Nutrition for Horses

by

freedom health llc

Three factors for evaluating your horse’s nutritional needs.

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Adapted for e-book format.
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Introduction

As horse owners, trainers, breeders, and managers the most basic issue we address daily is what to feed our horses. There are countless types of hard feeds, hay and roughage out there from which to choose, and everyone has an opinion on what and how much should be fed. When a horse is in active training, proper nutrition is even more important.

This e-book will take a closer look at the factors that influence your horse’s nutrition. It will also provide an outline for how to design a feeding program that is both appropriate and safe, based on your horse’s individual needs.

This content originally appeared as a series of blog articles on www.succeed-equine.com.

To see more content like this, visit the SUCCEED® Digestive Conditioning Program® Blog.

The content of this e-book was reviewed separately by two independent experts. One is a board-certified veterinary nutritionist who wishes to remain anonymous. The other is Juliet M. Getty, PhD, an equine nutritionist, writer, consultant and speaker. Dr. Getty currently serves as a panelist of the Equine Sciences Academy and formerly as contributing nutrition editor for Horse Journal.
A pasture that offers a variety of grasses, edible weeds, shrubs and flowers may look ugly, but can provide a non-working horse all of the nutrients he needs for a balanced diet. Most of the time, this horse probably won’t need much intervention to get a balanced diet that fits his needs. He’s living exactly how his ancestors lived, on a slow and steady forage diet that is appropriate for a horse’s digestive system and overall health.

A performance horse is being asked to expend considerably more energy. We often try to compensate for greater energy needs by giving performance horses large amounts (more than 4 lbs. of dry weight) of hard-to-digest feed two or three times a day. And somewhere along the line, this feed practice became the norm for nearly all horses — whether they actually need the extra energy and nutrition or not.

Here’s the problem: horses’ digestive systems aren’t designed to process grain feed, especially so much fed all at once. Grain feed (e.g.: oats, corn, barley, wheat, rice) contains higher levels of simple carbohydrates and starches that can be difficult for a horse’s GI tract to digest properly. This can modify the horse’s natural digestive balance, especially in the hindgut, which can affect the horse’s weight, condition, health and more. In turn, this can impact a horse’s behavior and ability to perform to his full potential.

3 Factors for Evaluating Your Horse’s Actual Nutritional Needs

It can be hard to judge whether a horse is nutritionally sound or not — and if he’s not exhibiting obvious signs, you may think he’s just fine.

If your horse isn’t getting all of the available nutrients from his feed (or is dealing with poor digestive health), he’s probably not behaving or performing at his best. It can be hard to judge whether a horse is nutritionally sound or not — and if he’s not exhibiting obvious signs, you may think he’s just fine.
But even if your horse appears outwardly to be in good health, it’s worth evaluating three main factors that influence every horse’s nutritional needs:

- **Horse-specific factors**, or the horse’s specific age, breed, body type, discipline, activity level, and individual health needs
- **Dietary factors**, or the horse’s current diet and any specific nutrient requirements that aren’t being met, relative to his needs
- **Feeding-management factors**, including the frequency, timing, location and method of feeding.

This method of assessing an animal’s nutritional program was adapted from a model introduced by the American College of Veterinary Nutrition. You may not take the time to do this three-step analysis every time you change your horse’s schedule, but by presenting an ideal model, we hope to help you develop your own customized approach to feeding.

This e-book will take a closer look at how those three factors can influence what, how, and when you feed your horse — and why each matters. We will address each of the three factors separately, then wrap up by showing how these three factors can be applied with an example program based on this model. In the process, maybe you’ll discover that you’re doing everything exactly right — but if not, we can help you rethink how and what you feed to create the basis of a program that better meets your horse’s unique needs.

Remember that every horse is an individual and should be fed as such. Horses with special needs, such as allergies, diseases or other conditions that require particular nutritional support, will require additional customization. Always talk to a nutritionist or your vet who is qualified in the field of equine nutrition before making major changes. The American College of Veterinary Nutrition maintains a database of ACVN Diplomates who are specialists in veterinary nutrition.
Horse factors that affect nutrition requirements starts with the most basic information about your horse: the physical aspects of breed, body type, and age. It also considers a horse’s usage, including the type and level of activity. All of these factors dictate how much energy is required to support basic functions like blood circulation and a horse’s physical activity. It also influences the amounts of certain nutrients different horses require.

You take all of these factors into consideration every day, whether you realize it or not. You wouldn’t ask your senior horse to exercise as vigorously as your five-year-old horse, for example — so you shouldn’t assume they should follow the same diet. By isolating each factor and analyzing how it applies to what you feed your horse, you may gain a new perspective on his actual nutritional needs.

**Physical Factors That Influence a Horse’s Nutrition Requirements**

The National Research Council of the National Academies provides documents on the nutrient requirements of animals, including horses. These requirements change according to various factors of the horse’s physical make-up, including its breed, body type and weight, age, and life stage.

**By isolating each factor and analyzing how it applies to what you feed your horse, you may gain a new perspective on his actual nutritional needs.**

**Breed**

Different breeds have different nutrition requirements: If you feed a Morgan the same number of calories as a Thoroughbred, you’ll either have a very fat Morgan, or a very thin Thoroughbred. Each breed’s metabolism handles feed at different rates. Arabs and Thoroughbreds tend to require more nutritional attention than Warmbloods or draft-type horses, as they often carry less weight. Furthermore, some breeds (e.g., miniatures, ponies, Paso Finos,
Morgans, Quarter Horses, Arabians) have a higher genetic tendency toward developing equine metabolic syndrome, necessitating attention to the sugar/starch content of the diet.

**Body Type and Weight**

A horse’s body type is often closely tied to its breed (see above), but a horse’s weight can fluctuate throughout the year and with a varied training schedule. A horse’s weight is also affected by its diet, and changes in weight may signal health issues. Keep a close eye on weight changes, and know what your horse’s baseline looks like (and also when he’s looking his best!). Remember that “fixing” an underweight horse is not as simple as throwing grain at the problem. Likewise, slimming down an overweight horse requires a balanced, well-rounded approach.

**Age**

A horse’s age is a critical factor in deciding his diet. A horse’s ability to ingest essential nutrients is compromised as he ages, for a variety of reasons. Saliva production decreases, and digestive enzymes are not as plentiful. Over time, the fingerlike projections in the intestinal tract — called “villi” — don’t work as well. Like humans, older horses’ teeth (as well as kidneys and liver) deteriorate, and their immune systems slow down. That makes older horses more susceptible to environmental factors, such as cold weather or lower-quality feed. So, a senior horse may require more energy to maintain a healthy weight, as well as specific nutrients to support basic functions. All of these factors should be counter-balanced with a nutrition program that compensates for specific challenges.

**Growing Horses**

Foals and weanlings generally fall much lower on the Henneke Body Condition scale, which means they have higher caloric needs. The National Research Council defines the caloric requirement of a growing horse as the sum of the energy needed for maintenance and the energy needed for gain. In addition to energy (calories), growing horses require additional protein to aid cell development.

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**Horse Factors**

Take all these factors into consideration when evaluating a horse’s individual needs:

- Breed
- Body type and weight
- Age
- Pregnant and nursing mares
- Breeding stallions
- Performance and training level
- Health challenges
Usage Factors That Affect a Horse’s Nutrient and Energy Requirements

Pregnant and Nursing Mares

Broodmares’ nutritional needs fluctuate throughout gestation and while nursing, but remain consistently higher than those of horses in a physiological state of maintenance. Mares in the first month of lactation require the highest amounts of calories, protein, calcium and phosphorus — higher even than horses in heavy work. Studies suggest that lactating mares increase voluntary forage intake by 65 percent, compared to those same mares during pregnancy. Additionally, nursing mares require additional water to make up for dehydration caused by nursing. Pregnant mares should also be kept at a higher number on the body condition scale (ideally 6 to 6.5 on the Body Condition Scale) for increased reproductive performance and to create body tissue.

Breeding Stallions

A stallion also needs additional calories and protein. The amount of dietary energy required during the breeding season will be affected by breeding frequency; refer to the National Research Council’s Nutrient Requirements of Horses for a tool to help you chart these differences.

Performance and Training Horses

A performance horse in active training has specific nutritional needs that support a more demanding schedule than a horse that is turned out much of the time. The needs of performance horses will vary between discipline, depending on the frequency, intensity and duration of exercise. A racehorse will require a different program than an endurance horse. Be sure to check with a nutritional professional to customize the specific blend of nutrients (protein, fats, carbohydrates and the like), vitamins and minerals, and level of calories required for a particular travel, training and competition schedule.
Nutritional Challenges for Performance Horses Include:

- Increased caloric requirements
- Limited turnout
- Frequent travel
- Physical demands
- Emotional challenges

The additional challenges presented by these factors make it even more important to nourish performance horses while maintaining the delicate balance of their digestive systems.
DIFFERENT types of forage, grasses and grain provide different types and amounts of nutrients. How much of each nutrient your horse needs will depend on his individual horse factors — the physical characteristics we discussed in Chapter 2.

Nutrients fall into six main classes: carbohydrates, fats, protein, minerals, vitamins and water. This customizable chart from the National Research Council of the National Academies can help you estimate the nutrients your horse may need (based on weight and lifestyle), but always consult a nutrition professional before making major changes.

A Breakdown of the Six Essential Nutrients

To understand what any animal needs from its diet — including horses, humans, dogs and others — it’s important to understand these six core nutrients: carbohydrates, fats, proteins, minerals, vitamins and water. Here we present a basic overview relative specifically to the diet of the horse. More information can be found online or in nutrition books.

Carbohydrates

Carbs provide the bulk of a horse’s energy. When discussing carbohydrates in the context of nutrition, it’s best to think of them in two broad categories — fibrous and nonfibrous.

Fibrous carbs are the structural carbs found in the seed coats and stems of plants. Pasture plants and hay generally have more fibrous carbs than harvested grains, along with other important nutrients.

Nonfibrous carbs (or nonstructural carbs) are mainly starches and sugars. Feed products containing mostly grains and seeds (like corn, oats and wheat) are primarily made up of nonfibrous carb sources. Immature pasture grasses have higher levels of nonfibrous carbs than more mature grasses.
• Get fibrous carbs from: forages such as timothy, alfalfa, Bermuda grass, and orchardgrass, and other high-fiber ingredients like beet pulp and wheat bran.

• Take Note: When grain feeds rich in nonfibrous carbs are fed in large quantities, they can’t be digested and they can pass into the cecum and large intestine. This can lead to the production of lactic acid and can create an overly acidic environment in the hindgut. For this reason, nonfibrous carbs (grains) should be limited in a horse’s diet, and fibrous carbs (forages) should be prioritized.

Fats and Fatty Acids
Dietary fats provide energy, help improve body condition and act as carriers for fat-soluble vitamins. Ounce for ounce, fat also contains more than twice as much energy as carbohydrates or protein, so it’s one way to increase a horse’s calories without overloading his grain rations.

• Where fats are found: Grasses and alfalfa; grain and sweet feeds, and in brans, ground flaxseeds and other seeds, liquid oils, and in powdered or pelleted fat supplements.

• Heads up: Most horses need less than 10 percent of their total diet to come from fats. Always introduce any added fats slowly.

Proteins/Amino Acids
Most tissues in a horse’s body are made of protein, which is made up of chains of amino acids. Most of these amino acids are produced by the body; others (called essential amino acids) must be obtained from food sources. Proteins serve many functions, including maintaining and producing muscles, enzymes and hormones.

• Where protein is found: Alfalfa, grass hay, grain and grain by-products. Also soybeans, bran, beet pulp and seeds.

• Take Note: It’s important to feed a source of protein that includes essential amino acids (such as lysine), as the horse’s body doesn’t naturally make these essential amino acids.
Minerals
Dietary minerals are nutrients that include calcium, phosphorus, potassium, sulfur, sodium, chlorine, and magnesium. Important “trace” minerals necessary for the horse include iron, cobalt, copper, selenium, zinc, manganese and more. Horses require large amounts of calcium and phosphorus for building bone (this is especially true for growing horses).

- **Where minerals are found:** Sodium, potassium, zinc and copper are often found in grain mixes, supplied in mineral blocks or added as a top-dressing to feed. Forages naturally contain minerals. Fortified grain mixes will supply them, as well as mineral blocks or added supplements.

- **Heads Up:** Add minerals via mineral blocks and supplements, as relying on grain to supply it may result in an overdose of simple carbohydrates.

Vitamins
Some vital nutrients can’t be made by the body and must be ingested via feed. Most (if not all) of a horse’s vitamin needs are supplied via the levels naturally occurring in grains and pasture grasses. Hay no longer contains the vitamin content that once existed in living grasses.

- **Where to find vitamins:** Fresh forage supplies beta carotene (which the horse converts to vitamin A) and vitamin E; sunshine provides vitamin D.

- **Heads Up:** Most commercially prepared horse feeds include vitamin supplements; check to be sure before adding supplemental vitamins on top.

Water
Clean, readily available water is essential for good health. Dehydration can cause illness and death much more quickly than if any of the above feed nutrients were lacking in a horse’s diet. To prevent dehydration during cold temperatures, provide a heated water source; horses do not typically drink enough ice-cold water to meet their needs.
Where to Find Nutrients

All of the carbohydrates, protein and minerals a horse needs can be found naturally in grass. However, vitamins and fats are easily destroyed by the environment once grass is cut for hay, making dried forage products (such as beet pulp, hay and chaff) low in these nutrients. Like their ancestors, modern horses are hardwired to process and make the most of naturally occurring sources of energy. For most horses, an appropriate fresh forage mixture may be the best way to get the vitamins and minerals necessary for good nutrition. For horses that have limited access to pastures or that require additional energy, it’s critical to rethink how this extra energy is provided. Throwing simple carbs at the problem won’t help — evaluate what nutrients are missing from your horse’s diet, and adjust accordingly.

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Safety of Feed

All types of feed need to meet basic safety requirements. Your nose and eyes can tell you if your hay is spoiled or moldy. If grain or hay becomes wet, moldy, dusty or is infested by rodents, it’s imperative to replace it immediately.
MOST horse owners spend a disproportionate amount of time debating what to feed a horse. That’s important — but it’s equally important to assess the timing, location and amount of feed provided.

Once you know what to feed, it’s important to consider how best to meet those needs.

The Ideal Scenario vs. Reality
In an ideal world, horses would get all of the necessary vitamins, minerals and nutrients from naturally occurring sources. They would live outside 24 hours a day and graze slowly and constantly on a mix of grasses.

However, this situation may not be realistic based on turnout restrictions, competition schedules, special dietary needs or other factors. So most horse owners supplement pasture with hay, chaff, processed feed and/or vitamins. It’s possible to design a safe and appropriate feeding regime that doesn’t rely solely on pasture grass — but it does take additional planning.

Feed Management Factors: Schedule, Location and Method of Feeding
Use the ideal situation — constant access to grass — as a model, doing your best to mimic this slow and steady approach with other feeds.

Feed Schedule
Many horse owners feed their horses twice (or maybe once) a day, providing all of the horse’s energy for the day in one or two feed dumps. This works for a human’s digestive system, but it’s nearly impossible for a horse to process that much grain-based feed at
once. As a result, undigested grain can pass into the cecum and large intestine and create an overly acidic environment in the hindgut.

_Try This:_ Divide your horse’s feed into several small meals fed throughout the day. Emphasize complex carbohydrates by offering free-choice hay and adding beet pulp, chaff or other fibrous carbohydrates to his grain or pellets.

**Feeding Location**

Where you choose to feed your horse greatly influences his nutrition. Physical challenges (like aggressive pasture mates) may literally prevent him from eating. Emotional challenges, like a chaotic barn environment, may also create problems. He might respond by bolting his feed, or may refuse to finish it, compromising his nutrition.

_Try This:_ Move him to a quieter area where he doesn’t feel threatened. You may find that he eats more slowly and puts on weight easier when he feels comfortable enjoying his food and doesn’t have to fight for it.

**Method of Feeding**

How you feed a horse also plays a role in his nutrition. Never feed a horse on sandy or dusty ground, as he could ingest sand with his feed. Also avoid feeding hay on the ground if you use straw for bedding, as horses may become accustomed to eating the straw instead of the hay. While it is technically a source of forage, straw is a lower-quality food source better suited as bedding.

_Try This:_ Feed hay in hay nets, mangers or hay racks off the ground. If your horse bolts his feed, try slowly introducing your horse to doubled-up hay nets or commercial feeders to make it harder to get at. Also try to feed in an area where he has some space to move around naturally as he eats. Movement is good for gut motility (which is why horses move slowly as they graze). That doesn’t mean exercise, however — be sure to give your horse at least a 30-minute buffer between a meal and exercise. However, forage should be fed free-choice, allowing your horse to exercise with some forage present. The horse’s stomach continuously secretes acid; therefore, forage helps prevent acid from damaging the unprotected upper portion of the stomach.
Environmental Factors
Climate and temperature also influence nutrition. Rain, wind, insects and extreme temperatures reduce time spent grazing, as horses seek shelter rather than feeding. Colder weather prompts them to increase forage intake, since horses maintain body temperature by hindgut fermentation of hay. The physical landscape will also affect nutrition. Mature plants are less palatable and provide fewer nutrients, so horses may need additional supplements during the late summer. Contact your local agricultural extension office for a hay and forage evaluation.

The most common issue with feeding programs is the tendency to overfeed grain-based feed and to underfeed forage.

Common Feeding Mistakes
The most common issue with feeding programs is the tendency to overfeed grain-based feeds and to underfeed forage. That’s because it’s convenient, and mimics how people eat. Instead, emphasize a continuous supply of forage, where the horse has access to forage grazing at all times, even throughout the entire night. And don’t go overboard on treats, which are often loaded with sugar.

Meeting Somewhere in the Middle
If the ideal model of feeding — constant grazing — doesn’t meet your horse’s energy requirements, do your best to incorporate as many aspects of this natural model into your feeding program as you can. Time, money and resources will ultimately dictate your plan, but you can always emphasize forage.
In Chapter 2 we helped you evaluate the factors that influence your horse’s needs, including:

- Breed
- Body type and weight
- Age
- Breeding status
- Performance and training schedule

All of these factors influence what and how much you will feed. Once you’ve determined these factors, plug them into the National Research Council’s Animal Requirements chart to find an appropriate starting place to evaluate nutrient and energy requirements.

In Chapter 3, we broke down the six essential nutrients for good health and where to find them. We recommend emphasizing fibrous carbs and getting a healthy balance of the other nutrients for good health. You should be able to answer the following questions:

- Is my horse’s feed appropriate and safe?
- Is he getting the necessary nutrients in the right amounts to meet his particular needs?
- Is it meeting nutritional needs without negatively impacting digestive health?
- What changes do I need to make to what I am feeding as a result of my evaluation?

How You Feed

In Chapter 4 we looked at how your feeding schedule and your horse’s environment can influence his nutrition. We recommended mimicking the natural feeding pattern of horses in the wild — slow and steady foraging — as closely as possible to achieve the best nutrition. You should be able to answer the following:

- How close is my feeding management to the ideal?
- Where can I make changes to make it better?
- Where might I have to compromise due to limited time, money or resources?
Why It’s Important

Your horse’s nutrition and digestive health has the ability to impact everything. Gut health. Overall health. Behavior. Physical ability. Performance. When a horse isn’t getting the nutrition it needs, it can result in serious risks to digestive health. Even minor issues in any of the above can lead to poor nutrition that will affect behavior and performance.

Practical Steps You Can Take

While striving to meet the ideal — slow and steady ingestion of the appropriate nutrient available naturally — take steps to mitigate the factors you can control.

- Review the NRC suggested minimum nutrient amounts for your horse. (Remember that these numbers will change with exercise intensity and with the change of seasons.)
- Send a hay/pasture sample to your local agricultural extension to have it tested for nutritional content based on horses’ (not cattle) needs.
- Read your feed labels and understand what you’re feeding.
- Change the elements of management over which you have control.
- Adjust amounts of feed to meet your horse’s needs, and prioritize forage.
- Support nutrient absorption and healthy gut function with SUCCEED.

It may be impossible to control every single aspect of your horse’s nutrition, but by focusing on the things you can control and making sure your horse’s digestive system is as healthy as possible, you’re one step closer to a healthy, happy horse.
How SUCCEED® Can Help

Optimal nutrition is achieved when a horse is getting the appropriate mix of nutrients to match his lifestyle. Some horses may ingest the correct balance of nutrients but be physically unable to use them. The challenges introduced by traveling, competing, breeding or illness may interfere with a horse’s normal, healthy ability to absorb nutrients effectively.

SUCCEED can help maintain the healthy digestive system in the horse, in the face of these challenges, to help him get the most out of his feed. It can help a horse maintain a healthy weight, optimize nutrient absorption and support his body condition.

Additionally, when we ask our horses to compete, we sometimes make it difficult to follow a feeding program that revolves around grazing and free access to roughage. Other practicalities, like time and money, can also interfere with following a “natural” approach to feeding. SUCCEED can help mitigate those factors by helping your horse get the best possible nutrition out of the feeding program that works for you and your horse — and stay healthy in the process.

Take the SUCCEED Challenge to see the difference for yourself.
Conclusion

WHETHER a horse seems perfectly healthy or is showing signs of poor nutrition, it is always worth taking a step back to evaluate the appropriateness of your feed program for your horse’s health and performance ability. Good nutrition is the foundation of a healthy, successful horse: from gut to overall health, and attitude to performance ability.

Be sure to keep in mind these horse-specific, dietary, and feeding management factors as you work with an equine nutrition expert to determine how best to meet your horse’s nutritional needs.

RESOURCES

American College of Veterinary Nutrition
www.acvn.org

American College of Veterinary Nutrition Diplomates Database
Directory to find veterinarians certified in equine nutrition
www.acvn.org/directory/

National Research Council of the National Academies
For documents on the nutrient requirements of animals
www.nationalacademies.org/nrc/

Henneke Body Condition Scale
www.uky.edu/Ag/AnimalSciences/pubs/asc145.pdf

Nutrient Requirements of Horses Calculator
To calculate based on specific horse factors
nrc88.nas.edu/nrh/
Freedom Health LLC
65 Aurora Industrial Parkway
Aurora OH, 44202
800-281-6727
8AM to 5PM ET, M-F

For more information on SUCCEED Conditioning Program:
www.succeed-equine.com

For more information on the SUCCEED Equine Fecal Blood Test:
www.succeedFBT.com