

Commercial Grain Mixes versus Plain Grains for horses:

By: Dr. Bill Vandergrift, PhD

Can I feed plain grain to my horse?

Plain grains such as oats or corn have been fed to horses for thousands of years. This concept is certainly not new and underscores the fact that yes; you can feed plain grains to your horse and do so successfully. However, plain grain does not provide a balanced diet for your horse and must be properly supplemented. Depending upon the age, stage of production and any specific health issues your horse might have, plain grain may be lacking in protein, amino acids, minerals, vitamins and/or essential fatty acids. Even mature horses at maintenance will need to be properly supplemented with at least minerals and vitamins when receiving plain grain. There are volumes of supplements, especially mineral and vitamin supplements on the market but very few relatively speaking, will properly balance the mineral and vitamin levels of plain grains. If you are not sure which products will properly balance plain grains or how to properly feed a mixture of plain grains and other dietary components to your horse to effectively achieve the desired temperament, growth, production and/or performance level you are usually better off selecting a pre-mixed commercial feed product that is appropriate for your horse's needs.

What can happen if plain grain is not properly balanced?

The most common anomalies that occur when horses are fed plain grain without proper supplementation include:

1. Secondary hyperparathyroidism
2. Hyper-reactivity
3. Insulin resistance
4. Developmental Orthopedic Disease
5. Osteoarthritis
6. Tying-up
7. Poor stamina
8. Low immune response
9. Poor reproductive performance
10. Poor hair and hoof condition

It is beyond the scope of this short article to go into details on each of these anomalies, however, it should be clear from the above list that more problems can be created than are solved when prepared and balanced commercial horse feeds are replaced with plain grains without proper fortification.

What needs to be done to properly fortify plain grain for horses?

Problem: Calcium and phosphorus levels and balances. All grains contain substantially more phosphorus than calcium; this relationship is referred to as a calcium: phosphorus imbalance. Given enough time a calcium: phosphorus imbalance will cause secondary hyperparathyroidism, a condition that causes significant changes in bone metabolism and a general decline in overall health. This is the most common finding in horses fed plain grain without proper supplementation. Feeding alfalfa in combination with plain grain has been a common practice in order to ensure the horse receives more calcium than phosphorus. Feeding alfalfa and plain grain only still does not ensure that the horse will receive enough phosphorus, especially if the horse is a lactating mare or young growing and/or performance horse. *Solution:* Feed a mineral supplement designed to balance calcium and phosphorus levels and ratio of plain grain. Two of the best options available are Triple Crown 30 and EquiVision Equine Nutrimix.

Problem: Trace mineral and vitamin deficiency and imbalance. Plain grains do not contain adequate levels of many trace minerals such as zinc, copper, selenium, iodine or vitamins. Deficiencies or imbalances of these critical nutrients can result in temperament problems, hair and hoof quality problems, low immune response, bone and joint anomalies, poor reproductive performance and more. *Solution:* Feed a supplement designed to balance mineral and vitamin levels and ratios of plain grain. Two of the best options available are Triple Crown 30 and EquiVision Equine Nutrimix.

Problem: Amino Acid deficiency. Plain grains are low in essential amino acids. This can lead to poor growth, poor reproductive performance and poor performance in young horses. *Solution:* The best source of essential amino acids for horses is soybean meal. Mixing soybean meal with plain grain will raise the protein level of the diet and provide essential amino acids; approximately ½ pound per day should be adequate for most lactating mares and young horses. Another more convenient option would be to feed Triple Crown 30 which contains soybean meal as well as minerals and vitamins as discussed previously.

Problem: Essential fatty acid deficiency. Plain grains do contain fat; oats for example can contain as much as 4% fat which is adequate for most mature horses. However, research has demonstrated that supplementing equine diets with omega-3 fatty acids can improve trainability, immune response, hair and skin quality and overall performance. *Solution:* Good omega-3 fatty acid sources for horses include fresh green grass (pasture), flax or linseed and fish oil. Triple Crown 30 contains flax and Triple Crown also makes available a fish oil supplement for horses that can be mixed with plain grain when pasture is not available.

Problem: Insulin resistance and Cushing's. Horses suffering from insulin resistance or Cushing's should receive a diet as low in soluble carbohydrates as possible. Therefore, susceptible horses should not be fed plain grains. *Solution:* There are several commercial diets now available that are designed for horses with metabolic syndrome. One of these should be selected and fed according to label directions. Triple Crown provides several options depending upon the needs of the individual horse: Triple Crown 30, Triple Crown Lite, Triple Crown Low Starch, Triple Crown Safe Starch Forage, or Triple Crown Senior.

Questions about Commercial Feeds

Commercial feeds are too high in sugar aren't they? Sugar and other soluble carbohydrates in plain grains and commercial feed products can be measured. Triple Crown makes the actual soluble carbohydrate level of its feeds available on its web site (www.triplecrownfeed.com). The reality is that many commercial diets are actually lower in sugar than plain grains, even those that contain some molasses.

Commercial feeds are too high in minerals and vitamins aren't they? Mineral and vitamin requirements for horses have been researched for decades. Do we have all the answers yet? No, but all well trained equine nutritionists agree that our knowledge about vitamin and mineral requirements and balances for horses is well understood at this point in time. As a result, major commercial equine diets do a satisfactory job of meeting the horse's mineral and vitamin requirements without going over when fed according to label directions. The most common cause for horses receiving excess minerals or vitamins is feeding products off label.

Are commercial feed products causing an increase in insulin resistance and Cushing's in horses? In a word, no! Granted, the actual cause for the increase in insulin resistance in horses has not been fully elucidated; however, evidence suggests the increased incidence has more to do with genetics and basic management than feed composition. Having said that, horse owners should be warned to take a realistic look at their horse's activity level and nutritional needs. There are many products available today designed for high performance horses that contain high fat levels. If your horse is not working hard enough on a very regular basis to warrant a high fat feed you could be predisposing him or her to insulin resistance. Insulin resistance is best managed by feeding a low soluble carbohydrate, low fat diet and by increasing the horse's daily exercise level.

The Big Picture

The horse is designed to eat a high fiber diet based on forage. Horses with high metabolic demands such as lactating mares and high performance horses require more than just forage to provide adequate fuel sources to satisfy their metabolic needs. Feeding horses that are closer to a maintenance metabolism a diet designed for their high metabolic rate counterparts can lead to future problems. Fortunately, the commercial feed industry provides many different products to fit the needs of these different horses. Horses can be fed plain grains successfully if they are supplemented correctly. However, selecting the correct commercial feed product will not only be easier but actually more effective than trying to mix and match diet components yourself.

ABOUT THE AUTHOR

Bill Vandergrift, PhD, is the founder of EquiVision, Inc., an international equine nutrition consulting company. He works with clients in North America, Ireland, England, and Japan and formulated the Triple Crown Nutrition feed line. Dr. Vandergrift and his wife, Janice, own and operate EV Farms in Versailles, KY, a full service broodmare boarding and sales prep facility.

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