Meeting Your Horse's Nutritional Needs

Too much, too little or just right-does your horse's diet match his lifestyle? Follow these guidelines to balance his feed bucket.

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By Sarah ChristieAbout the Author:Sarah Christie is a lifelong horsewoman and experienced endurance competitor.Meeting a horse's nutritional needs isn't always easy. Many owners mistakenly feed their equine partners as if they were top Olympic show jumpers or United States Equestrian Team endurance champions. But the reality is that many horses are not fed according to what their true workload is. Achieving the right combination and balance of roughage, protein, fat and carbohydrates takes some research, as well as trial and error. Too much of a good thing can result in founder, colic, kidney strain or obesity. Too little can rob a horse of essential nutrients and cost you a winning performance or worse. Most importantly, a successful feeding program balances calorie input with energy output. Here are some basic guidelines for finding the right formula based on your horse's need. These rules of thumb, along with advice from your vet or equine nutrition expert, will help you devise an appropriate feeding plan for your horse.

The BasicsWhile calorie needs fluctuate with activity levels, some basic equine requirements remain constant across the meal spectrum. High-quality forage, either pasture or hay, should make up the bulk of any horse's diet, from couch potato to Kentucky Derby winner.With a gut designed for almost non-stop grazing, horses should consume between 1.5 to 2.5 percent of their body weight daily. This means that an average 1,000-pound adult horse should consume 15 to 20 pounds of hay per day, with additional grain supplements depending on condition and activity level. In their wild state, horses' natural forage is a mixture of grasses, clovers, grains and the occasional herb or woody shrub. This provides a variety of minerals and vitamins, as well as fat and protein levels that vary with the seasons. Feeding a single type of hay year-round eliminates this nutritional diversity. The trick is to recreate the natural balance as closely as possible while still meeting all of the nutritional demands created by an artificial training regime. This is commonly done through the feeding of grain "concentrates."

ConcentratesAny grain, grain mixture or manufactured feed product is referred to as a "concentrate" because it provides more calories and energy per mouthful than hay or pasture grass. Thus, it takes less time to consume the same amount of calories available in concentrates than in hay or grass. Concentrates are generally low in fiber and high in starch and fat. Feeding a concentrated feed along with hay and/or pasture is a way to ensure that working horses consume enough calories, vitamins and minerals to keep up with their energy demands.Concentrates come in many forms-grain mixtures, pellets, ground meal and even liquid. Almost all have been processed to some degree, to improve digestibility, combine ingredients or extend the shelf life of the product.Grain has at least 30 to 50 percent more digestible energy per pound than hay. Corn packs the most energy per pound, followed by barley, then oats. Measured in volume, corn is twice as high in calories as oats.The most common methods of processing grain are the crimping, rolling, flaking or cracking of oats, barley and corn. This is done to open the outer layer of the grain seed to allow for easier chewing and digestion. Without this processing, much of the grain would pass through the digestive tract untouched. These grains are frequently combined in a mixture with molasses to reduce dust. This is called a "sweet" feed. Molasses also adds carbohydrate energy to the mixture, but in such a small amount as to be insignificant. A small number of horses with extreme sensitivity to sugar may get "hot" or "high" on sweet feed, and thus perform better on a dry mixture.Commercial grain concentrates may also contain pelleted vitamin supplements. These balance out any nutritive deficiencies that may be lacking in the hay/grain combination. In some cases, a pelleted "complete" feed will combine chopped roughage with grain in a pre-set mixture and eliminate the need for feeding hay. Because these pellets are quickly consumed by most horses, the diet may lead to boredom-induced vices such as cribbing, weaving or wood chewing. Sometimes pelleted feeds have been known to cause choke in horses. One remedy for this is to soak the ration in water for 10 to 15 minutes prior to feeding, or feed a low-protein hay or chaff as filler.

Energy NeedsAccording to the National Research Council , if the following gaits are performed for two hours a day, an idle horse would have increased energy needs as listed (in percentages): Slow walk, 12 percent Fast walk, 18 percent Slow trot, 46 percent Fast trot or slow canter, 97 percent Medium canter, 136 percent

In other words, a horse working at a fast trot for two hours should be fed twice as much as a horse that is idle. Additional calories should come from a mixture of both hay and concentrated feed.Increase the amount of hay as exercise intervals escalate, but gradually add to the grain ration over time to avoid colic or other digestive disorders.FatFat has a number of benefits for the working equine. Not only is it 85 percent digestible, it does not contribute to a risk of colic or founder because it is carbohydrate-free. It produces 30 percent less heat than protein in the metabolic process, and it is an easy

way to increase calories without increasing volume-not to mention fat helps produce glossy coats!Essential fatty acids (EFAs) are nutrients responsible for promoting healthy skin and lustrous coats. EFAs are not produced by animals and must be supplied in their diets. Fat can be incorporated in a feeding regime by adding oils, rice bran or any commercial fat supplement. One cup of vegetable oil contains 240 grams of fat, the equivalent of 1.2 pounds of corn or 1.5 pounds of sweet feed. Thus it can be substituted as part of the daily grain ration. Adding fat to a concentrate is as easy as pouring it on as a top dressing. But note that oil can turn rancid in warm weather, so be sure to store it in a cool place.Not all oils are created alike. Pure wheat germ oil is a rich source of vitamin E (an antioxidant), as well as essential fatty acids such as Omega 3 and Omega 6 (not found together in oils like corn oil). Essential fatty acids are required for the healthy functions of every cell, because they increase the horse's oxygen consumption, metabolic rate and energy levels. Essential fatty acids are required for the functioning of kidneys, nerve and brain, immune system, cardiovascular system, gastrointestinal tract and digestion, muscles and performance.Flax seed oil and flax seed meal (whole seeds cannot be digested) are high in Omega-3, -6 and -9 fatty acids, plus lignans, B vitamins, potassium, lecithin, magnesium, fiber, protein and zinc. With 25 grams of protein for every 100 grams of seeds and an ability to stabilize blood glucose levels, flax has become popular with many performance horse trainers.Rice bran is another excellent source of fat and vitamins, similar in texture to cornmeal. Stabilized rice bran is often found to contain 20 percent fat (raw rice bran is very unstable; therefore it can become rancid within 24 hours if not stabilized).When fed with a dry grain mixture rice bran can fall to the bottom of the feeder where it will be left behind by finicky horses. Thus, it is better to add rice bran to a sweet feed or chaff (chopped hay) where it will bind with the other ingredients (water can also be added to mix it in, since it is water soluble).WORK LEVELSIDLE HORSEWhile two riding lessons a week may qualify as hard work for you, any horse that is ridden or exercised less than three hours a week is considered "idle" from the standpoint of caloric needs. Good quality hay, fed in the amount of 1.5 to 2 percent of total body weight, (15 to 20 pounds per day for a 1,000-pound horse) can deliver all of the nutritional qualities of a balanced diet for an idle horse. The key is selecting the best quality hay and the appropriate type. Horses thrive on hay with a crude protein level of 10 to 12 percent. Excessive protein can cause kidney problems, skin allergies and developmental bone disorders. Alfalfa has the highest level of protein, as much as 28 percent in some cases. If you must feed alfalfa, avoid hay that is cut at the height of the growing season or grown specifically for dairy cattle. Better yet, look for an alfalfa/grass combination, or alternate feedings with a grass or grain hay, such as timothy, fescue, oat or barley hay. Grass hays typically have low levels of crude protein, as little at 6 to 8 percent; thus they are a good filler to combine with alfalfa.If feeding exclusively a low-protein grass hay, or if the pasture forage is less than ideal, then a modest grain supplement is in order for an idle horse. A daily ration of between 2 to 3 pounds of a fortified grain mixture can help provide adequate vitamins and minerals for the average 1,000-pound horse.

Suggested daily menu: Idle Munching10 lbs. orchard grass or fescue hay5 lbs. first or last cut alfalfa hayOr:18 - 20 lbs. Bermuda grass hay3 lbs. sweet feedLIGHT WORKA pleasure horse or recreational trail horse that is ridden an hour or two a day, five or six days a week, is doing light work. Even an equitation or pleasure horse in training does not burn the kind of energy that a jumper, barrel racer or polo pony does. Yet most owners tend to overfeed their pleasure horses out of a misguided belief that they are doing "hard" work.While it is true that daily exercise burns more calories than standing in a pasture, the nutritional demands do not increase appreciably. An "easy keeper" with an efficient metabolism may be perfectly healthy on a diet of good quality hay.But horses with a higher metabolism, older horses or show horses that need extra calories to keep their competitive edge, can benefit from the daily addition of a concentrated feed supplement. In addition to 15 to 20 pounds of hay per day, up to 5 pounds of 10 to 12 percent crude protein grain mix (broken up into two or more feedings) may be added on days the horse is worked.

Suggested daily menu: Eating Light10 lbs. orchard grass or fescue hay5 lbs. alfalfa hayOr:12 lbs. alfalfa/grass hay3 lbs. crimped oats or barleyMODERATE WORKHorses that are worked between seven to 12 hours per week, that regularly break a sweat during work and are required to sustain extended periods of exertion or deliver frequent intense bursts of energy fall into the category of moderate activity. This includes most hunters, ropers, reiners, cutters, lower-level dressage horses, gymkhana and competitive trail horses.Most horse owners often consider this type of work "heavy." But show horses in moderate work are less likely to be overfed than horses in light work, because overweight individuals are at a distinct disadvantage in competitive sports.A horse in moderate work can easily meet his increased energy demand with a modest increase in grain. Up to 10 pounds of sweet feed daily may be appropriate for a horse in regular, moderate work, in addition to a daily hay ration of 15 to 20 pounds. Grain rations should always be increased gradually and never given in amounts in excess of 5 pounds at one time. Providing grain hay, such as barley or oat, as part of a balanced forage mixture will also add nutritional value.

Suggested daily menu: Moderate Meal Plan8 lbs. orchard grass, fescue or alfalfa/grass hay8 lbs. oat or barley hay6 - 10 lbs. sweet feedOr:15 lbs. oat or barley hay5 lbs. alfalfa8 - 12 lbs. crimped oats or barleyHeavy WorkRacehorses, polo ponies, eventers, jumpers, endurance horses and upper level dressage horses in daily training are considered to be in heavy work. Their total weekly work time may not be any greater than a horse in moderate work, but these disciplines require athletic performance at the highest level and therefore have the highest energy demands. For instance, 90 minutes of interval training for an endurance or racehorse uses almost twice as much energy as a dressage horse working

at a medium trot for the same amount of time.Horses in heavy work may have difficulty consuming enough calories to maintain optimum weight, as lengthy training sessions reduce meal times, travel can disrupt feeding schedules and in some cases, individuals may simply be too tired to eat.

Suggested daily menu: Heavy-Duty Dining15 lbs. oat or barley hay10 lbs. alfalfa hay10-12 lbs. sweet feed top dressed with 2 cups oilOr:25 lbs. alfalfa/grass hay5 lbs. complete pellets10-12 lbs. crimped oats or barleyTop dress with 1 lb. rice bran

Horses in heavy work should consume between 2 to 3 percent of their body weight daily in feed. In order to meet this demand, they may require as much as half of their intake, by weight, in concentrates.Premium commercial feeds with fat added or top dressing your own grain mixture with wheat germ, soy, canola or coconut oil is a practical necessity for keeping weight on hard-working horses-and has the added advantage of boosting endurance. Free choice availability of quality hay is almost always in order, although some horses become finicky and bored with their selection when constantly confronted with the same menu. If this happens, try offering a mixture of hays, breaking grain feedings up into several small meals a day or offering turnout on irrigated pasture for a few hours every day.This article first appeared in the August 2004 issue of Horse Illustrated magazine. Click Here to subscribe.