

Nutrition of the Weanling and Yearling Horse

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For the rapidly growing horse, the period between weaning and 2 years of age is a critical one in terms of nutrition. During this time there is a tremendous increase in bone size and mineralization as well as muscle mass. It is essential that energy and nutrients in the ration be provided in adequate quantities and kept in balance to ensure proper growth, development and health of the horse.

MAXIMAL GROWTH VS OPTIMAL GROWTH

Maximal growth of the horse is different than optimal growth of the horse. Feeding a young horse so that it is growing at the maximum rate possible is undesirable because during the growth process bone mineralization, which is responsible for the strength of the bone, lags significantly behind bone lengthening (at 12 months of age the young horse could be expected to have reached approximately 90 - 95% of its mature height but only about 75% of its mature bone mineral content). Ideally, the young horse should gain weight at a rate that its developing bones can easily support. However, overfeeding (especially energy) can cause a young horse to gain weight so fast that its bones do not have the structural strength to support its weight and/or the rapid weight gain can exacerbate other skeletal anomalies. Under these conditions, the incidence of developmental orthopedic disorders (DOD) and unsoundness increases. This scenario can also occur during periods of uneven growth. For example, if a horse which was underfed and growing slowly is switched to an adequate diet which allows it to grow quickly, the probability of DOD occurring is increased. Foals between the ages of 3 months and 9 months of age are at greatest risk for the incidence of DOD.

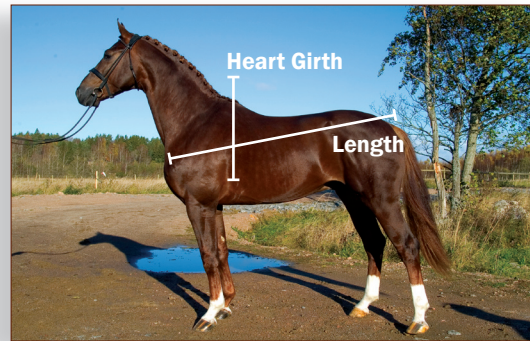
Ideally, the young horse should be fed so that it grows at a moderate, steady rate. Recommended rates of average daily gain for horses are found in the National Research Council (NRC) Nutrient Requirement for Horses (1989) publication. An updated NRC Nutrient Requirement for Horses is expected to be released in 2007. Recommended average daily gain values for horses of different mature body weights range from 0.28 - 0.39% and 0.15 - 0.21% of the horse's body weight for weanlings and yearlings, respectively. Feeding a young horse so that it grows at a moderate rate does not compromise the eventual size of the horse. Consequently, you do not have to be concerned that feeding the weanling and yearling for a moderate rate

of growth will result in a smaller horse at maturity.

Monitoring the horse's body weight using a scale or a measuring tape are two ways to track growth over time. With a tape, measure the circumference of the horse's heart girth and the length from point of shoulder to point of buttock.

The measurements and the following equation can be used to closely approximate the horse's weight (1).

$$\text{lb body wt} = \frac{[\text{heart girth (in)}]^2 \times \text{length (in)}}{280 \text{ (weanlings) or } 301 \text{ (yearlings)}}$$



FEEDING THE WEANLING AND YEARLING

Energy and nutrients are first used to meet maintenance requirements. Any energy and nutrients remaining will be used for growth.

The dietary ratio of calcium (Ca) to phosphorus (P) (Ca:P) should range from 1:1 - 3:1. Legumes tend to be higher in Ca than P and higher in Ca than the grasses. Grains are typically much higher in P than Ca. Therefore any change in forage or grains in the diet would be expected to alter the Ca:P ratio.

There is an increased incidence of defective bone and associated tissue formation if one or more of the following conditions exist.

1. the quantity of Ca and P is inadequate
2. the ratio of Ca:P is inverted
3. the diet is low in zinc (Zn) or copper (Cu).
The ideal ratio of Zn:Cu is 3:1 to 4:1.
4. the energy content of the diet exceeds 120% - 130% of that recommended by the NRC.

High quality forages are an excellent way to provide the young horse with much of the energy and nutrients it needs. The forage component of a weanling's diet should

never be less than 30% as measured by weight and ideally should be much greater. While it is possible to determine the energy and nutrient content of hay by laboratory analysis, it is very difficult to get a handle on the quantity of nutrients that pasture contributes to the nutrition of the young horse. This is because the conditions of the pasture vary over time due to temperatures, rainfall and pasture management practices etc. Consequently, pasture alone should not be considered adequate to meet all of the young horse's nutrient requirements.

Because the ability to efficiently utilize forages develops over time, young, growing horses need higher quantities of sugars compared to mature horses. Frequently, when more energy than can be supplied via forages is needed, cereal grains such as oats and corn are increased at the expense of the forage component. However, there is a very real and practical limit to how much cereal grain can be fed to a horse without causing serious nutrient-related ailments, and the grain ration should contain supplemental fat.

You can either formulate your own concentrate ration or purchase a commercially prepared concentrate specifically formulated for horses at different stages of growth. The total quantity of concentrates should be kept at the minimum possible to achieve the desired growth rate and maintain a moderate body condition score. Ribs should be visible on weanlings and yearlings. There should be fat covering the top 1/3 to 1/2 of the ribs below the flat

of the back. Additional fat may indicate the horse is too heavy.

Maximizing forage consumption will mimic natural feeding behavior and facilitate gastrointestinal tract health. Because of their small stomachs, young horses should be fed the concentrate part of their ration multiple times throughout the day, and any concentrate not eaten should be removed and replaced with fresh concentrate the next feeding. It is important that you take the expected feed consumption of the horse into account when calculating your horse's daily ration.

The horse requires a number of different minerals in its diet. Some of the minerals, especially the major minerals, may be supplied in adequate amounts via natural feedstuffs. Common feedstuffs are not usually a reliable source of the required trace minerals, so supplementation is usually recommended. Salt or sodium chloride (NaCl) should always be provided free choice as a horse will regulate their own intake. It is also recommended that vitamins be supplemented to most young horses. Additionally, young, rapidly growing horses should always have access to a fresh, clean supply of water.

REFERENCE

(1) Wilson, K.R., S. Jackson, C. Abney, B.D. Scott and P.G. Gibbs. 2005. Body weight estimation methods as influenced by condition score, balance score and exercise in horses. In Proceedings, 19th Equine Science Society. Page 57 - 62.

Table 1. Energy and nutrient recommendations for weanlings and yearlings.

	Digestible Energy (Mcal/lb of body weight)	Crude Protein %	Ca %	P %	Cu ppm	Zn ppm	Vit A IU/lb	Vit E IU/lb	Expected feed consumption (% of body weight)
Weanling	1.25	14.0 – 16.0	0.7	0.4	10	40	910	37	2.0 – 3.5
Yearling	1.15	12.0 – 14.0	0.5	0.3	10	40	910	37	2.0 – 3.0

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