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1998

## G98-1344 Basics of Feeding Horses: Feeding Management

Kathleen P. Anderson

University of Nebraska - Lincoln, kanderson1@unl.edu

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# Basics of Feeding Horses: Feeding Management

This NebGuide outlines appropriate practices for feeding horses.

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*Kathy Anderson, Extension Horse Specialist*

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Often, nutritional management of the equine is a misunderstood topic. Successful nutritional management depends upon combining information on the nutrient requirements of different horses and their eating behaviors with the knowledge of how to best meet those requirements. Proper nutritional management is extremely critical in the horse due to the unique arrangement and anatomy of its digestive tract. Often, it is the feeding method, not feed composition, which leads to digestive disorders in horses. This NebGuide includes information on the basic, daily feeding management for horses.

## Feed Horse by Class

Nutrient requirements vary depending on both a horse's nutritional class and its life status. For example, a broodmare in lactation has different nutritional requirements than a 10 year old, non-working horse. Dividing horses into classes (mature idle, producing broodmares, working or young growing horses) relative to nutritional requirements is the first step in designing a workable feed management plan.

When feeding by class, most horse owners generally select one of two basic feeding plans, depending on their particular situation and availability of feeds. One plan is to feed a single roughage source (e.g. grass hay), then feed from two to four different concentrate feed mixes which vary in protein content and amounts of other nutrients. The number of concentrate mixes would depend on how many different classes of horses being fed. A second, more commonly used feeding program is to feed one well balanced concentrate to all horses and supplement with either legume or grass hay, to meet horses differing needs.

## Feed Horses According to Body Weight

*Table I* shows recommended daily feed intakes by horses as a percentage of body weight. To use this table, decide what class best fits your horse and your horse's body weight. While scales are most accurate for weighing horses, they are often impractical and other methods, such as visual estimation, weight tapes or body measurement formulas can be used. One common method, a heart girth tape, is available from feed dealers, veterinarians and livestock supply companies. Another method is to use a

body weight equation such as the following, which only requires a measuring tape. One equation is:

$$W = \frac{HG^2 \times BL}{330} \quad \begin{array}{l} W = \text{Weight in pounds} \\ HG = \text{Heart girth in inches} \\ BL = \text{Body length in inches} \end{array}$$

As shown in *Figure 1*, heart girth is measured at the horse's circumference. Run the tape around the horse, at the highest point of the withers. Body length is measured from the point of the shoulder, along the horse's side and to the point of the buttocks (half the distance from the corner to the tail).

Example: How much to feed your horse?

1. Determine the class of horse you have:  
Light working horse
2. Estimate the horses weight:  
Heart girth = 70"  
Body length = 69"

$$W = \frac{(70)^2 \times (69)}{330} = 1024 \text{ lbs.}$$

3. Nutrient Requirements (*Table I*)

Intake is based on a percent of body weight. From *Table I*, it is estimated this class of horse will have an intake of 1.5-2.5 percent of body weight.

Range in total intake (forage + concentrate)  
\* if intake is 1.5 percent of body weight then:  
Total pounds of feed fed = .015 X 1,024 lbs. = 15.36 lbs per day

\* if intake is 2.5% of body weight per day then:

Total pounds of feed fed = .025 X 1,024 lbs = 25.6 lbs. per day  
Forage - Range of forage intake - 1-2 percent body weight (*Table I*)

\* If forage intake is 1 percent of body weight then:

Pounds of forage fed = .01 X 1,024 lbs. = 10.24 lbs. of forage per day

\* If forage intake is 2 percent of body weight then:

Pounds of forage fed = .02 X 1,024 lbs. = 20.48 lbs. of forage per day

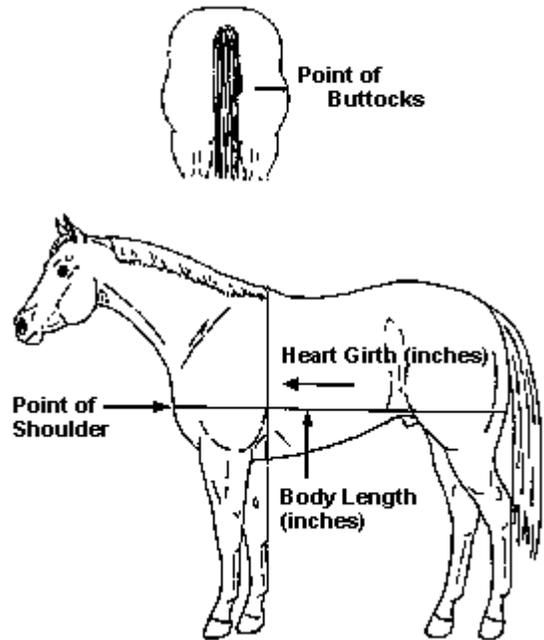
Concentrate - Range of concentrate intake - .5-1 percent of body weight (*Table I*)

\* If concentrate intake is .5 percent of body weight then:

Pounds of concentrate fed = .005 X 1,024 lbs. = 5.12 lbs. concentrate per day

\* If concentrate intake is 1 percent of body weight then:

Pounds of concentrate fed = .01 X 1,024 lbs. = 10.24 lbs. concentrate per day



**Figure 1. Locations of measurement of Body Weight Equation.**

This horse will need to eat between 10 1/4 to 20 1/2 lbs. of hay and 5 to 10 1/4 lbs. of grain each day, as long as the total daily feed consumption does not exceed 15 1/2 to 25 1/2 pounds of feed.

<b>Table I. Expected feed consumption by horses (percent body weight)<sup>1</sup></b>			
	<i>Forage</i>	<i>Concentrate</i>	<i>Total</i>
<b>Mature horses</b>			
Maintenance	1.5-2.0	0-0.5	1.5-2.0
Mares, late gestation	1.0-1.5	0.5-1.0	1.5-2.0
Mares, early lactation	1.0-2.0	1.0-2.0	2.0-3.0
Mares, late lactation	1.0-2.0	0.5-1.5	2.0-2.5
<b>Working horses</b>			
Light work <sup>2</sup>	1.0-2.0	0.5-1.0	1.5-2.5
Moderate work <sup>3</sup>	1.0-2.0	0.75-1.5	1.75-2.5
Intense work <sup>4</sup>	0.75-1.5	1.0-2.0	2.0-3.0
<b>Young horses</b>			
Nursing foal, 3 months	0	1.0-2.0	2.5-3.5
Weanling foal, 6 months	0.5-1.0	1.5-3.0	2.0-3.5
Yearling foal, 12 months	1.0-1.5	1.0-2.0	2.0-3.0
Long yearling, 18 months	1.0-1.5	1.0-1.5	2.0-2.5
Two year old, 24 months	1.0-1.5	1.0-1.5	1.75-2.5
<sup>1</sup> Air-dry feed (about 90% DM). <sup>2</sup> Examples are horses used in pleasure, equitation or working 1-3 hours per day. <sup>3</sup> Examples are horses in ranch work, roping, cutting, barrel racing, jumping, etc. or working 3-5 hours per day. <sup>4</sup> Examples are horses in race training, polo, etc. or working more than 5 hours per day.			

## Feed Horses to Condition Scores

While feeding horses according to body weight is ideal; most horsemen should use a horse's condition (degree of fat cover) as a feeding guide. Research has shown amount of bodyfat, which is an estimate of stored energy, influences many physiological functions, such as reproduction and work performance. Condition scoring requires visual observations and/or feel of fat covering is done at six body sites (back, ribs, mid-barrel, neck, behind the shoulders at the forerib, withers and tailhead; *Figure 2*). Estimates of fat cover are then compared to a numerical description of a condition score system (*Table II*) to determine a condition score. When condition scoring horses, long, winter-type hair coats or muscle tone and bulk can give incorrect body condition assessments. Take time to run a hand over the horse at the points identified in *Figure 2* to determine degree of fat cover at these various body locations. According to condition scores, adjustments should be made in the amount of hay and grain being fed so horses are fed to their optimal condition and subsequently achieve maximum reproductive and performance efficiency. Research has shown broodmares at a condition score of 4 or below will have compromised reproductive performance. Horse owners should try to maintain their horses at condition scores between 5 and 7.

**Table II. Condition scoring (degree of fatness) system.**

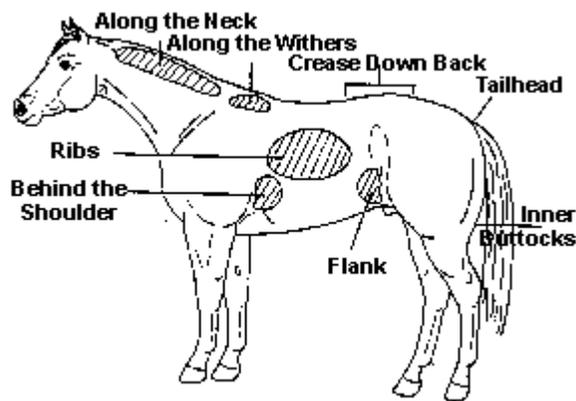
Score	Back	Ribs	Neck	Shoulder	Withers
1	very prominent vertebrae	very prominent	extremely thin	prominent	prominent
2	prominent vertebrae	prominent	very thin	very thin	very thin
3	fat vertebrae - 1/2 way up	can easily see	thin	thin	thin
4	negative crease	can still see outline	less thin	less thin	less thin
5	level	not seen but easily felt	blends into shoulder	blends smoothly into body	rounded
6	slight crease	not seen can be felt	a little fat	a little fat	a little fat
7	average crease	can barely be felt	average fat should and ribcage	almost level between	fat
8	prominent crease	difficult to feel	fat and ribcage	level between shoulder	fat filled
9	very deep crease	cannot feel (patchy fat)	bulging fat	bulging fat	bulging fat

1. Observe horses visually. Cautions: long hair will interfere with scoring; therefore, palpation of fat cover (i.e. ribs) will be necessary. Certain conformation characteristics or pregnancy status may influence the degree of fat appearance over certain body parts; therefore, use all locations in accessing a composition score. Do not confuse fat for muscle tone of a physically fit horse.

2. Assign condition scores (CS) and record in whole or half units (i.e. CS = 5.5, CS = 8.0).

### Feed Adequate Long-Stemmed Roughage

Horses innately display a need to forage or chew long-stemmed roughage. A horse requires a daily minimum of 0.75 to 1 percent of its body weight as forage to satisfy this roughage need and allow for normal activity of the digestive tract. Horses grazing abundant, good-quality pasture consume enough forage to meet this roughage requirement. When pasture is not available, owners must supplement to ensure the horse meets this roughage requirement. A 1,000 pound horse, for example, requires a **minimum** of 7 1/2 to 10 pounds of hay per day. When horses do not receive adequate amounts of long-stemmed roughage over a period of time, they develop undesirable behaviors such as chewing wood, eating bedding, chewing tails and eating feces.



**Figure 2. Areas emphasized in the condition score.**

Long-stemmed roughage is still needed even if a "complete" feed (both hay and concentrate incorporated into a pellet) is fed, to prevent wood chewing and other behavioral vices.

To ensure good nutrient utilization, hays or pasture must be high quality. Hay can be fed in a variety of methods, such as overhead bunkers, hay bags or ground feeders to minimize the ingestion of dirt, sand and/or fecal material. Hay feeders should be designed to keep leaves, the most nutritious part of hay, from falling on the ground. Mount hay feeders where they are safe and easy to fill. Popular combination hay and concentrate feeders are designed with a tray to catch hay leaves, can be filled from outside the stall and are safe when mounted at chest height. Avoid feeding hay, or any feed, directly on the ground.

This practice encourages feed waste and increases the chance for parasitic infection. Round bales can be simple and economical method in feeding pastured horses, especially in winter time. While metal round bale feeders can minimize waste, they are also potentially dangerous for horses.

### **Feed All Feeds by Weight of the Ration and Not Volume**

Feeding by weight decreases the chance of overfeeding, due to differences in weight per volume of different feeds and different processing methods. For example, horse owner's universal feed measurer is a 3 pound coffee can. A coffee can of corn, though, weighs more than a coffee can of oats, and a coffee can of pelleted feeds weighs more than one of textured feed. Substituting a coffee can of corn for that of oats may result in feeding twice as much energy. Such sudden changes in the energy density can make a horse susceptible to digestive disorders, such as colic or laminitis (founder). In fact, one of the most common causes of digestive upset is overfeeding of energy in a single feeding because grain mixes weight differences were not taken into account.

To assure against energy overfeeding, always check feed weights, especially when new or different feeds or hays are purchased. Learn the approximate weights of different size blocks of hay and of various concentrates. Mark cans and other feed-dispensing containers to standardize portion amount.

### **How Much to Feed at One Time and How Often to Feed**

In many ways, a horse's digestive physiology is best suited for a continuous, low level feed supply. However, for management, housing and production needs, most horses are meal-fed. Meal-feeding large amounts of concentrate (grain) increases starch bypass into the cecum and colon of the horses digestive system. Large amount of starch presented to the hindgut increases the frequency of digestive upset. Therefore, a practical guide is to never feed more than 0.75 percent of a horse's body weight in concentrate at any one feeding. For example, a 1,000 pound horse should never be fed more than 7.5 pounds of grain at any one feeding. If your horse is doing a lot of work, and requires 16 to 20 pounds of feed per day, this grain must be split into three or more feedings a day. A mature, idle horse could be fed concentrate only once a day, but should have continual access to long-stemmed roughage. Growing horses, lactating mares or moderate working horses generally require twice-a-day feedings. Split intake into equal portions. For example, if fed twice daily, one half the daily amount of hay and one half the daily amount of grain should be fed at each feeding.

### **Feed Daily at Set Feeding Times**

Horses are creatures of habit. When fed on consistent time schedules, the chances of colic or founder are reduced. Horses are also more content, less likely to go off feed and seldom develop stable vices when maintained on a regular schedule. In contrast, horses fed erratically usually appear annoyed in the stalls and may develop stall vices such as digging, pawing, kicking, chewing or others.

Evenly spaced feeding times such as at 12 hour intervals for twice-a-day feeding, will enable the horse to more efficiently utilize its ration. This is especially important when feeding large amounts of grain.

### **Avoid Abrupt Ration Changes**

Ideally, changes in the type or amount of feed given a horse should be conducted over several days, depending on the degree of change. This practice allows the digestive system to adapt to different levels and physical forms of nutrients and is especially important when feeding energy-dense rations. When large increases in the amount of grain fed is necessary (e.g. fattening thin, lactating mares) increase the

grain intake by one half pound every two to three days until the energy balance is met. Some feed changes can be made almost immediately; some require a few days; and others require a week or longer to assure a safe adjustment. For example, when changing from one sweet feed to another, if both have similar energy levels, the change is minimal and can be completed over a few days. However, if the ration has been primarily oat-based and will now be corn-based, there is a significant increase in the energy level. This new, high-energy ration should be introduced over seven to 10 days. When changing to a new concentrate, it is best mix the new and old rations together for each feeding and gradually increase the amount of the new ration while decreasing the old.

Similar precautions should be taken when changing a horse from an all hay diet to lush pasture. Horses should be "weaned" onto the pasture by turning them out for a few hours for two to three days, then half a day for two to three days, then left out. If this gradual introduction to pasture is not possible, fill horses up on hay before turning them onto lush pasture.

### **Provide All Horses with Fresh Water**

Horses need a good source of clean, fresh water, although intake should be restricted from hot horses. Give hot horses small amounts of water, but cool them down before giving free access to water. Other horses need access to fresh water at all times. A mature, idle horse will drink approximately 10 to 12 gallons of water daily, more if lactating or sweating. While automatic waterers provide a labor reduction, some horse owners prefer watering with buckets to monitor of water intake. No matter what method is used, water sources should be checked twice daily and never left empty.

### **Provide Salt for All Horses**

All horses require some dietary salt. Pastured horses not receiving mixed feeds should always have free-choice access to trace mineralized salt in either a loose or block form. Horses fed commercially prepared feeds, which usually contain 0.5 to 1.0 percent added salt, will not need supplemental salt. One exception: the working horse. Sweating horses may require more salt than they consume in their diet and thus may need accessibility to free choice salt.

### **Never Feed Grain Mixes Containing Rumensin**

Grain mixes containing Rumensin, a commercial growth-enhancing cattle feed additive, should never be fed to horses. Rumensin has been found to be lethal to horses.

### **Feed only High Quality, Clean Feeds**

Horses require top-quality grains and hay. Clean, fresh feeds aid against digestive and respiratory disorders. Grains with hard seedcoats, such as corn, must be coarsely processed for maximum nutrient availability. Processing of soft-coated grains, such as oats, has less effect on improving nutrient digestibilities. Avoid finely processed grains, as small particle size may increase incidence of colic and respiratory problems. Finely processed grains should be pelleted before feeding. Examine all feeds for signs of mold or dust. Discard any feed (hay or grain) that is moldy, dusty or smells spoiled.

### **Check Daily for Feed Refusals and Remove**

Daily observation of both feeders and horses is important in detecting health problems. Occasionally horses do not "clean up" or finish their feed. Feed refusals can suggest a health problem, over-feeding, something wrong with the feed, limited access to water or teeth problems. All uneaten hay or grain

should be removed with each feeding and inspected for indications of spoilage. Loose stools or changes in manure consistency may be signs of digestive problems.

### **Do not Feed to Soon Before or After Exercise**

Never feed or water a hot horse. A good guideline is to avoid feeding your horse two hours before or after exercise. However, frequent sips of water to a hot horse will speed cooling time and help avoid dehydration.

### **Group Feeding verses Individual Feeding**

In groups, horses tend to behave similarly. For example, one horse eating encourages others to eat. Appetite also can be stimulated in individually housed horses by allowing them to observe others eating. In some situations, competition may allow some horses to consume excess feed while others receive inadequate amounts. Usually, foals and young growing horses can be fed in groups with minimal problems. As they age, however, horses develop "pecking orders," and feeding time brings out these aggressive behaviors. Reduce competition when group feeding older horses by providing individual feeders for grain. Spread the feeders over a large open area and space them 40 to 50 feet apart. Feeders should be free of sharp points and projecting edges.

### **Routinely Exercise Stalled Horses**

For stalled horses, routine exercise is important to maintain optimal eating behavior. Stalled horses, especially those fed large quantities of feed, should be exercised daily to help maintain regular eating habits, desirable stall behavior and general health. Exercise can be in the form of riding, longe line work, ponying, mechanical walker or by free exercise.

### **Routine Dental Checks and Parasite Control Program**

In addition to a good feeding schedule, every horse should have regular dental checks and be on a routine parasite control program. Horses are subjected to various dental abnormalities which can hinder their ability to grind feed and consume hay. Observations of eating behaviors, such as dropping large amounts of grain while chewing, holding the head sideways, abnormally slow eating, undigested grain kernels in the feces or general unthriftiness, could be indicators of a dental related abnormality. Consult a veterinarian experienced in equine dentistry for assistance. Additionally, horses infested with parasites will often appear unthrifty, have rough hair coats and an overall unhealthy appearance.

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***File G1344 under: HORSES***  
***A-3, Feeding & Management***  
***Issued March 1998, 2,500 printed***

*Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.*

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