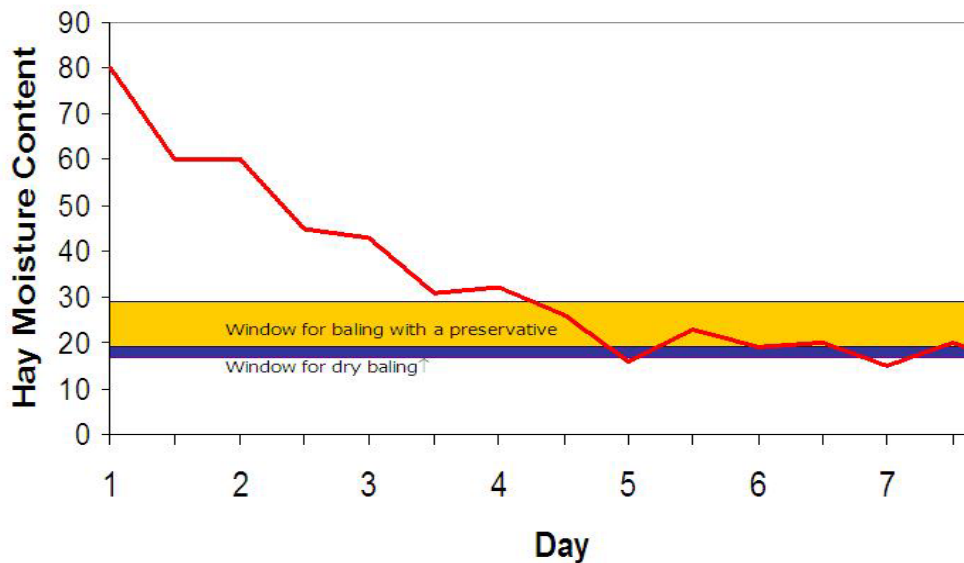


# Acid Treated Hay for Horses

While many horse owners select hay for their horses based on different characteristics (color, smell, type of hay or hay mix) one characteristic that remains the same for all hay is having a dust free and mold free bale. A safe and effective way to properly treat hay is with buffered propionic acid. The acid will inhibit mold growth therefore stopping the heat and mold growth, which causes dusty hay.

Baling hay at the correct moisture, 13% to 17%, is not always possible. Over one-half of baled hay produced is damaged by not hitting the proper level when baling. This damage is due to baling too wet or baling too dry. Hay harvested 18% and above actual moisture will heat, mold, and lose feed value and palatability. Hay harvested below 14% moisture will be brittle, have leaf shatter and high dry matter loss. The window for optimum baling is indeed, very narrow and hard to hit with the forces of the environment dictating the drying rate of the cut hay.



Instead of preserving hay or grain by drying or ensiling them under anaerobic conditions, which allow microorganisms to ferment some of their soluble carbohydrates to organic acids, they can be preserved by spraying them with organic acids as they are harvested. Generally, a 0.5 to 2% mixture of primarily or entirely propionic acid is used. The acids used are not corrosive or harmful to the animal. They are normal products of microbial fermentation of ingested feeds in the horse's cecum and colon (lower gut). They are absorbed and used for energy or glucose production. Several times more of these acids are produced in the horse's intestinal tract than would be ingested in a properly acid-treated feed. In contrast, lactic acid and bacterial cultures have been touted as hay preservatives, but have been found to be ineffective. Buffered propionic acid is safe for all livestock including horses. Treating any type of hay with the correct amount of buffered propionic is both safe and effective in the prevention of mold growth, dust and caramelizing of the hay.

Studies by University of Illinois and Cornell University and cited by Les Vough, PhD and Erin Petersen, MS, PAS, "Horse Hay Quality and Selection – Sorting out the truth from the fiction" found that

"Some hay growers apply preservatives (organic acids, yeast cultures, enzymes, etc.) to prevent growth of bacteria and fungi that are responsible for heating and development of the musty odor and mold that sometimes occurs after the hay is baled. Mold grows after the hay is baled. Under Mid-Atlantic weather conditions, it is often difficult to get hay sufficiently dry in the field before baling. Application of preservatives can prevent the development of musty odor and mold in the hay that is not adequately dried. Most

preservatives applied to horse hay contain organic acids that are the same as those found in the horse's gastrointestinal tract. Propionic and acetic acid, the most common organic acids used in hay preservatives are produced naturally in the cecum and colon of horses as a result of microbial digestion of fibrous feeds. These organic acids can be used as mold inhibitors and applied when hay is not yet dry enough to bale safely but rain is coming and crop may be lost if not baled early. Research studies have shown that heating and molding of hay during storage is decreased with the use of preservatives.

A study conducted at the University of Illinois found that yearlings receiving hay treated with a mixture of propionic and acetic acids consumed just as much and gained just as much over a 1 month feeding trial as yearlings consuming untreated hay. Clinical measures of well-being of the horses, such as serum enzyme levels, were not affected by consumption of preservative-treated hay, indicating the hay had no negative effects on the horses. A study conducted at Cornell University showed that when given a choice, horses preferred alfalfa that was not treated with a preservative over alfalfa that had been treated with a mixture of propionic and acetic acid. However, when only given the treated hay, daily consumption did not decrease. Thus, after a short conditioning period, horses will consume acid-treated hay. So given that propionic acid and acetic acids are produced naturally in the gastrointestinal system of horses and treated hay is much less likely to be musty or moldy than untreated hay, the feeding of preservative-treated hay is not harmful and can be quite beneficial in reducing respiratory problems and heaved that is more likely with untreated hay."

In conclusion acid treated hay is not only safe for all livestock including horses, but has many beneficial properties when compared to untreated hay.

Reference:

Petersen, Erin, Vough, Les. *Horse Hay Quality and Selection – Sorting out the truth from fiction*. Electronic version retrieved Jan. 26, 2006, from:  
[http://www.equinestudies.umd.edu/documents/UMSeminar/vough\\_petersen.pdf](http://www.equinestudies.umd.edu/documents/UMSeminar/vough_petersen.pdf)

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Leep, R., Morrison, J., Peterson, P., Phillips, E., Undersander, D. (2002). *Buying horse hay*. Electronic version retrieved Jan. 26, 2006, from:  
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**Copies of all reference materials are available upon request.**