

# Equine Nutrition: Feed Evaluation and Nutrient Sources

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## Commentary

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## DESCRIPTION

The horse is in their most natural environment when they spend the majority of their day grazing on pastures. Forage constitutes the largest portion of the horse's diet, in fact it makes up the entire diet for wild horses and many domesticated horses. The natural diet for the horse is low quality herbage. Domesticated horses are often grazed on pastures that have a higher nutritive value through improvements in pasture maintenance than their wild counterparts. Horses eat forage either through grazing fresh forage directly from pastures, or a variety of forages that have been conserved in one way or another. While many domestic horses do have opportunity to spend a great deal of time at pasture, some horses that are kept for competition purposes may be restricted entirely (stabled year 'round) or in part (limited turnout) from natural grazing. In many places in the world, seasonal growing periods results in the need to conserve excess forage for winter feeding. Conserving forage is done in a number of ways, with the goal being to preserve a digestible product with high nutrient value. It must also be palatable, of high hygenic quality, and able to be stored for long periods of time.

A common way of conserving forage is to allow the cut grasses to field dry before baling and storing it. This process is dependent on appropriate weather conditions. The harvested plant materials are typically cut at a late stage of maturity, and dried to approximately 15% moisture content. The quality of field-dried hay is quite variable both nutritionally and hygienically. Grass hay is a low energy forage with a variable digestible energy (DE) of between 4 and 8 MJ/kg). Alfalfa (also called lucerne) is higher with a DE of ~10 MJ/kg). In addition to being a higher energy source, alfalfa is also higher in protein (alfalfa is a legume and legumes are higher in protein) and it is higher in water content. Typically field-dried hay is stable in ambient conditions, however, if not dried properly, changes can occur during storage affecting the already variable quality of the product. One of the disadvantages of field-dried hay, is the

potential for dust content which horses will inhale while eating the hay. One of the ways to address this is to soak or steam the hay prior to feeding it. Soaking the hay in a bucket of water shouldn't last more than 10 minutes to minimize the loss of water-soluble nutrients. In places where weather conditions make field drying difficult (particularly for alfalfa), another conservation method that maintains the nutritional quality and produces a highly digestible product, is to artificially dehydrate the forage at high temperatures. The hay is chopped into shorter pieces and then put into a special tank for a brief period of time at 800 °C. This is an expensive, but efficient process and lends itself well to drying young forage. Two downsides to this method, is the work involved with chopping the forage and, secondly, that horses will eat it very quickly. Often straw is mixed with the alfalfa to lower the protein levels in the finished product. A third way to conserve forage is to turn it into haylage or silage. The process to do this is in effect to "pickle" the hay. It is done through an acidification process in an anaerobic environment. Technically, the existing lactic acid bacteria found naturally on the moist grasses ferments the carbohydrates into lactic acid. The lactic acid drops the pH level of the crop which acidifies it, thus reducing the spoilage organisms on the end product. The only difference between haylage and silage is in the dry matter (DM) content. Silage has a higher moisture content. This means that silage is at greater risk for microbial growth and since the horse cannot metabolize certain toxins, haylage is the more common choice for horses.