

## Achieving Sound Growth Through Sound Feeding

Today's decisions about feeding will determine the soundness of your growing horse tomorrow.

By Lori K. Warren, PhD, PAS

Raising a young foal can be a very rewarding experience: breeding your prize mare to an accomplished stallion; witnessing the newborn gain control of his legs and suckle his dam for the first time; watching with pride as your foal races his pasture mates or leaps over his first log. Raising a young foal can also be challenging, particularly when it comes to feeding.

Providing the growing horse with a well-balanced diet is critical if your goal is to produce a strong, sound adult horse. An adequate supply of energy (calories), protein, calcium, phosphorus, zinc and copper are needed to support normal muscle and skeletal development. When nutrient supply does not match nutrient demand, problems with development can occur, which could ultimately affect the athletic future of the horse as an adult.

This article will address some of the challenges that need to be considered when feeding a young horse. In addition, guidelines will be provided to aide you in putting together a sound feeding program from the weaning through the yearling year.

### The Challenges of Feeding the Growing Horse

Young horses, like young children, have very high nutritional requirements. In fact, on a gram for gram basis, the amount of nutrients needed by the young horse often exceed that of a full-grown adult. The solution, however, is not as simple as providing the weanling or yearling with more feed. With a digestive system three to five times smaller than that of a mature horse, it is impossible for the youngster to consume and process the same volume of feed as an adult.

High nutrient needs, coupled with a small digestive system, dictates that young horses be fed a nutrient-dense diet—a diet that provides lots of nutrition in a small package. This means forages selected for the younger horse should be of the highest quality. Grain mixes fed to the growing horse should have a higher percentage of protein, calcium and phosphorus, as well as higher concentrations of copper and zinc than those feeds selected to maintain adult horses.

In addition to supplying the young horse with adequate amounts of

nutrients, the nutrients must be provided in the right proportions. For example, protein and minerals must be provided in proportion to calories (also called nutrient to calorie ratios). The more calories in the diet, the more growth occurs. But if the calories are not matched with the appropriate level of protein and minerals, the end result is an overweight foal that is predisposed to skeletal malformations (see the sidebar, “Nutrition and DOD”).

Because of their importance in bone growth, certain minerals must also be provided in the right amounts with the appropriate ratios. In particular, the calcium:phosphorus ratio is ideally 1.2 to 1.8:1, although ratios of 6:1 can be tolerated. Most importantly, the amount of phosphorus should never exceed the amount of calcium in the growing horse’s diet.

Fortunately, most feed companies offer grain mixes that have been formulated specifically to meet the needs of the growing horse. When fed appropriately, these feeds take much of the guess work out of feeding because they contain a balanced level of calories, protein, vitamins and minerals. However, you must remember that the grain mix is only half of the young horse’s diet—selecting high quality hay or providing good pasture is just as important.

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### Reaching Mature Size

The most rapid growth occurs during the first three months of a foal’s life, when average daily weight gain can be as much as 3 pounds per day. Between 6 and 12 months of age, average daily weight gain will slow to 1.1 – 1.8 pounds per day, or between 35 and 55 pounds per month. By the time the horse is a year old, he will have reached 90 percent of his mature height and 65 to 70 percent of his mature body weight.

Although the rate of growth will slow over time, young horses will continue to grow until they are approximately 3 to 4 years old. At a moderate rate of growth, mature height will not be reached until they are 2 years old, whereas filling out to their mature weight may take an additional one or two years.

The rate of growth naturally varies between individual horses. Certain breeds, or even certain bloodlines within a breed, are known for producing “early bloomers” that grow rapidly and reach mature height sooner. Others

are “late bloomers” and take longer to reach their genetically predetermined mature size.

In addition to genetics, nutrition also has a direct effect on the rate of growth. Because nutrition is fairly easy to manipulate, it's often used as a tool to control growth. Diets can be formulated to support a rapid rate of growth in horses. However, these types of diets also leave little room for error and carry the greatest risk for skeletal problems to develop. Feeding a foal for rapid growth won't give you a bigger adult horse, he will just reach his mature size sooner. At the other end of the spectrum, a diet that elicits a slow rate of growth may postpone the onset of training and, in severe cases, may permanently stunt mature size.

How fast should a foal grow? In contrast to other livestock, which are fed for maximal growth and a relatively short lifespan, young horses need to be fed for optimal growth, which promotes longevity and athletic ability. Unfortunately, “optimal” growth is not so easily defined and may even differ, depending on breed and intended purpose, as well as pressure from within the industry to produce a horse with a certain “look” at a certain age. To reduce the risk of developmental problems, conservative and steady growth should be the goal.

#### Good Foal Nutrition Begins with the Mare

Nutrition of the growing horse really begins with the pregnant mare. Much of the fetal development takes place during the last three months of pregnancy; therefore, the nutrition of the mare is critical during this time. For more information on feeding broodmares, see the Winter 2005-06 issue of *Equus Caballus*.

Once the foal is born, the mare's milk will serve as an excellent source of nutrition. However, around 2 to 3 months of age, milk no longer meets the needs of a nursing foal. This is a good time to institute “creep feeding” by providing the foal a suitable grain ration all to himself. For more information on creep feeding, see the Spring 2006 issue of *Equus Caballus*.

#### Feeding the Weanling

The young horse is most vulnerable to bone and joint disease during the period of rapid growth from weaning (at 4 to 6 months of age) until 12 months of age. Therefore, a properly balanced diet is most critical in the first year of your foal's life.

At the time of weaning, foals should be consuming a feed concentrate,

formulated for growing horses, at the rate of about 1 pound of feed per month of age. Starting a good creep feeding program 2 to 3 months prior to weaning will help the foal reach this level of feed consumption. After weaning, continue providing a feed formulated for growing horses.

In addition to a feed concentrate, the forage component of the diet is also very important to weanlings. Forage can be provided with free-choice access to good quality hay (eg, alfalfa, perennial peanut, or an alfalfa-grass mix hay) or pasture. If relying on pasture as your forage source, realize that weaning often occurs at a time when pasture quality is declining. As a result, the grain portion of the ration becomes a big source of the nutrition missing from fall/winter pasture. Offering weanlings good quality hay, even if they are housed on pasture, may support the desired rate of growth with slightly less grain.

In order to maintain a steady rate of growth, body condition and body weight should be assessed, and the weanling's diet adjusted, every 2 weeks until the foal is 12 months of age. If you are not luckily enough to have a livestock scale, you can get a reasonable estimate of body weight by measuring your horse with a weight tape. Keeping records of your weanling's body weight will help you track his rate of growth and may help you detect developmental problems before they become too severe. Typically, you will be adding one-half to one pound of feed at each 2-week assessment interval. These amounts will begin to taper off as your weanling reaches his first birthday.

Weanlings should not be allowed to become too "plump." The goal is to support growth without allowing excessive weight gain that puts excessive pressure on developing bones and joints. Don't be fooled by a "hay belly," which can make the weanling look fatter than he really is. Hay belly results from expansion of the weanling's smaller gut to accommodate bulky feeds like hay. As a guideline, you should be able to easily feel your weanling's ribs, but not easily see them.

### Feeding Yearlings

The rate of growth slows as a weanling transitions into a yearling. As a result, the yearling's nutrient requirements are reduced compared to his requirements as a weanling. This means the proportion of nutrients in the diet can be reduced over time, typically by selection of a different commercial grain mix. It also means forage, which is typically less nutrient-dense than the grain mix, becomes an important component of the yearling's diet.

Fortunately, by the time your foal is a yearling, not only have his bones

and muscles grown, his digestive tract has grown. A larger digestive can accommodate bulkier feeds, which means that the yearling's diet can contain a greater proportion of forage (hay or pasture) and a lesser proportion of grain (an average yearling diet being made up of 60% forage and 40% grain).

Guidelines for amounts of forage and grain to be fed, presented as a percentage of the yearling's body weight, are listed in Table 1. High quality hay or pasture should be paired with an appropriate commercial grain mix.

If your yearling is on pasture or if you feed a grass hay, such as timothy, coastal bermudagrass, or orchardgrass, you should continue to feed the same grain mix he received as a weanling (ie, a mix formulated for growing horses) until approximately 18 months of age.

If you feed alfalfa, perennial peanut, or a alfalfa-grass mix hay that contains lots of alfalfa, you have the option of switching down one "octane" in grain mix. For example, if you were feeding a 16% crude protein grain mix to your weanling, you could switch to a 14% crude protein grain mix for your yearling.

Although he may be growing slower, remember that your yearling is still growing. You should continue to monitor body condition and body weight, but can reduce the frequency from every 2 weeks to once per month. Adjust the pounds of forage and grain you offer, as the yearling gains weight.

### Sound Nutrition Can Help You Achieve Sound Growth

Designing diets for young horses is more difficult than any class of horse. Because the youngster is growing, every nutrient counts, and there is less room for dietary mistakes. With careful feed selection and frequent monitoring of growth, you can help your young horse reach his full genetic potential.

### DOD and Nutrition

Any discussion on nutrition and growing horses inevitably turns to the dreaded subject of developmental orthopedic disease (DOD). This term encompasses a number of bone and joint disorders, such as physisitis, osteochondrosis, and flexural and angular limb deformities.

A young horse is most susceptible to DOD when they are 2 to 12 months old, during the period of very rapid growth. However, the severity of the

problem may not become apparent until the horse is radiographed at a yearling sale or until it enters training. Severe cases of DOD may affect the future soundness and serviceability of the horse.

Many factors are thought to contribute to the development of DOD, including the foal's genetic predisposition, rapid growth, trauma, overly excessive or overly restrictive exercise, and an improperly balanced diet. More often than not, several of these factors are involved simultaneously.

When nutrition is implicated in DOD, it may be related to an excess of dietary energy (excess calories), an unsteady growth rate (periods of slow restricted growth, followed by rapid, compensatory growth), and inadequate or imbalanced mineral supplementation. Recent studies have also suggested that excess starch and sugar, which is a large component of grains such as corn, barley and oats, may play a role in DOD in some youngsters. High protein diets have historically been blamed for DOD; but numerous studies have shown this is not the case. In contrast, a diet that contains insufficient protein can cause DOD.

To reduce the risk of DOD, care should be taken to ensure the foal receives a balanced diet throughout the first two years of its life. In addition, there is less risk of DOD if young horses are fed for a moderate rate of growth and kept in moderate body condition. Overweight foals place more stress on their bones and joints.

Encourage a steady rate of growth by using high quality feeds to provide the nutrients your young horse needs. Maximize the forage component of the diet by using high quality hays. Pair forage with grain mixes that have been formulated for growing horses. If you suspect your youngster may have sensitivities to starch and sugar, consider purchasing a low-starch feed that has been specifically formulated for growing horses.

Avoid causing undue stress, which decreases feed intake, resulting in growth slumps often followed by unwanted growth spurts. Providing creep feed for the nursing foal will familiarize the foal to solid feeds, and reduce stress at weaning. Maintaining an adequate vaccination and deworming program, in addition to a healthy, disease-free environment, will also reduce incidence of illness, which can suppress feed intake. Finally, monitoring growth and periodically adjusting the diet will ensure a steady rate of growth.

Choosing the right feed.  
By Jill Haight

Choosing just the right feed and trying to determine if it is balanced for baby can be difficult. Since one size does not fit all, Seminole Feed has developed a scientifically advanced feed for growing horses and broodmares.

Seminole Mare & Foal feed provides the correct ratio of calcium and phosphorus, and it has a balanced level of protein and calories for an optimal growth rate. Young horses should be provided Seminole Mare & Foal feed through the age of 18 months for those on a grass hay/pasture diet or through 12 months of age for those consuming primarily alfalfa or peanut hay as their forage. When your yearling is ready to move from a Mare & Foal diet, begin with a quality 14% feed such as Blue Ribbon or Gold Chance 14.

If you are looking for a low starch feed, Spillers Safety 1st YoungStock has been designed specifically for foals, weanlings and yearlings.

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