

FEEDS FOR LIGHT HORSES

NO. 59

EXTENSION BULLETIN E-917

SEPTEMBER 1975

*Melvin Bradley and W. H. Pfander, Department of Animal Husbandry, College of Agriculture
University of Missouri*

The greatest expense of ownership of a horse is his feed. It can be minimized by

- (1) keeping a healthy horse
- (2) feeding a balanced ration according to need (*Extension Bulletin E-919, Ag Facts 61*), and
- (3) by purchasing feeds discriminately that meet the needs of the animal.

ARE OATS AND TIMOTHY HAY NECESSARY IN HORSE RATION?

Much credit has been attributed to these two feeds, especially by horsemen of a few years ago, and rightly so. Conversely, researchers have found it difficult to substantiate a need for either, when substitutions of other grains and hays were made. Trowbridge had completed 365-day tests with hard working mules, as early as 1911, that showed less weight loss and 28% less feed cost with corn compared to oats fed with mixed hay. Respiration counts showed no difference in heat tolerance. Mules seemed to tire of corn over the year-long test more than oats.

Many of the early problems with legume hay were due to dust and mold caused by inadequate harvesting methods. Light yields and sparse leaves of timothy presented fewer harvesting problems.

Horses relish oats. This observation, combined with the knowledge that less care is needed to avoid digestive problems with oats than corn because of their higher fiber content, has always made oats popular.

Timothy hay and good oats fed together make a satisfactory ration for adult horses; but are too low in protein, calcium, and vitamins for brood mares and growing horses.

The Arabian horse, progenitor of most domestic breeds, attained his excellence in a country that produced no oats or timothy hay.

INGREDIENTS NEEDED

Feed ingredients needed for horses are the same as for other livestock. They are carbohydrates, fats, protein, minerals, vitamins, and water; the first three of these can yield energy. Major sources of energy and protein are grains and roughages including pasture.

Energy values of grains and roughages are commonly expressed in terms of total digestible nutrients (TDN). Grains usually range from 65-80% TDN and hays from 40-55%. Pasture grasses vary greatly according to kind, water content, and stage of maturity. In vigorous growth they are higher in nutrients

than hay. In dormancy and late maturity they are considerably lower than they would have been if cut at the right stage for hay.

ROUGHAGES

SUCCULENT ROUGHAGES

Pasture. Grass is the natural feed for horses. No one feedstuff is as complete in nutrients as green pasture grown on fertile soil and few feeds are fed under a more healthful environment. Grass reduces cost, provides succulence in the ration, and furnishes minerals and vitamins that are sometimes lacking. Hardworking horses need supplemental energy feeds because of the high water content of grass. Dry grass is usually low in protein and vitamins, and heavy stocking rates pose a parasite problem.

Silage (15-20% TDN). Various types of silage can be used to replace half of the hay ration. It must be of good quality, free of decay or mold, and should be chopped fine. Good corn silage is preferred, but milo and grass silage can be used. It should be worked slowly into the rations of mature idle horses, growing horses, brood mares, and stallions. It is too bulky for hardworking animals and foals. Legume haylage can replace silage with equal or superior results. The cost for most horsemen is prohibitive unless they combine it with a cattle feeding program.

DRY ROUGHAGES

The most important consideration in selecting a dry roughage is that it be free of dust and mold. Otherwise, heaves and colic may result. Early-cut hays, properly cured, are much preferred. They can be identified by color, head development on grass hays, leaf-to-stem ratio, and size of stems in legumes. Bales should be broken to check for dust and moldy odor.

Confined idle adult horses will eat about 15-20 lbs. of a good quality mixed hay daily when no grain is fed. Hay need not be fed in amounts that cause gross wastage nor should it be limited to amounts that force animals to eat stems.

LEGUME HAYS

Legume hays are higher in protein and minerals and are more palatable than grass hays. They make excellent horse feed and should be included in the rations of young growing animals, breeding animals, and many adult working horses.

Alfalfa Hay (50% TDN). When properly cured, alfalfa

COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

Reprinted through courtesy of University of Missouri Cooperative Extension Service.

is the best of the legumes from a nutrient standpoint. Its high protein, calcium, and vitamin content make it especially useful in balancing rations for brood mares and young growing horses. Some halter showmen make extensive use of top quality alfalfa in show rations, especially with horses that are finical about eating.

Although western work horses in irrigated districts in the past consumed much alfalfa free-choice, some horsemen consider it "heating" or "too laxative," and feed it as half of the roughage.

Clovers (48-50% TDN). Many varieties of clover are used alone or in combination with grass hays for horses. Red clover is similar to alfalfa and can be substituted for it, usually with slightly less beneficial results. It is lower in protein and usually has a higher ratio of stems to leaves than alfalfa.

Properly-cured Alsike clover is a good hay for horses.

Lespedeza (49% TDN). When cut early, lespedeza makes an excellent hay. It is higher in protein than red clover. When cut late many leaves are lost from shattering and the stems become wiry and low in digestibility. The calcium content is about half that of alfalfa.



Alfalfa



Lespedeza



Orchard grass



Timothy

GRASS OR NONLEGUME HAYS

Grass hays yield less per acre, are lower in protein, calcium, and vitamins, but are less likely to be moldy and dusty than legumes. They are usually cut too late to yield quality hay and are often priced higher than their feeding value justifies.

Grass hays are often grown and harvested in mixtures with legumes which produce an excellent combination suitable for almost any type of horse feeding program.

Timothy (48% TDN). No other hay has attained the lasting popularity of timothy. Its wide range of climatic adaptability, ease of curing, bright color, and freedom from dust and mold make it the horseman's favorite. Since it is low in protein, it is a better feed for mature work horses than for stallions, mares, or young growing stock. If it is fed as the only roughage, it should be supplemented with protein or be fed with a high protein grain such as oats instead of corn. Special effort need not be made to obtain timothy as it can be satisfactorily substituted for in all horse rations. Mature, late-cut timothy is a poor feed for any class of livestock.

Prairie Hay (47% TDN). Some horsemen substitute prairie hay satisfactorily for timothy. It is lower in protein, less bright in color, and usually less palatable than timothy.

Bromegrass Hay (49% TDN). Bromegrass makes good horse hay. It is palatable when harvested in the bloom stage.

Orchard Grass Hay (49% TDN). Orchard grass is much like bromegrass but not quite as satisfactory.

Cereal Hays (47% TDN). Cereals make good hays when cut early. They should be cut in the soft to stiff dough stage. They are seldom cut early enough. Oats, barley, wheat, and rye hays are preferred, in this order. Extensive use is made of these in the Pacific Coast region.

GRAINS

Grains are high-energy feeds used with hay to regulate energy intake of the animal commensurate with work performed, growth made, and/or reproductive performance. Medium-sized, hardworking horses may need as much as 12 lbs. or more of grain and an equal amount of hay daily to maintain body weight; whereas adult idle horses may get fat on grass alone.

Horses like grain. Some even bolt it to the point of choking. Most grains are improved by grinding or rolling, but none should be ground fine. Frequent feeds in small amounts are preferred with at least a half hour's rest for tired horses before grain is fed. Continued heavy grain feeding during a day off can cause a serious disease called Azoturia ("Monday morning" disease). In general, grain rations should be cut in half and hay increased on days that working horses are idled. (See *Feeding Light Horses, Ext. Bull E-918*). When substitution of one or more grains is made for others it should be done gradually.

Oats (65% TDN). Oats are the choice among grains by most horsemen and horses. The bulky nature of oats permits horsemen maximum liberty in their use with minimum danger of digestive disorders, and most fastidious horses find oats to their liking. Oats are higher in protein than most grains, which make them useful with low-protein grass hays. However, half legume hay insures a more complete ration when oats are fed as the only grain. Some disadvantages are: expense on a TDN basis, and variability in quality. Federal grades are No. 1, No. 2, No. 3, No. 4, and Sample. Grades 1 and 2 are usually the best buy.



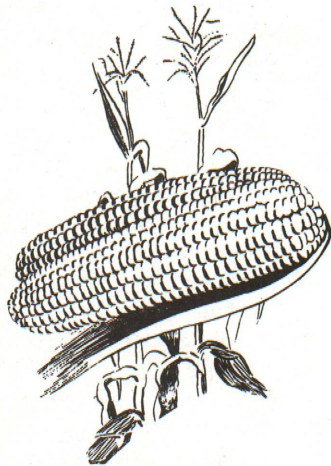
Red clover



Oats



Brome grass



Corn



Wheat



Milo



Barley

Although oats are an excellent horse feed, when cost and/or convenience dictate, most rations can be satisfactorily formulated without them.

Corn (80% TDN). Corn is a good horse feed and is used extensively in the Midwest. About 15% less corn would equal a given weight of oats in energy value. For this reason corn is especially useful for improving condition of thin horses and maintaining condition on those at hard work. It is often a good buy on an energy basis, even exceeding hay on occasion.

Because of its high energy content and low fiber, corn must be fed with more care than oats to avoid colic. Corn and oats, equal parts, make an excellent grain ration. Corn can supply all of the grain when fed according to the work that horses are performing and when large amounts are not given at one time.

Some horsemen consider corn a "heating" feed in warm weather. This theory is not easy to explain because "heat" produced in digestion is greater for fibrous feeds, such as hays and oats, than corn. Probably a major reason is horses eating corn tend to stay fatter than others, especially if not regularly exercised.

Milo (80% TDN). Milo can substitute for corn in most rations. It varies in protein content from 6 to 12%, has little vitamin A, and some varieties are unpalatable. It is most satisfactory when used in a grain mixture. In some areas milo is often a better buy than corn. It should be cracked or rolled.

Barley (78% TDN). Barley is a very satisfactory feed when ground and fed as described for corn. Fifteen per cent wheat bran or 25% oats fed with barley almost eliminates the risk of colic.

Wheat (80% TDN). Wheat is seldom fed to horses except in the Pacific Northwest. It can be fed as a part of the grain ration (about 1/3) when fed with a bulky feed. It should be rolled or coarsely ground. Wheat tends to be doughy when moist and produces palatability problems.

Wheat Bran (66% TDN). Wheat bran is highly palatable, slightly laxative, and very bulky. Horsemen have long preferred "bran mashes" for animals stressed by extreme fatigue, foaling, or sickness. Bran is reasonably high in protein, high in phosphorus, and like other grains, low in calcium. Because of its high cost on a TDN basis it is generally used at levels of 5-15% of the ration.

Cane Molasses (60% TDN). The addition of 5 to 10% molasses will reduce dust and increase palatability of a ration. Greater amounts will make a ration too laxative. It is very low in protein and usually expensive on an energy basis. Dried molasses are often added to the grain ration to increase consumption.

PROTEIN FEEDS

The horse's need for protein is relatively low and is easy to meet with practical rations. With the exception of milking mares, most 600-1200 lb. horses need from 3/4 to 1 lb. of digestible protein (DP) daily. If the roughage is half legume hay fed in adequate amounts the protein need will be met. However, supplementing rations of young growing horses is insurance against a deficiency and stimulates appetite. The haircoat of horses being fitted for show will "bloom" to a higher degree when about 1 lb. daily of an oil meal is supplied. Large amounts are laxative.

Protein supplementation is needed when poor quality late-cut grass hays are fed.

Linseed Meal (30% Protein). Linseed meal is in a class by itself in producing bloom or lustre to the haircoat, therefore it is held in high esteem by many horse showmen. Its laxative effect and palatability make it useful with roughages of poor quality.

Fitters of show horses who use legume hay may find linseed meal too laxative in their programs.

Soybean Meal (42-50% Protein). With the exception of producing bloom, soybean meal is a preferred supplement to linseed meal. It is higher in protein, has a better balance of amino acids, and is usually cheaper in the Midwest than other supplements.

Cottonseed Meal (40-45% Protein). Cottonseed meal is used extensively for horses in the Southwest. It seldom sells below soybean meal in the Midwest and is not as palatable; therefore, the extent of its use is limited. It does have more phosphorus than the other oil meals.

Commercial Protein Supplements. These vary in composition, protein level, and price. They often contain needed minerals and vitamins and are convenient for those who do not wish to formulate their own horse rations. Some may be expensive. Commercial supplements are usually formulated for a specific feeding program; therefore, they should be fed according to directions.

Other Protein Supplements. Alfalfa meal, corn gluten meal, meat meals, and others can be used with horses as protein supplements.

Pelleted Feeds. Complete rations pelleted for horses are finding an eager market. They are convenient to transport and feed, and waste is held to a minimum. When pelleted feeds are purchased from a reliable source, the horseman can depend upon a good balance of nutrients. Pellets are especially useful for horses with heaves.

They usually are more expensive than hay and grain fed separately and horses tend to eat bedding and chew wood more when fed pellets. Cribbing (*Ext. Bull. E-920*) may result in some cases unless exercise lots are used, and some horses need an adjustment period before eating pellets well.

MINERALS

Major Minerals (salt, calcium, phosphorus). No other animal faces a critical need for salt like the working horse. He may lose as much as 75 grams daily through sweat and urine. For this reason loose salt should be offered free-choice in a convenient place along with an abundance of clean water regardless of the type of ration fed. Salt-starved horses should be brought to a full feed in a period of about one week. Intake of salt is about 2-3 oz. daily or 1-1 1/4 lbs. weekly.

Skeleton and teeth represent about 5% of live weight and are composed largely of calcium and phosphorus. Milk is also high in these minerals. Therefore, pregnant or lactating mares and growing horses have high mineral requirements.

Mineral mixtures formulated from ground limestone, steamed bone meal, oyster shell, defluorinated phosphate, etc., are commonly used (*See Ext. Bull. E-919*). They should be fed free-

choice separate from the salt supply.

Trace Minerals. Trace mineral needs of horses remain largely obscure because little research has been done on them. Strong, long-lived horses have been developed for years with good care and management suggesting most if not all trace minerals are supplied in a good feeding program. In light of present knowledge, iodine would seem to be an exception. It is best supplied in the salt as iodized salt.

Many horsemen feel extreme skeletal stress in young horses, such as racing, increases the need for minerals. No doubt, a deficiency cannot be tolerated by such horses. Conversely, force feeding high levels of trace minerals is detrimental and may be toxic in some cases.

VITAMINS

Less is known about vitamins than minerals; but supplementation is easy because they are cheap, and with the exception of vitamin D are tolerated at high levels. Substantial body storage of some vitamins is possible.

Horses with access to good pasture, if only for a brief time, and those receiving good quality hay, especially if half legume, will probably need no vitamin supplementation. Deficiencies are more likely to appear with horses in confinement for long periods of time on poor quality roughage.

The B vitamins are synthesized in the large colon and caecum of healthy horses. However, a need for thiamine in the diet has been demonstrated. A deficiency of riboflavin contributes to periodic ophthalmia (moon blindness). Common sources of B vitamins are green plants, dried legumes, soybean meal, etc.

Vitamin A is important for normal health of tissues, including eye and bone growth and maintenance. Green plants and hays contain carotene which the body normally converts to vitamin A.

Vitamin D is essential for calcium and phosphorus deposition in bone formation. Animals exposed to sunlight usually synthesize sufficient vitamin D to meet their needs.

Vitamin E is abundant in most rations and seldom needs supplementation. Claims for its benefit in restoring fertility in horses have not been substantiated by research.

Establishments with horses confined for long periods should probably consider an economical commercial source of vitamins as insurance against deficiencies when the roughages are not of top quality. On the other hand, "stuffing" an animal many times beyond his known requirements increases expense and contributes nothing to his health.

WATER

A source of fresh, clean drinking water is essential for horses at all times. Daily consumption may average 10-12 gallons with much higher amounts consumed at hard work and/or hot weather. When water is not available free-choice, idle animals should be taken to it at least twice daily at regular intervals. Impaction is a common and rather serious problem resulting from infrequent drinking. Hot horses should be cooled out or permitted small amounts of water before drinking their fill.

Those at work should be watered frequently whenever possible, as it refreshes the animal and reduces heat exhaustion.

The best bred horse in the hands of a good trainer will fail unless supported by a good health and feeding program.