

# FORAGE: HAYLAGE (WRAPPED HAY, SILAGE)

*A Good “Weatherproof” Alternative to Hay?*



## THE BENEFITS OF HAYLAGE

### **Horses Love It**

Horses readily consume fermented products because they're palatable. Being dust-free, haylage can reduce coughing in horses with chronic respiratory conditions. Veterinarians often recommend haylage for horses with chronic cough because it eliminates the coughing symptoms. However, this recommendation often occurs without considering haylage's broader health implications for the rest of the body.

### **Simplified Production and Storage**

Farmers also have an interest in producing fermented forage. Hay production is labor-intensive, often requiring multiple turnings and 3-5 days of sunshine for proper drying. This



typically allows for only one or two hay cuts per summer from a meadow, each requiring significant labor. The hay also requires proper dry storage, ideally in a barn.

However, many farmers lack sufficient storage capacity, leading them to store forage outdoors. Modern round or square bale production often makes traditional hay storage above stables impractical, as these older buildings aren't accessible to machinery and the large bales can hardly be moved by hand. Most modern equestrian facilities are designed without barns, making indoor storage impossible. Outdoor storage of hay, whether uncovered or under tarps, is problematic as moisture penetrates the hay, leading to mold growth.

# HIGHER YIELD, LESS WEATHER DEPENDENCY

Haylage production increases field yields. Herbs become less prevalent as grasses and clovers are favored for the fermentation process. The production is more efficient: requiring only 1-3 days of sunshine and 1-2 turnings, depending on desired moisture content. The wrapped bales can be stored outdoors, and fields can be cut 3-5 times per season. This efficiency explains why more farmers are choosing to process at least their early and late cuts into haylage, especially during periods of unstable weather.



## *The Critical Disadvantage: Unsuitable for Horses*

Horses naturally require stemmy grass with low sugar and high crude fiber content. However, feed high in structured crude fiber and low in soluble carbohydrates cannot be properly fermented. Proper haylage fermentation is done by lactic acid bacteria which require sugars and complete anaerobic conditions; when this isn't achieved, harmful fermentation and mold development result.

## *Horses are More Sensitive than Cattle*

Unlike cattle, horses are highly sensitive to improperly fermented forage products. Reactions can range from metabolic disorders affecting liver and kidneys (leading to joint inflammation, muscle soreness, and pain) to skin conditions like mud fever and sweet itch, and digestive issues including diarrhea, free fecal water, and severe colic.

## *Mold: Not Just a Hay Issue*

Haylage is usually wrapped with a residual moisture content of 15-20%. This leads to air entrapment and thus delays the proliferation of lactic acid bacteria, thereby enabling mold and bacterial growth.

When mold is visible on the outside of a haylage bale, it has typically penetrated to the core. "Invisible" mold, yeasts, and pathogenic bacteria occur frequently in plastic-wrapped forage bales, because these organisms naturally exist on meadow plants. When truly anaerobic fermentation conditions aren't achieved, they can multiply within the bale - often without being detectable to the human eye or nose.

Microbial dormancy only occurs at pH levels below 5, at which point neither lactic acid bacteria nor harmful microorganisms can continue growing. The rate at which this pH value is achieved depends on both sugar content and the amount of air trapped within the bale.

While mold in hay is recognizable by dust, musty odors, and compressed gray patches, haylage can appear to be of good quality - though laboratory analysis usually proves otherwise.

Test it yourself: After approximately 6 months of storage, send a sample of your haylage to an agricultural research laboratory for microbial analysis. Most horse owners are shocked when they receive the results.





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### **Lactic Acid Bacteria**

When horses consume ensiled products like haylage, they ingest significant amounts of lactic acid and lactic acid bacteria - components essential to the fermentation process. These bacteria alter the intestinal environment by acidifying both the small and large intestine.

This acidification destroys beneficial gut symbionts in the large intestine, causing them to release endotoxins into the bloodstream. The native gut microbiome is then replaced by colonizing lactic acid bacteria, which digest soluble carbohydrates and protein from the forage without providing any nutritional benefit to the horse. Instead, they produce lactic acid as a waste product, which in part is absorbed through the intestinal mucosa.

The resulting acidic environment in the gut leads to inflammation of the intestinal lining, potentially developing into leaky gut syndrome - a primary cause of fecal water syndrome in horses. This disruption of the natural microbiome by lactic acid bacteria can trigger various health issues including laminitis, allergic conditions like sweet itch or digestive issues like diarrhea or even colic. Nutritional deficiencies are the natural result of hindgut dysbiosis.

*Like mold, lactic acid bacteria are detrimental to the horse's digestive system, which is why haylage should not be fed to horses.*

### **Reduced Nutritional Value**

While some argue that fermented grass is 'pre-digested' and therefore easier on the horse's digestive system, the opposite is true. The horse must use oxygen to convert absorbed lactic acid into glucose for energy, requiring additional oxygen consumption. Moreover, the presence of lactic acid bacteria in the hindgut actually reduces nutrient absorption and increases waste products compared to hay feeding, due to dysbiosis they cause.

### **Vitamin Deficiency Risk**

Far from providing essential nutrients, lactic acid bacteria can lead to nutritional deficiencies. The lack of active forms of vitamins B6 and B12 is particularly concerning, as it significantly impacts overall metabolism and can promote the development of detoxification disorders like Kryptopyrroluria (KPU).

### **Acid Load on the Body**

Most horses cannot adequately convert the substantial amounts of lactic acid from haylage into glucose. Instead, this acid accumulates in the connective tissue, causing horses to appear bloated or seem to gain weight, often misinterpreted as EMS. However, this isn't true weight gain from muscle or fat - it's actually lymph fluid retention, which the body uses to buffer the acidic environment in the connective tissue.

While blood tests may not show this acidification because the kidneys work hard to maintain constant blood pH, this process takes its toll. After the hindgut, the kidneys are the organs most damaged by haylage feeding.

# THE IMPACT OF FEEDING HAYLAGEE

Feeding fermented forage can lead to multiple serious health issues:



## **Hindgut Acidification Due to Lactic Acid**

Disruption of the healthy gut microbiome, resulting in hindgut inflammation (colitis) and leaky gut syndrome

## **Compromised Carbohydrate Metabolism**

Instead of beneficial volatile fatty acids, the body must process lactic acid, leading to decreased performance and muscle acidification

## **B-Complex Vitamin Deficiency**

Due to compromised hindgut microbiome, essential B vitamins become deficient. The liver especially lacks active vitamin B6 needed for biotransformation (detoxification), which can lead to Kryptopyrroluria (KPU)

## **Toxic Load on Liver and Kidneys**

Caused by improper haylage fermentation, as well as destruction of beneficial hindgut microbiome, and resulting Kryptopyrroluria (KPU)

## **Acidification of Connective Tissue**

Places excessive stress on the kidneys, which must regulate acid-base balance through tissue lymph retention, while also straining the cardiovascular system

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## **Red-Flag Symptoms**

Symptoms vary by individual horse and may include allergies, excessive lymph storage, fecal water, colic, sweet itch, mud fever, tendon damage, laminitis, and many other conditions.

## **Listeriosis and Botulism**

As if this is not enough already, there's also the risk of listeriosis and botulism. Botulism is typically a fatal poisoning caused by toxins from decomposing matter. These toxins often enter haylage bales through dead mice or deer fawns and can proliferate in the warm, moist environment. While dead mice can also end up in hay, they cause no harm once dried. Multiple fatal cases of botulism linked to haylage feeding have been reported in equestrian facilities across Germany, Austria, and even in Great Britain, a nation known for its horse expertise. This risk alone should raise serious questions about the suitability of haylage for horses.

## **The Performance Cost of Haylage**

While the nutritional values in haylage may seem appealing, the type of energy it provides is ultimately more harmful than beneficial. Its high protein content results from bacterial proteins found in lactic acid bacteria, which are largely indigestible for horses. Moreover, lactic acid itself is not an energy source for horses but merely a waste product. The resulting disruption to the hindgut microbiome limits the horse's ability to efficiently utilize cellulose for energy. When concentrates are added to the diet, they mainly fuel the lactic acid bacteria that thrive on sugars and starches.

In the long term, feeding haylage can diminish performance and cause serious health issues, although these effects may take years to manifest and are then rarely directly attributed to haylage feeding.

## **CONCLUSION:**

*If you're feeding haylage, don't blame persistent issues on the supposed fragility of today's horses or try to manage various symptoms individually. Instead, switch to horse-appropriate forage to truly support their health.*

