

One hundred years ago most people would not have dreamed that horses would be drinking electrolyte-tinged water, devouring rations spiked with beet pulp, corn oil, and animal fat, or scarfing down sundry supplements. For most horses, even the ones that earned their keep by plowing the family fields, transporting the town physician from house to house, or carrying the leisure class from one societal function to the next, a steady diet of hay or pasture and perhaps some oats or corn kept them in adequate body condition. With the advent of the automobile and the transition of the horse from the ranks of necessity to the ranks of recreation, horses were asked to perform more athletic endeavors. The need to jump higher, gallop faster, and trot further became paramount to equestrians, and research in equine nutrition escalated as the level of competitiveness rose. As research refined nutrient requirements, scientists sought ways to efficiently deliver maximal nutrients. In recent years, researchers have turned to new feedstuffs in an effort to find magic fuels. Despite continued efforts, there is a reliance upon the time-honored feeding methods of years ago.

Whether horsemen are feeding long-adored or newfangled feedstuffs, lore surrounds some of the offerings. Unraveling the mysteries and fallacies of common feed ingredients is not as difficult as one may believe.

# Feeding Fallacies

BY MARK LLEWELLYN

**OATS:** Oats are a favorite feed among horses and horsemen alike. In preference tests, horses consistently choose oats over many other feeds, including cracked or whole corn, alfalfa hay, wheat, barley, rye, and soybean meal. Oats are used extensively in the creation of commercially prepared feeds, with some containing over 30% oats. Much of their popularity as a feed for horses may be due to habit as much as tradition. Ask any non-horseman what horses eat and invariably oats and hay, and maybe grass, will come up. Peace of mind may also induce owners to feed oats as they are the safest of all cereal grains for horses, being relatively high in fiber and low in digestible energy. Some horsemen believe oats must be crimped, rolled, or otherwise processed to be of maximal nutritional value to horses. This is erroneous and a particularly unfortunate mistruth because horsemen typically pay more for processed oats. Yes, it's true that aged horses with poor teeth may derive more nutrients from processed oats, but the majority of the equine population can extract a similar level of nutrition from whole as from crimped oats.

In addition, heavy oats (also called racehorse or jockey oats) usually weigh more per unit of volume than regular oats, and they generally contain little foreign material. However, the nutritional content of heavy oats is quite similar to other oats, despite rumors to the contrary. The more consistent quality of heavy oats makes them more appealing to some horsemen.

Naked oats are amassing quite a following among horsemen. Unlike other varieties, naked oats do not develop hulls. As such, they have greater nutritive value than do regular or heavy oats. Absence of the hull makes naked oats much more similar to grains that are naturally devoid of hulls such as corn, wheat, and rye. Hence, they are

more energy dense. In addition, naked oats are higher in fat, registering at about 9% compared to the 5% of regular oats. Without hulls, however, the safety margin often taken for granted by horse owners is lost because the fiber content plummets, leaving the horse more susceptible to illness should overconsumption occur.

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**CORN:** Like other hull-less cereal grains, corn is a high-energy feed. Notwithstanding popular opinion, corn does not make horses unmanageable, high spirited, or obese when fed in proper amounts. Corn is more energy dense per pound than oats and other cereal grains. Each kernel contains 60 to 70% starch, which is broken down to glucose in the small intestine. This sugar can be used immediately for energy or stored in muscle cells as glycogen until needed. Oats, on the other hand, contain on average 45 to 50% starch and about 15% less digestible energy on a pound for pound basis. Therefore, if fed to provide equal amounts of energy (and not on a volume basis), corn has no more of a propensity to make a horse high-strung or obese than other cereal grains.

Corn is a “hot” feed in the context of high energy, but not in the context of its ability to generate body heat. This fact may surprise some horsemen. If corn and oats are fed to provide identical quantities of digestible energy, oats will produce greater body heat because they are more fibrous. Corn contains approximately two percent fiber while it is common for oats to contain 10% fiber. As fiber undergoes microbial fermentation in the hindgut, heat is produced. Therefore, oats actually produce more body heat than corn, but neither can produce the degree of heat provided by hay.

**BEET PULP:** Beet pulp often gets a bad rap among horsemen despite several nutritional benefits. Beet pulp is an incredible source of dietary fiber. Horses depend on fiber as an energy source. In particular, horses asked to perform over long periods of time benefit from high levels of dietary fiber.

Despite its usefulness in the diets of many horses, much lore surrounds beet pulp. One of the most popular myths regarding beet pulp is the need to soak it prior to feeding. While there is no harm in soaking beet pulp before it is fed, it is not necessary. Some horse owners believe that, due to its absorptive capacity, beet pulp will swell once it encounters liquids in the stomach, causing the stomach to rupture. This is unfounded and easily

negated. The holding capacity of the stomach is under hormonal direction. As the stomach walls expand, the hormone motilin stimulates the emptying of the stomach into the small intestine, so there is little chance of the stomach perforating.

Contrary to popular opinion, beet pulp doesn’t make horses choke, and it doesn’t contribute too much sugar to the diet. Beet pulp is a by-product of the sugar beet industry. Table sugar is created by the extraction of simple sugars from sugar beets. Modern mechanisms used to extract the sucrose from sugar beets are extremely efficient, leaving the beet pulp almost sugarless. Ten pounds of beet pulp supplies approximately the same amount of sugar as a few apples, so the notion that beet pulp is superabundant in sugar is simple hogwash.

**BRAN:** Bran is the seed coat or outer layer of a cereal grain. For many years, the primary use of bran was in bran mashes, and recipes for these concoctions abound. The two primary ingredients in a typical bran mash are wheat bran and hot water, with other ingredients added based on the preferences of horses or the imagination of the caretaker. Through the ages, bran mashes have been touted as effective laxatives, but this has been refuted by scientific trials, which have shown no increase in fecal water content or associated softening of stool. Further, bran mashes also do not prevent colic.

Some horsemen believe that bran will increase the fibrous component of the diet. Bran does contain fiber, but fiber can be introduced into the diet in more efficient ways. Any type of hay, for instance, contains significantly more fiber than wheat bran. So, are there any benefits to feeding bran mashes? A bran mash adds liquid to the diet and may therefore improve hydration status in horses that have reduced water intake due to cold weather or that refuse to drink water from an unfamiliar source. But this is only a short-term remedy to reduced fluid consumption, and measures to increase voluntary water ingestion should be made.

While wheat bran mashes have been a staple in some stables for many years, rice bran has become a popular feedstuff amongst the avalanche of new-age feeds. Rice bran is rich in fat. In fact, rice bran is typically 20% fat, and as fat levels increase, caloric density of the diet escalates. Therefore, rice bran is energy dense and may be the perfect feed for the horse that requires large amounts of dietary energy, such as lactating mares or heavily worked performance horses. The addition of rice bran to the diet can actually decrease the amount of grain being fed because of its high-energy content.

Some concern regarding the high levels of phosphorus found naturally in rice bran has been voiced since the popularity of the feedstuff skyrocketed. Rice bran is high

## But I See Oats In His Manure!

**Do not become too alarmed if you see what looks like undigested oats in horse manure. Chances are this is merely the hull or outside covering of the oat. The horse has likely digested the most nutritious part of the grain, the oat seed, and passed on the hull. Every now and then, whole oats can be found in the manure of some horses, and this may be due to improper mastication (chewing) or poor dental health. Horses apt to bolt their feed or eat hurriedly may not properly grind oats with their molars, causing them to be swallowed before the hull is broken. An equine dentist or veterinarian should evaluate the teeth of horses that pass whole oats in manure to be sure no dental anomalies are present. ■**

# Paco the Pica



**P**aco eats everything – the bark of trees, dirt, manure, fence posts, hair, and the list goes on and on. If Paco can manipulate it with his lips and tongue, he’s likely to execute a taste test. Is this abnormal? Does this reflect a nutritional imbalance, some vitamin or mineral deprivation? Yes and no. Horses typically do not wander about eyeing up odd things to munch on, but boredom or curiosity does induce some horses and ponies to investigate their surroundings a bit more thoroughly than perhaps necessary. Pica is the term used to describe a depraved or abnormal appetite that results in the ingestion of items not normally eaten, such as those listed above. With the exception of water, salt, and dietary energy, horses are unable to distinguish when body reserves of a certain nutrient are waning, and thus do not have a true appetite for anything else. Therefore, horses do not consume protein, vitamins, or minerals (excluding salt) according to their needs, but rather taste preferences.

It’s not uncommon for young horses, particularly foals, to practice coprophagy, or manure eating. Some horsemen believe it is a normal developmental milestone, and the practice may jumpstart the establishment of the microbial population in the intestinal tract. These bacteria allow the foal to switch from a milk-based diet to a forage-based diet as they are imperative for the proper diges-

*Feeding inadequate forage may provoke wood chewing, a potentially harmful vice.*

tion of fiber. Foals will normally eat only fresh feces from their dams. The threat of parasite infestation is rare as most endoparasites require an incubation period in the feces to become infective.

In the adult horse, coprophagy may be caused by a lack of dietary fiber. Horses thrive on diets rich in forages, and such feedstuffs are typically high in dietary fiber. With the advent of “complete feeds,” some horses do not have the opportunity to consume fibrous forages. In an attempt to fulfill dietary fiber needs, horses may practice coprophagy. Maintaining a portion of the diet as long-stem roughage will likely alleviate this problem. ■

in phosphorus (1.2%) and low in calcium (0.1%), and this extreme difference may skew the calcium to phosphorus ratio of the diet. Excessive phosphorus in the diet inhibits calcium absorption. When calcium is not derived from the diet, it is leached from the bone, and connective tissue is

when stored improperly in hot weather than are pelleted feeds or straight grains. The presence of mold inhibitors in most formulations preclude this problem, but it is wise to buy small quantities of feed at a time during hot weather. Rotating feed ensures that the oldest feed is used first and

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used as a filler, causing the bones to enlarge. The most obvious effect of excessive dietary phosphorus is malformation of the facial bones or "big head." Interestingly, this syndrome was once known as miller's disease because over-feeding of bran was implicated as the cause decades ago. Some rice bran products, including Equi-Jewel (Kentucky Performance Products, 1-800-772-1988), contain a balanced calcium to phosphorus ratio. Such products are superior to straight rice bran because they do not upset the balance of calcium and phosphorus in the total diet.



*Bright, gleaming coats are the result of well-balanced nutritional programs that often include vegetable oils or animal fats.*

**MOLASSES:** It's sticky, smells good, and horses love it, but does molasses cause colic? No. Molasses is the liquid residue that remains after the sap of sugar cane (blackstrap) and sugar beets is condensed and sugar crystals are formed. Pure molasses is too thick and gummy to be handled by ordinary feed mill equipment, so it's often diluted before being added to grain mixes. While molasses does increase the palatability of feed, it's also useful for reducing dustiness of a feed and discouraging sorting of ingredients within a mixture.

When all other avenues of explanation fail, molasses has been incriminated as a cause of colic. Sweet feeds (those that contain molasses) are more likely to mold

this too is a sound management practice.

Others feel the small intestine is unable to digest the glucose typically found in a sweet feed meal, and it squeaks by into the hindgut, possibly causing colic. Because most sweet feeds contain only 5-10% molasses, this is unlikely. In conclusion, do not place too much stock in molasses as the culprit in acute or chronic colic.

**OIL:** Corn oil and other vegetable oils (such as soy, safflower, canola, etc.) are commonly used as supplements due to their significant caloric content and their high digestibility. They are useful additives for increasing the energy density of rations. However, as a safeguard against colic, vegetable oils are not effective. Digestibility of vegetable oils is high (close to 90%) and usually oils are digested before they ever reach the hindgut. This feeding myth is likely related to the fact that mineral oil is often given to relieve impactions in horses with colic. However, mineral oil is completely indigestible and serves only to lubricate the gastrointestinal tract in an attempt to dislodge an obstructive mass.

**ANIMAL FAT:** Controversy swirls around the use of animal fats in horse feeds. Truth be known, feed-grade animal fats provide the same benefits to horses as do most vegetable oils. They increase energy density of a meal, settle dust in a feed, discourage sifting of fines or other material, and promote a glossy hair coat. Animal fats are slightly less digestible than vegetable oils because they may not be as pure. In addition, they are not as palatable to horses as some vegetable oils, particularly corn oil, but the majority of horses will eat them willingly. All in all, however, animal fats have proven to be just as effective as other fats.

Feeding horses properly is not difficult. Reliance upon an educated horseman, a veterinarian, or an equine nutritionist is paramount if a feeding management question arises. This is particularly true when confronted with an old wives' tale. ☺