Recently, we sent out an invitation to our Trail Blazer readers to hit us with their most pressing questions, in 20 different categories. With over 9,000 questions from our readers, the idea for our dynamic new “Burning Questions” series was born.

In each issue of 2010, we will focus on one topic that our readers have a keen interest in getting great answers from experts!

Questions by Trail Blazer Readers
Answers by Dr. Kathleen Crandell, Dr. Amy Gill & Dr. Clair Thunes
I would like to know if feeding hay in the trailer is safe for horses, and what is your recommendation of how to feed a horse in a trailer so it doesn’t choke?

Horses are fed hay in trailers without incident all the time, but there is a slight chance that a horse could choke. There are a few things you can do to reduce the risk. Tying the horse so that he is able to get his head down and chew in a more natural swallowing position is one idea. It may seem very convenient when the trailer has a built-in feed bunk, but it can be very uncomfortable for the horse if he cannot step back from the bunk and lower his head. Hay bags work better because the horse can take a bite and then drop his head to chew. Wetting the hay before putting it in the trailer not only reduces the dustiness in the trailer but also provides moister bites. Because horses do not particularly like drinking in the trailer, moistening whatever they are eating may ease its passage down the esophagus. Feeding the same hay the horse is getting at home may be wise if the horse has a tendency to gorge when offered something that is different or more palatable.

- BY KATHLEEN CRANDELL, PhD

What are the best energy snacks to pack for equines on the trail, items you could bring to provide your horse with the proper nutrition if the grazing is limited?

If grazing on the trail is limited you will need to provide a supplementary source of nutrients and should focus on forage first, as adequate forage is necessary for the correct functioning of the digestive tract. This could be in the form of baled hay although this may not be the most practical. Other alternatives would be pelleted or cubed hay or a commercially produced complete feed. If the feed you choose is different from your horse’s regular diet, then you should introduce the new feed to your horse gradually over a week prior to your trip. This will help reduce the risk of colic due to sudden dietary change.

Most horses typically consume about 2% of their body weight per day in forage and possibly more if they are working hard. Pelleted feeds are more easily digested and there is less waste, so it may be possible to feed slightly less than you would feed in long stem hay. This may be an important consideration if you have to pack feed with you. If there is likely to be some grazing then taking enough of these feeds to provide 1% of your horse’s body weight per day would be a safe minimum.

- BY CLAIR THUNES, PhD

MEET OUR HORSE NUTRITION EXPERTS

Dr. Crandell is an Equine Nutritional Consultant. She received her MS in Equine Nutrition and Exercise Physiology and PhD in Equine Nutrition and Reproduction from Virginia Tech. Currently Dr. Crandell is a nutritionist for Kentucky Equine Research, one of the premier equine research and consulting firms in the world. She has designed and formulated several horse feeds and has consulted with many top US riders on their feeding programs. As a lifetime avid trail rider, Dr. Crandell has many hours and miles on the trail. She has been competing in Competitive and Endurance competitions since 1989. To learn more about Kentucky Equine Research, visit www.ker.com

Dr. Gill conducted her graduate studies at the University of Kentucky, receiving a Master of Science degree in Equine Nutrition in 1989 and a Doctorate in Equine Nutrition and Exercise Physiology in 2000. Dr. Gill specializes in growth, metabolic and exercise-related disorders. Dr. Gill has much practical experience with horses as well and spent many years breaking and galloping racehorses and working on the racetrack as an equine physical therapist. As a consultant Dr. Gill has worked extensively with several feed manufacturers. In 2004, she produced a series called Horse Sense for RFD-TV. You can learn more about Dr. Gill by visiting her website: www.amygillphd.com

As an equine nutritionist through her company, Equilibrate Equine Consulting, Dr. Thunes has worked with a wide range of horses from lactating mares to competitive driving horses, and with a variety of physiological problems including insulin resistance and muscle myopathies. Dr. Thunes believes in finding the right balance not only in the diet of the horse but also between the need of the horse and the resources of the owner. Additionally Dr. Thunes shares her knowledge talking with local equestrian groups on a range of nutrition related topics. You can learn more about Dr. Thunes by visiting her website: www.summitequine.com

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**What is the best way to store hay, and how can I tell if my hay is still good to feed the horse if it has been stored for a while?**

Hay should be stored in a building separate from where the horses are housed so that if a fire occurs it will not endanger the horses. Hay should not be put in a barn until it is dried to 12% moisture or less. If it is higher, the chance of molding increases as well as the possibility of the hay spontaneously combusting due to active fermentation of starches and sugars, which produces heat. Hay should be good to feed so long as it is stored where it remains dry. Certain nutrients, such as vitamin E, values, will decrease over time, but in general hay one year of age or less is still suitable for feeding. The only true way to tell the nutrient content of forage is to have it analyzed by a qualified laboratory.

- **By Amy Gill, PhD**

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**When horses are out on pasture, what extra vitamins, minerals and supplements would be helpful to make sure they are getting all they need?**

Good-quality forage found in pastures goes a long way in meeting a horse’s nutrient requirements. Nutrients abundant in green grass are water, digestible fibers, protein, vitamin A (in carotenones), vitamin E and vitamin D (from sunlight). There can be sufficient amounts of macrominerals such as calcium, phosphorus and magnesium. Microminerals like zinc, copper and manganese are present but may be inadequate. Selenium can be deficient, adequate or excessive depending on the area of the country. Sodium is usually low in the forage, so free-choice salt (sodium chloride) should always be available.

If the pasture is poor, either in quality or quantity, then the supply of the above-mentioned nutrients would be less. Three general types of supplements may be used to balance nutrients that are deficient or missing in the forage, and these vary in what nutrients they offer: vitamin/mineral fortified salt (formulated for horses); vitamin/mineral supplement (fed in small quantities, only appropriate if more calories or protein are not necessary); or commercial concentrate (contain additional calories and protein; the amount of calories needed will dictate whether it would be a low-intake balancer type or a regular commercial feed).

- **By Kathleen Crandell, PhD**

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**Feeding alfalfa hay, beet pulp and other “soluble” fibers such as rice bran and soy hulls help to keep water in the intestinal tract which can also help prevent dehydration.**

- **Dr. Amy Gill**

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**Is it true that it is better for your horse to soak his hay before you feed it?**

There are certainly some benefits to soaking hay, perhaps the most obvious being that it increases the horse’s water intake. This may be of use in situations where you are concerned about your horse’s water intake and hydration status. Additionally, soaked hay has lower levels of starch and soluble sugars than the same hay prior to soaking. For horses with insulin resistance, laminitis or PSSM and where low sugar/starch hay is not available or levels are unknown, soaking (one hour in cold water or a half hour in hot water) can be a very useful tool. For horses with respiratory issues aggravated by dust and allergens, soaking hay may be beneficial as even clean hay has some dust particles. Soaking for 30 minutes has been found to reduce the number of respirable particles by 90%. If you do decide to soak your hay, more is not necessarily better. No further reduction in respirable particles was found even when soaked for up to 12 hours, however there was a significant reduction in the amounts of some minerals in the hay, which may not be desirable.

- **By Clair Thunes, PhD**

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**It is important to keep in mind that as horses age they may become less efficient at absorbing nutrients from their diet and may have higher nutrient requirements than earlier in life. As a result, it is often necessary to feed a more nutrient-dense diet with higher quality ingredients.**

- **Dr. Clair Thunes**
If you are packing in the “backcountry” on a multi-day ride, what feed should you pack to get the most “bang for the pound”?  

Some of what you have to pack depends on the backcountry. If forage is sparse, then packing hay cubes or hay pellets would be the most compact way to bring in essential forage to supplement what little the horse can pick up. Contact the Forest Service for info on grass and water in the area you plan on packing in and to check their regulations on certified weed-free forages. If there are abundant natural forages, then bringing along some type of grain concentrate will be very much appreciated by the horse.

On a weight-by-calorie basis, high-fat feeds certainly give the horse more energy with less bulk than low-fat or conventional feeds. Pelleted rice bran together with some type of vitamin/mineral supplement and high-fat pellets (6-12% fat) would give more calories per pound than conventional pellets.

Pack only pelleted feeds because they have undergone heat treatment killing contaminants; textured feeds have higher risk of sprouting grains (and attracting bears). Make sure the horse is accustomed to eating any type of feed you bring before embarking to reduce risk of colic. Bring along a small salt block or loose salt to add to the feed.

- BY KATHLEEN CRANDELL, PhD

I would like ideas on how to feed my trail horse to maintain a healthy digestive system and prevent colic when away from home on overnight campsouts?

Sudden changes in feed can cause gastrointestinal disturbance and colic so keeping the diet as consistent as possible is an important consideration. Diets should be forage-based and grain should only be added when it is not possible to maintain condition from forage alone. Some horses do not handle the stress of new surroundings as well as others and these horses may go off feed and may have an increased colic risk. If grazing is available, even hand-grazing for a short period may help them to relax and contemplate eating their regular ration. Ensuring adequate hydration is important because dehydration can increase the risk of impaction colic.

A source of salt should be provided, and consider an electrolyte if working for prolonged periods and/or sweating. Some horses will not drink water when away from home. Adding a small amount of apple juice to your home water and then doing the same when away from home can be helpful for creating a familiar taste and encouraging a picky drinker. Plain water should always be additionally available. Hard work can induce colic especially if the horse is exercised beyond its fitness level; therefore, your horse should be fit enough to comfortably perform the exercise being asked of him.

- BY CLAIR THUNES, PhD

If the trail horse can get enough calories from forage alone, then the ideal diet would be forage with a vitamin/mineral supplement and salt to supply the other nutrients that are low or missing in the forage.

- Dr. Kathleen Crandell

I have two horses: one is a hard keeper and one is an easy keeper. How can I manage them best when they live together in a pasture?

You are not going to like this answer—if cannot be done well unless the hard keeper is dominant over the easy keeper, and that generally never happens. Most hard keepers are at the bottom of the pecking order and that is why they are thinner—they get run off their feed by more dominant pasture mates. The only true way to manage these two is to separate them at feeding time so that each can quietly eat their feed, and then make sure there are more than two piles of hay in the paddock when they are turned out together so there is always hay available to the hard keeper. It may require more time but this is the only way to ensure each horse is consuming only what he or she is supposed to.

- BY AMY GILL, PhD

How do the nutritional needs of recreational trail horses differ from those of horses competing in other disciplines?

There is not much difference in the vitamin, mineral and protein requirements between trail horses and other performance horses. The biggest differences would be the amount of calories needed and the form in which the calories are consumed. Forages (grass or hay) provide an ideal source of energy that is constantly available as the horse goes down the trail. Forages are also necessary for a properly functioning digestive tract and act as a major stimulus to the thirst response for water intake. All of these are important for the trail horse. If the trail horse can get enough calories from forage alone, then the ideal diet would be forage with a vitamin/mineral supplement and salt to supply the other nutrients that are low or missing in the forage. Only if the horse cannot maintain his weight on forage alone is it necessary to add some kind of more calorie-dense feed.

- BY KATHLEEN CRANDELL, PhD

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Is there anything I can feed that would prevent or greatly reduce the risk of tying up, and are there any feeding regimes that could cause tying up?

There has been a long-recognized association with the feeding of high-starch meals and the occurrence of tying up. Consumption of high-starch meals is commonly thought of as the cause of “Monday morning disease”, seen in work horses that were fed full rations on their day off and then suffered from tying up the following day when pulled out to work.

More recently, researchers have been able to link high-starch intakes to tying up in horses with certain genetic muscle disorders, polysaccharide storage myopathy (PSSM) and recurrent exertional rhabdomyolysis (RER). A horse with PSSM builds up too much sugar (glycogen) in the muscle tissue, and thus responds well to removal of as much starch as possible from the diet. RER horses can tolerate a moderate amount of starch, but a narrowly defined threshold often tips them over the edge.

There are a few nutrients, such as selenium/vitamin E or calcium, that when deficient or imbalanced can lead to muscle problems. Also when a horse becomes dehydrated and has lost a lot of electrolytes through sweating it can bring on a bout of tying up. To avoid tying up, make sure the horse has a well-fortified diet with the proper balance of minerals and vitamins; back off or slow down if the horse becomes dehydrated; replace electrolytes when the horse is sweating intensely; and avoid high-starch meals if the horse is suspected of having either PSSM or RER.

- BY KATHLEEN CRANDELL, PhD

What is the recommended protein vs. fat content recommended in packaged feed?

A horse’s nutrient requirement depends on multiple factors, such as what he does for a living, his metabolic state, i.e. how hard he is working, whether he is growing, etc., the weather, and his state of health. Therefore how much protein and fat should be in a feed depends on the individual horse. However, assuming we are talking about a mature horse, he will need his total diet to have a crude protein content of around 10 to 12% even in quite heavy work. The bigger concern is the quality of the protein, as protein from lower quality forage sources may not provide adequate essential amino acids.

If the horse does not need larger amounts of grain to maintain condition then a small amount of a high protein (30%) feed may be fed to ensure that essential amino acids are provided. As for fat, it is required for absorption of the fat-soluble vitamins A, E, D and K and as a source of omega fatty acids. Fat content of grass is about 6%; however, in hay it is around 3% as some of the fatty acids are lost during curing. For your average horse, feeds containing less than 10% fat are adequate.

- BY CLAIR THUNES, PhD

What should you feed your horse when your trail ride ends up being longer and harder than you expected and the horse gets back to the trailer pretty tired?

There is nothing better for a tired horse than to allow him to graze fresh grass, if it is available. Grass has the benefit of having the right combination of nutrients for energy and a lot of water for rehydration. Letting the horse eat with his head down is also relaxing for the horse and stretches back muscles tired from carrying the weight of a rider or pack. If there is no grass, then hay is the second best. Feeding the hay on the ground and dousing it with water may sneak a little moisture into the horse.

Make sure there is fresh water (not too cold) available for the horse. Fiber from the forage in the gut should trigger the thirst response and make the horse want to take a good drink. The fiber and water in the gut form a reservoir of energy and electrolytes for the horse to draw upon to replace what was lost during the long trail ride. Once the horse has gotten a belly full of forage, it would be reasonable to offer a small concentrate meal.

- BY KATHLEEN CRANDELL, PhD

Protein content in the diet may need to be increased and a pre-biotic may be beneficial in supporting digestion. Whenever possible, continuing to work the older horse within its abilities is also important as many older horses seem to thrive on knowing they are still valued.

- Dr. Clair Thunes
I just want to ride my horse forever! What are the best supplements that can help keep his joints as young as possible for as long as possible?

The best combination of nutrients to keep joints and bone healthy includes chondroitin, glucosamine, MSM, hyaluronic acid, bio-available silicon, vitamin D, copper, zinc, calcium, phosphorus and magnesium. Additionally, a natural anti-inflammatory is omega 3 fatty acids, and this compound can help prevent damage to hard-working joints and bone. A powerful antioxidant such as BioBerry (blackberry extract) will help combat the negative effects of free radical damage in working horses. As always, all of the above are only helpful when the horse is fed, managed and trained correctly. And remember, supplements are not magic bullets and can only be used to augment a feeding and training program.

- BY AMY GILL, PhD

How do I add calories to my horse’s diet to keep weight on him without overfeeding?

Allowing a horse to eat as much hay as he likes is the best way to keep weight levels optimum. A horse cannot be overfed forage unless he is starting to gain too much weight. If simply allowing free-choice hay is not providing adequate calories to maintain body condition, adding a concentrate higher in fat and soluble fiber is the next logical step to help with weight maintenance or gain. Fat is calorie dense and will not cause changes in blood glucose levels like soluble carbohydrates do. Fiber is the most natural feed for a horse and is always the place to start when adjusting the diet to increase caloric intake.

- BY AMY GILL, PhD