



Managing Grazing of Horses

Dr. David W. Freeman
Extension Equine Specialist

Daren D. Redfearn
Extension Forage and Pasture Management Specialist

Oklahoma Cooperative Extension Fact Sheets
are also available on our website at:
<http://osufacts.okstate.edu>

Few horse owners prioritize grazing and forage management. Money is wasted by feeding more supplemental feed, and the appearance of the grazing area is undesirable. Lack of expertise and prioritizing of forage management may be the most frequently occurring mismanagement practice.

How can horse owners control grazing of horses so they get the “best” out of pastures, and keep them from “tearing up” a pasture?

These are simple questions with not so simple answers. In order to maximize utilization of pasture on the farm, owners need a general understanding of how horses utilize forage, factors affecting animal performance on pastures, and knowledge of grazing behavior of horses. Combining these “animal factors” with agronomic factors will allow owners to set realistic goals and design pasture plans that meet them.

Outlined below are several considerations for management of the “animal factors” that can assist in the success of maximizing forage utilization for horses. Additional information, including recommendations on forage types and agronomic practices to enhance forage production, can be obtained from OSU Extension Facts, F-3980 “Forage for Horses.”

Intake Limits of Horses on Forage Diets

How much forage a horse **can** eat and how much forage a horse **will** eat are two entirely different items. Mature horses on complete hay diets can consume up to 2.25 percent to 2.75 percent of their body weight in hay on a daily basis. Therefore, in situations where hay is full fed and highly palatable, a mature 1,200 pound horse can consume about 30 pounds of hay per day. The upper limit of dry matter intake on pasture should be similar or slightly less than the dry matter intake expected on all hay diets. Wet forages such as immature winter grains may have less intake of dry matter because large amounts of water are ingested as part of the plant.

Several factors influence voluntary intake, making it difficult to estimate how much pasture forage a horse will eat. Some pastures and grasses are more palatable than others. Lush, immature, growing forages are more readily consumed than tall, weedy, unpalatable forages. Horses introduced to lush pastures from a dry lot or stall will routinely graze aggressively the first few days as compared to their intakes after they are acclimated to the forage. Initial intake can be large enough to cause founder or colic unless owners restrict grazing.

Extremely cold, wet, windy, or hot weather reduces the

amount of time horses graze. Supplemental feeding decreases the amount of time horses graze. In addition to the obvious reduction of appetite from the supplemental feed, horses will quit grazing and stand around feeding areas for several hours in anticipation of receiving grain mixes.

Forage palatability. Palatability refers to a horse’s preference for different forages. Typically, small grains, annual and perennial ryegrass, bluestems, and bermudagrass are highly palatable for most horses. Ryegrass, wheat, oat, rye and triticale forages are acceptable to horses. Of these, ryegrass, wheat, and oats are the most preferred. Palatability studies on legumes suggest that horses readily accept crimson, berseem and subterranean clovers. Arrowleaf clovers and vetch have significantly lower palatability.

Palatability is relative between different horses and the previous forages they have eaten. Forage types that are the sole source of pasture may show high palatability, whereas the same forage in a multi-forage pasture may go ungrazed. Given time, horses will pick and choose one forage over others in pastures with several forage species. Spot grazing occurs in horse pastures because of forage preference.

The order of palatability of different forages changes as the pasture changes with the seasons that affect growth of different forages in the pasture. Also, horses raised on a particular forage accept forage more than horses without previous exposure to the forage.

Forage Nutrient Utilization

A limited amount of research and a large amount of casual observation indicates forage diets can supply the nutrient needs of several classes of horses. Availability of sufficient amounts of high quality forage is usually the limiting factor.

Compared to cattle, horses have less ability to digest energy of high quality forages. When consuming high quality forage, horses will compensate for slightly lower digestion rates and faster passage rates by higher voluntary intakes of dry matter. Horses digest highly lignified forage (mature, stemmy forage) poorly. Energy digestibility coefficients for forages decrease from more than 50 percent to less than 30 percent as quality of forages decreases. Similar ranges of forage quality may affect energy digestibility in cattle 2 or 3 percent compared with the 10 to 20 percent in horses.

Protein digestibility in hays typically range from 50 to 70 percent. Protein digestibility of forages in pastures would be

expected to be similar to hays of similar maturities. As with energy, digestibility of protein in forages can be expected to vary between forage species and within species at different stages of growth. One research trial comparing different hays calculated the protein digestibility of high quality bermudagrass at 57 percent, low quality alfalfa at 66 percent, and high quality alfalfa at 73 percent.

Protein digestion within the horse's digestive tract is also significant. Feed not absorbed in the small intestine travels to the hind gut. Protein in forage is better utilized when digested in the small intestine rather than the hind gut. Horses digest protein in low quality forage (stemmy, mature) mainly in the hind gut. Protein in low quality alfalfa is digested mainly in the hindgut, whereas almost $\frac{1}{3}$ of the protein in high quality is digested in the small intestine. Maximizing protein digestion in the small intestine is especially important when meeting needs of growing horses and broodmares.

Forages are also a good source of minerals and vitamins. Mineral content of forages vary between different forage species and in similar forages at different stages of growth and pasture locations. Agronomic practices such as fertilization alter mineral profiles of forages. As a general rule, balance calcium to phosphorus in forages for all classes of horses. However, the amounts of the two minerals may be deficient, especially for growth, exercise, and broodmare production. Additional minerals should be fed as a supplement at regulated intakes. Mineral supplement with equal parts of calcium and phosphorus can be supplied free choice, however, large variations of intake will occur nonrespective of a horse's nutrient needs. Forages also are an important source of many vitamins, especially vitamin A containing compounds.

Estimating Correct Stocking Rates

Proper stocking rates, or the number of horses per unit of land area, are affected by several factors such as size of horses, forage species, soil type, season of the year, environmental moisture, fertilization, and length of time horses have access to a pasture. These factors make it difficult to provide stocking rate recommendations at rates of number of head per land area. To avoid variability, research trials quantify stocking rates as amounts of forage per amounts of animal weight, e.g. pounds of forage dry matter per 100 pounds of live animal weight.

In one study of yearling horses grazing high quality, well-managed bermudagrass pasture, forage allowance of 60 pounds of forage dry matter per 100 pounds of live weight provided the maximum average of daily gain. Denser stocking rates greatly reduce average daily gain. At proper stocking rates, thick stands of bermudagrass of 4 to 6 inches in height are grazed to a minimum of 2 to 3 inches, and managed so the grass does not become in short supply or too mature. Under optimal conditions, non-supplemented yearlings on well-managed, high quality bermudagrass can gain 1 to 1.2 pounds of body weight per day. Yearling gains on well managed cool season, small grain pastures (rye, wheat) may be slightly less (.8 to 1 pound per day), probably due to the intake of large amounts of water in small grains. Water fill may not allow for enough dry matter intake to facilitate moderate growth rate.

The availability of supplemental grain has been shown to affect yearling growth both positively and negatively in several grazing trials. Yearling gains on properly stocked,

well- managed bermudagrass pasture have been improved by supplementing grain at 1 percent (6 to 8 pounds grain per day) of body weight per day. However, yearling gain was decreased in another group in which half this amount of grain was fed daily. The probable cause was the grazing behavior was altered by them spending more time waiting around feed troughs. Apparently, the benefit of the supplemented grain did not offset the lower forage intake from less time spent grazing.

Supplemental feeding of yearlings on small grain pastures appears to be of more value for increasing performance compared with bermudagrass pastures. One trial reported yearling gains on small grain pastures increased from 0.8 pounds per day to over 1.5 pounds per day when grain was fed at 1 percent of body weight per day.

Considerable management accompanied the previously mentioned research to manage forage quantity and quality. Bermudagrass was managed so horses grazed thick stands that were 4 to 6 inches in height. Small grains should be managed so forage growth is 6 to 8 inches tall. This will result in maximum quantity and quality of forage. Animal performance will be extremely limited at high stocking densities, seasons of the year when grasses are dormant, and in pastures with poor quality forage.

Usually, forage heights are too short on horse farms because of overgrazing. Overgrazing severely limits forage production and forage intake. When the herbage height of bermudagrass decreases below 3 inches in height, it severely reduces the average daily gain of yearlings. This relates to the increased nutrient availability in leaves, compared to the stem portions of the plant. The top layer of pastures have a higher leaf content. **It is important for horse performance as well as forage growth to allow a pasture to develop adequate leaf area before grazing, and provide periodic rest from grazing to allow forages to recuperate and maintain productivity.**

As previously noted, nutrient content and digestibility can be expected to decrease as forage becomes mature. Some species of forages, such as bermudagrass, grow rapidly in optimal environmental conditions. During these times, grazing might need intensified to maintain acceptable maximum plant heights and maturity. Bermudagrass should be managed to remain 3 to 6 inches tall during grazing periods.

Differences in forage growth during different times of the year, the available forage per land area, and horse weight make general recommendations for stocking rates of number of head per land area inaccurate. Under controlled grazing systems which allow optimal quantity and quality of forage, stocking rates as intense as one mature, nonproducing horse to 1 to 1.5 acres of thick, productive bermudagrass at 4 to 6 inches of growth have been successful. The same stocking rates on small grains would require 6 to 7 inches of plant growth. Pastures that have less dense forage, shorter forage heights, or not intensely managed will require more acreage per horse. Unimproved, productive, native grass pastures in Oklahoma may require 5 to 10 acres per horse.

Grazing Behavior of Horses

Horses tend to be the hardest type of livestock on pastures. Pastures with cattle are usually more uniformly grazed, weeds are not as large a problem, and overgrazing is not

as immediate. Many of these observations are true because horse pastures tend to be overstocked.

These observations are also true because of the grazing differences between horses and cattle. Horses' biting style allows them to clip plants off close to the ground causing severe problems for plant regrowth. Also, horses tend to group around certain areas, killing the forage in this area and exposing the bare ground to erosion and propagation of weeds. Some horses tend to defecate in localized areas which causes manure buildup and reduced palatability of forage in these areas. The most difficult behavioral trait to overcome in horses is their selective grazing instinct.

Horses selectively graze pasture because of palatability of different types of forages and different stages of maturity of a specific forage. Horses selectively graze immature and less stemmy varieties of forage. This selectivity continues so small areas with short, new growth are continually overgrazed while surrounding areas grow past the point of desired maturity and palatability.

Selectivity results in spot grazing which reduces forage production and intake of high quality forage. As desirable species of forages are grazed out in the spots of overgrazing, less desirable, weedy species tend to increase. Surrounding areas become overly mature, and less digestible and palatable. Horses can quickly turn a pasture into a weed patch or dry lot unless both grazing and agronomic practices are employed.

Use of controlled grazing. Many horse farms, especially those with small acreages, can benefit from some type of controlled grazing system. Controlled grazing can be practiced by limiting the time per day horses have access to a pasture and/or by dividing pastures into smaller areas or "cells" and practicing rotational grazing. These practices will increase total forage production, increase the days that forage is available, and will help sustain higher stocking rates.

Access to pastures can be implemented around other farm routines such as morning and evening feedings. In that plan, horses could graze for 8 to 10 hours between feedings. However, shorter grazing periods, such as 4 hours per day, may provide better results, especially when forage supply or land area is limited.

Rotational grazing plans require the use of more than one pasture, or larger pastures can be subdivided into two or more grazing cells by the use of temporary fencing. Horses are moved as a group from one cell to the next as forage growth and consumption dictate. The time for grazing one cell may vary from one or two days to several weeks depending on stocking rates and forage growth. Although stocking rates are increased because of the reduction of land area, the grazing relief periods that the nongrazed cells receive help to prolong the forage growing season. Also, spot grazing typically will be reduced and horses can have access to forage maturities that are most efficiently digested.

A rotational system for bermudagrass pastures should maintain a minimum of 2 inches of grass in each cell. The pasture should be subdivided so it takes 3 to 4 weeks to move horses through all the cells. Cool season heights should be grazed to maintain a 3- to 4-inch minimum. Small grain cool season forages are especially susceptible to trampling, so restricting animal traffic during wet weather will help maintain forage growth.

Typical fencing alternatives include the use of multi-wire electric fencing or electrified poly-tape. Horses placed behind

temporary fencing must be adapted to it. Using temporary fencing in large areas will allow horses to become accustomed to it before confinement in smaller grazing cells. Providing visibility of temporary fencing by using ribbons on wire fencing or by using products such as poly-tape will assist the success of confinement. Also, horse behavior must be understood. Horses cannot be stocked as densely as other species of livestock because of their high level of aggressive behavior. So, use of small cell grazing for large numbers of horses has limitations.

Considerations for Small Acreages

Small acreage horse farms are difficult to manage so that forage is optimized for both esthetic and nutritional value. Horse owners must be realistic about the limitations of land area and stocking rates. Some areas are too small to grow forage and are better defined as dry lots rather than pastures. Nonetheless, some forage species are better at recovering from overgrazing and trampling in smaller areas. Bermudagrass is an example of a tolerant grass species that will stand significant abuse while maintaining significant regrowth. The best recommendation for small areas is to restrict grazing by limiting grazing time. When areas are large enough, divide the pasture into cells and rotate horses around areas during times that forage is productive.

Small acreage horse owners must aggressively practice agronomic measures to promote forage growth. Introducing improved varieties of forage, dragging manure piles, and fertilization are common practices that need implemented. Areas that are subject to erosion and near flowing watersheds may need protected by fencing to prevent overgrazing, loss of soil, and silting of waterways.

Some Recommendations to Manage Grazing in Horses

The scope of this article is confined more to grazing considerations than forage management practices such as forage specie selection, fertilization, weed control, and mowing. Oklahoma Cooperative Extension offices provide additional resources on these subjects. Several recommendations for managing grazing of horses are provided below.

- The goal of forage management is to maintain the desired supply of digestible forage to grazing horses. Mature forage and weedy forage types are not efficiently digested.
- Establishing forage depends largely on what plant species are best adapted to the soil type and geographical area, and the types and levels of agronomic inputs owners are willing to employ.
- The length of forage grazing season will depend on use of warm and cool season forages, rainfall, grazing management, and agronomic practices employed.
- Don't overestimate the available forage for stocking rate determination. Trees, sacrifice areas, overgrazed areas, and brush must be considered.
- If pastures are of adequate size, decrease sacrifice areas by practices such as frequently relocating feed troughs in pastures.
- Consider time limit grazing and rotational grazing programs, especially when housing horses on small acreages.

- Rotational grazing, companion grazing with other types of livestock, spreading of manure piles, and other management practices will reduce spot grazing.
- Pasture forage should be maintained at minimum optimal heights. Although complete removal of horses from pastures is not possible on many farms, rotational grazing or limited turnout time will help establish initial growth, and allow for regrowth during the active season of forage growth.
- Horses should be gradually introduced to forage types that are high in nutrients such as winter annuals. For example, start turn outs for 30 minutes once or twice per day for a couple of days, followed by a couple of days with access of 4 to 6 hours before continual turnout. Watch the horse's health and behavior to determine how quickly to advance this introductory period. Allowing horses free choice hay while not on pastures during the introductory period will help decrease their appetite when they are turned out.
- Selection of forages to establish needs to be based on desired forage production times and amounts, forage compatibility to the geographical area, the expected grazing and trampling pressure, and the expected grazing and agronomic practices to be followed. In Oklahoma, the most common warm season perennials are bermudagrass and native prairie grasses. More information on specie selections and agronomic practices are found in OSU Extension Facts, F-3980 "Forage for Horses" and from the Oklahoma Cooperative Extension Office in each county.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0607