latter exert for a very brief time.

"I run racing Quarter Horses myself, and their needs are not much above maintenance requirements—for a lot of them. It depends on how much you are running them, or if you have them on mechanical walkers and how far you're walking them, etc. You must use your own judgment on where you think an animal fits in these categories. This is a tough thing for a lot of horse owners. Even if they are riding the horse, if it's only once a week for an hour or so, they might think this is light exercise, whereas realistically it may not be any different from a maintenance animal because the work is so infrequent," says Nielsen.

Having four categories of exercise now, rather than three, provides a better guideline, and the new version gives estimates of how many hours per week that animal is working. This gives a better guide for the person who might not have any idea where his horse fits.

Horses in heavy to very heavy work mainly have a higher need for energy. "There is, however, some other tweaking

needed in the diet, regarding mineral requirements. For young horses in training, we've increased the calcium requirements a little, and include a lengthy discussion about the things besides nutrition that can have an impact on bone metabolism and amount of mineral there. The amount and type of exercise the animal gets can have just as great (if not greater) effect on the amount of mineral in the bone, as compared to what's in the diet," explains Nielsen.

The Importance Of Proper Exercise

Bone responds to whatever load is put on it. If you don't do much exercise, you lose some mineral. If a horse is doing heavy work, particularly at speed, the body tries to build a stronger skeletal system to accommodate those speeds. In periods of work, the body does a better job of absorbing calcium from the GI tract than it does in times when it doesn't need the extra calcium. The body adapts to the need.

You can feed a horse a lot of extra mineral, but in a period of inactivity when the horse isn't doing much, he will still lose mineral from the skeleton regardless of how much is in the diet. "The new guidelines make some precautionary statements about that. It doesn't really matter what you feed, if there's a poor exercise component. It all works together. If you have the exercise component correct, then meeting the mineral needs is very important," explains Nielsen. But a horse must have exercise in order to build strong bones.

"Bucked shins, which is a big issue with racehorses, is not nutritional. It is due to exercise or the lack of it. We often put these young horses in stalls while we prepare them

for sales, for 30 to 60 days. This inactivity, along with the early stages of training when they are typically kept in stalls and not sprinted at all, means they might have had no speed work, whatsoever, for five months," he says. Then they go out and work, often without an adequate period in which they can restrengthen their bones.

"Even when you start to break them and are walking, trotting and galloping these young horses, you are still not putting any speed into it until they're 60 to 90 days along. Then you start to go one or two furlongs or farther and never look back. The skeleton was weakened by the periods of inactivity and slow work, and you're not allowing enough time for it to become stronger later," he says.

Everything is interwoven. You can't just look at nutrition as a separate entity without considering the exercise and work the horse is doing. "Many times, people want to use nutrition as the magic bullet. If the horse is having problems, they want to blame nutrition. It would be handy to be able to do that, but it's not applicable," says Nielsen.

Fortunately for the bones, if you exercise the horse properly and subject the bones to whatever strain or force at which you will be competing, the bone will do a pretty good job of taking care of itself. Problems basically only occur when you don't give proper exercise. "Likewise, there's no need to do too much work at a high intensity. It only takes a few cycles (strides) at speed to obtain desired results.

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Some people do way too much of that," he says.

Bone does repair itself, if given enough time. But if you keep adding on too many cycles you damage the bone. Bone does repair itself, but slowly. If the horse has a weakened skeleton from not enough exercise (in a stall, with no speed work) and then starts to do too much, there will be problems. A little speed is good, but too much is not helpful at all. You walk a fine line between building up bones and breaking them down.

Fat In Diet Is The Biggest Change

"The new recommendations don't have much increase in vitamin concentrations. Protein is also not much different. They do talk quite a bit, however, about inclusion of fat in the diet," says Nielsen. Many people add fat to provide extra energy for a hard working horse rather than increasing the grain ration, since too much grain can lead to health problems like indigestion, colic or laminitis.

"There are a number of things that fat in the diet can do, but there are two sides to this idea. One group believes that fat in the diet of an athletic horse has lots of advantages, and another group thinks the advantages may not be that great. More research is needed to help shed light on this issue. But the thing that fat definitely does is increase the energy density of the horse's diet without increasing volume. He doesn't have to eat as much and can still obtain his caloric requirements, which is important for a horse in hard work," explains Nielsen.

Some athletic horses become fussy about their feed and it's

hard to get enough energy into them. "This is a tricky thing, and some horses don't want to eat fat. You want to start out slowly, adding just a small amount at first to the ration. You also need to remember that it takes some time for the horse to become adapted to it—to where they can utilize and gain benefit from fat. It probably takes a minimum of three weeks before you see some of the positive effects," he says.

"One of the things people believe it might help with is to increase glycogen stores in the muscle. This is like having more fuel in your gas tank—if you are exercising you can go a longer distance before you run out. There are some thoughts that it has a glycogen sparing effect also. Horses can use fat preferentially when doing aerobic activity (slow work) because it takes oxygen to utilize fats in the diet," explains Nielsen.

When a horse is trotting or doing a slow canter, he can use fats instead of tapping into the glycogen in the muscles and liver. Then when it comes time to do high speed anaerobic work, this might mean more glycogen would be available because the horse hasn't used it up on the days he was doing the slow work. "So with fats, not only do you fill the gas tank higher, but you save it longer; you don't touch the gas tank (or at least not to the same degree) on the slow days," he says.

"There's enough research to show these effects probably exist, but some people question it. There are enough advantages, however, in having fat in the diet, that for an athletic horse it makes sense. If for no other reason, it's a way you can meet calorie needs without increasing the amount of starch and sugars in the diet. This is just a lot safer way to feed a horse that has a high energy requirement," says Nielsen. ■

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