

Healthy eating—lessons from the horse’s natural diet Part I

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Remember that yoghurt commercial with the healthy person skiing joyfully down the slope? The tagline was “You’ve gotta put good things *into* your body to get great things out of it!” That’s true for all of us, not just the young, athletic types. It’s also true for horses, of all ages, types, and talents. The food we eat provides the building blocks for the maintenance and repair of all our tissues, so it needs to be good if we’re to be healthy and able to perform well.

So, what constitutes “good” food for a horse? Basically, it’s whatever foods support and enable good health. Recent research into equine nutrition has provided us with some great information, particularly for feeding performance horses, broodmares, and growing horses. But we can also learn a lot from going back to basics and looking at the horse’s natural diet—the types of foods the horse’s body is naturally designed to use.

Horses are herbivores; their bodies are designed or adapted (whichever term you prefer) to eat herbage—plant material. More specifically, the horse’s system is designed for fairly continuous intake of high-fiber, low-carbohydrate (i.e. low-starch, low-sugar), low-fat, living plant material from a wide variety of plant species. In this two-part article, we’ll take a look at these elements one at a time.

The natural diet is high in fiber

The horse’s natural diet is high in fiber. In fact, *horses have an absolute need for fiber*. Not only is it essential for healthy digestive function, dietary fiber is *the primary source of energy* for basic metabolic function, for movement, and for reproduction in the horse.

This energy is produced from the breakdown of indigestible plant material by bacteria and other microbes in the large intestine (the cecum and large colon). These microbes efficiently deconstruct the cellulose and other structural components of the plant that digestive enzymes in the horse’s stomach and small intestine cannot break down. This process of microbial breakdown (or fermentation) of dietary fiber releases volatile fatty acids (VFAs) which are absorbed into the horse’s bloodstream and then used for energy production throughout the body.

This process is so efficient that the average adult horse in good body condition can meet *all* of his basic energy needs from hay alone, provided enough hay is fed. (More on that in a moment.) Also of note this time of year (winter) is that the breakdown of dietary fiber in the large intestine produces more heat than does the digestion of grain or other more high-calorie foods. Thus, horses fed plenty of hay are more easily able to maintain their core body temperature in the winter months than are horses fed lots of grain.

How much is enough?

Regardless of the type of horse, and the type or level of activity, the absolute *minimum* fiber requirement for good health and function is 1% of the horse’s ideal body weight per day. For a 1,000-lb horse, that’s a minimum of 10 lbs of hay per day ($0.01 \times 1000 = 10$), if pasture is providing relatively little in the way of dietary fiber. (Even when the pasture is abundant, at times when the water content of the pasture is very high, such as in the spring and often in the autumn, its fiber content can be very low. At these times, pastured horses should be supplemented with hay, starting at that minimum of 1% body weight per day.)

For most horses, the *optimal* rate of roughage intake is in the range of 1.5% to 3% of body weight per day. (That's 15–30 lbs of hay for the average 1,000-lb horse, if pasture is limited.) I usually use 2% of body weight as a starting point, which is 20 lbs of hay per day for the average horse with limited pasture intake. That rate seems to keep most horses happy and maintaining their body condition. It can be increased or decreased from there, as the horse's needs dictate.

(Note that I'm talking about *pounds* and not flakes, slices, or any other portion of a bale. When you get a moment, take some kitchen or bathroom scales out to the barn and see just what 20 lbs of hay looks like. Also bear in mind that the weight of a bale or any portion of a bale can vary considerably from one batch of hay to the next.)

The numbers

For those of you who remain unconvinced that your horse may not need all that grain, take a look at Table 1. It lists some of the daily nutrient requirements (calories, protein, calcium, and phosphorus) for the average adult horse in good body condition. Note that good quality grass hay (in this case Timothy hay), when fed at a rate of 2% of body weight per day, more than meets the horse's basic needs for each of these nutrients.

Table 1. Daily nutrient requirements for the average adult horse in good body condition, weighing 1000 lb (450 kg). The horse's maintenance requirements (the amount needed to maintain body condition in an inactive horse) are listed alongside the amount of each nutrient provided by 20 lbs of good quality grass hay (i.e. 2% of body weight per day).

Nutrient	Maintenance requirement	Amount provided by 20 lbs of grass hay
calories (Mcal/day)	14.9	15.7
protein (grams/day)	596	655
calcium (grams/day)	18	34.6
phosphorus (grams/day)	12.5	16.4

Now take a look at Table 2 (on the next page). It lists the daily nutrient requirements for the same adult horse who is now in light work (e.g. pleasure riding, showing in equitation classes). Note that 20 lbs of good quality grass hay meets most, if not all, of the horse's needs for energy, protein, calcium, and phosphorus.

Table 2. Daily nutrient requirements for the same horse in light work (a total of 5–6 hrs of work per week), and the amounts provided by good quality Timothy hay fed at a rate of 2% body weight per day.

Nutrient	Light work	Amount provided by 20 lbs of grass hay	Shortfall
calories (Mcal/day)	18.7	15.7	3.0
protein (grams/day)	745	655	90
calcium (grams/day)	22.5	34.6	0
phosphorus (grams/day)	16.5	16.4	0.1

Space is too limited to illustrate it, but the small shortfalls in energy and protein can be made up by increasing the amount of grass hay by as little as 4 lbs per day, by adding 3.5 lbs of alfalfa hay instead, *or* by adding a total of 2 lbs per day of a grain-based sweet feed or pellet (not per meal; *per day*).

However...

Having said all that, there are a couple of problems with a diet that consists primarily or exclusively of grass hay. The first is that this diet is very limited in variety, one of the key elements of the horse’s natural diet. In fact, the typical grass hay diet is providing the horse with only one main species of plant. Furthermore, the entire batch of hay may well have come from the one property. If that land has been used to make hay for decades (or longer) and the haymaker has made no effort to replenish the soil, then the soil, and thus the hay, may be deficient in some of the nutrients required by the horse.

By limiting the variety of plant species and sources in the horse’s diet, we are increasing the probability that this diet will not meet all of the horse’s needs, particularly for the micronutrients (trace minerals, vitamins, antioxidants). For this reason, I recommend that horses on roughage-only diets receive a good-quality multivitamin-mineral supplement that is appropriate for the horse’s individual circumstances and needs. My favourite of all the options on the market is Platinum Performance Equine (www.platinumcare.com).

The other problem I have with hay-based diets is the lack of fresh, living plant material. I’ll discuss this problem further in Part II, along with grain-based feeds and fat-supplemented diets.

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