



# U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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## Fall Health Concerns for Horses By: K. Martinson, PhD, Univ.

Fall can be a beautiful time of year for horseback riding. However, falling leaves and frost can negatively impact horse health.

Ingestion of dried or wilted, but not fresh, maple leaves is associated with the toxicosis. Dried leaves are not generally believed to retain toxicity the following spring. Toxicosis normally occurs in the autumn when normal leaf fall occurs. Although studies indicate that leaves collected after September 15 are more toxic, cases of toxicosis in horses due to wilted leaves after summer storms have been observed. Horses are the only species for which maple leaf toxicity has been reported. Horses are often depressed, lethargic, and anorexic with dark red or brown urine after the first day of ingestion. They may progress to going down with labored breathing and increased heart rate before death. Horses should be fenced out of areas where wilted maple leaves are plentiful.

*Prunus* species (species in the cherry family) contain cyanide and should be removed from horse pastures. Cyanide is released after chewing the plant or seed, or when the plant material wilts (after a frost). Animals are most commonly found dead within minutes to a few hours of ingestion of the plant.

There are no reports of toxicity of horses grazing frost damaged pastures (includes grass and legume species). Frost damaged pastures can have higher concentrations of nonstructural carbohydrates, leading to an increase in potential for founder and colic, especially in horses diagnosed with or prone to obesity, laminitis and Equine Metabolic Syndrome. To reduce the chance of adverse health effects, it is recommended that horse owners wait up to a week before turning horses back onto a pasture after the first killing frost. Subsequent frosts are not a concern as the pasture plants were killed during the first frost.

## Ask the Expert: Buying Hay By: K. Martinson, PhD, Univ. of Min.

Q: What questions should I ask when buying horse hay?

A: Here are some questions horse owners should ask when purchasing hay:

1. Have you sold to horse owners before or do you specialize in horse hay?
2. What is the average weight of the bales? This is very important if buying hay by the bale.
3. How mature is the hay? Maturity is the main driver of forage quality.
4. What species are present in the hay? Legumes and grasses have different nutrient values.
5. Where was the hay harvested? Rule out ditch hay.
6. Was the hay rained on? Rained on hay is a good choice for horses with metabolic problems; it tends to be

lower in nonstructural carbohydrates.

7. Was the hay stored inside or under cover after baling? Hay stored inside or under cover has less storage loss.
8. Was the hay field fertilized and/or sprayed for weeds? Show good management and likely a better quality product.
9. What are the payment options?
10. Is delivery available and if so, what is the cost?
11. What is the price? Is there a price break for volume or cash?
12. Is assistance available with onsite handling and stacking of hay, and if so, at what cost?
13. How much hay do you have/bale each year? Helps ensure a consistent supply of hay.

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### Upcoming Events

#### Lunch and Learn Webinar

December 8, 2016  
Noon to 1:00 pm (central)  
"Managing Over-weight Horses"

Presented by Marcia Hathaway, PhD,  
University of Minnesota  
To join the free webinar, click [here](#).

Visit our [Facebook](#) page for "Ask the Expert Monday", "Tip of the Week Wednesday", "Friday Funny" and special events.

Check out our latest horse-related videos on our [YouTube Channel!](#)

Visit (and share) our [Webinar Library](#) for recorded lectures on over 20 horse-related topics.

**Equine Pasture Management Program**  
One farm visit and a customized pasture and grazing management plan.  
April 1 through August 1  
\$650 per farm.  
Registration opens 4/1/17

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## Research Update: Limit-Fed Diets and Slow-feed Hay Nets

Modern management strategies including meal feeding and increased duration of stalling have led to the decreased opportunity for horses to forage and socialize and possibly an increase in equine obesity. Changes in blood profiles and hormones can be impacted by different feeding and management systems. In an effort to lessen the effects of meal feeding, researchers have attempted to increase total time of consumption of feedstuffs by decreasing intake rate. The use of slow-feed hay nets represents an opportunity to extend foraging time while feeding a restricted diet to overweight horses in an effort to induce bodyweight loss.

The objectives of this study, conducted at the University of Minnesota, were to determine if a limit fed diet combined with the use of a slow-feed hay net would affect body measurements and blood and hormone patterns in overweight adult horses.

Eight adult Quarter horses with an average bodyweight of 1,241 pounds and a body condition score (BCS) of 7.2 were fed hay either off the stall floor (4 horses) or from a slow-feed hay net (4 horses; Figure 1) for 28 days. Horses were fed in individual stalls at approximately 60% of their maintenance digestible energy requirement, split evenly between two meals fed in the morning and afternoon. Bodyweight, BCS, neck and girth circumference and cresty neck score were taken on days 0 and 28. Twenty-four hour blood samplings were conducted on days 0 and 28 and analyzed for glucose, insulin, cortisol and leptin concentrations. Samplings occurred every 30 minutes for 3 hours post feeding, with hourly samples occurring

between feedings.

*Figure 1.* Horses were fed from either the stall floor or from a slow-feed hay net (pictured).



Horses feeding from the stall floor (2.0 hours) took less time to consume their hay meal compared to horses feeding from the hay nets (3.2 hours). This confirms the effectiveness of slow-feed hay nets at slowing hay intake rates which is especially useful when managing stalled horses or when feeding a limit-fed diet. Increasing the time horses spend feeding promotes gut health and has been shown to reduce stereotypical behaviors and the incidence of colic.

All horses lost bodyweight (an average of 79 pounds) over the 28 day period; however, no difference was observed between horses fed from the stall floor or the hay nets. It has been well established that a sustained, moderate-energy deficient diet results in the loss of both fat and lean body mass. Caloric intakes were designed to be at approximately 60% of digestible energy for adult horses at maintenance to achieve a reduction in 1 BCS unit in 1 month. However, there was no difference in BCS, neck and girth circumference or cresty

neck score between day 0 and 28. A possible reason for the inability to detect a change in BCS is the system itself. The BCS systems evaluates adipose tissue in 6 areas, including the ribs, behind the shoulder, along the neck and withers, in the crease of the back, and tailhead. Most of the horses had noticeable visual losses of adipose tissue in their lower abdominal area, a region not considered when assessing BCS.

Only time to peak insulin and peak cortisol were affected by treatment with horses feeding from the hay nets having lower values compared to horses feeding from the stall floor. Greater peak insulin is reflective of the shorter time to consumption from horses fed from the stall floor. These results also indicate that horse feeding from the stall floor had elevated stress, likely due to the shorter time of hay consumption. Average glucose, insulin, cortisol and leptin were affected by day. Glucose and insulin values increased while cortisol and leptin levels decreased throughout the 28-day period. The reduction in cortisol confirms that horses can acclimate to different feeding scenarios over time. Since leptin is a hormone secreted by adipose or fat tissue, a decrease in leptin helps to confirm a loss in adipose tissue during the 28-day period.

The use of a slow-feed hay net coupled with a limit fed diet appears to be an effective method for decreasing bodyweight and maintaining more moderate blood and hormone patterns when feeding overweight adult horses.

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