



# U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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## Research Update: Feeding Fat and Behavior

Previous research indicates horses are less reactive to novel stimuli when fed a high fat diet, but no research documents the mechanism for this phenomenon. The purpose of this study, conducted at Middle Tennessee State University, was to evaluate glycemic response as mechanism for decreased reactivity in horses fed a high fat diet.

Six Quarter horse geldings aged 8 to 15 years were randomly assigned to 2 groups and fed grass hay plus a diet of either grain or grain plus fat for a 21 day period. The horses were then switched and fed the other diet for 21 days. Glycemic response was tested on day 19 and reactivity on day 21. For reactivity tests, each horse was fitted with a heart rate monitor and turned loose in round pen. Startle reactivity was measured over 4 minutes with a fog machine used as a novel stimulus for the first 30 seconds, and heart rate recorded every 30 seconds from 0 to 4 minutes. Catch score was assigned when the horse was caught and

removed from the round pen. Pressure reactivity was measured using a soil penetrometer and was applied at the girth and lateral forearm until the horse shifted weight or moved away, and pressure required to elicit a response was recorded. For glycemic response tests, blood samples were collected 15 minutes before, and 30, 60, 90, 120, 180, 240, and 300 minutes after feeding. Plasma glucose concentrations were then analyzed.

There was no effect of diet on glycemic response, catch score, or pressure reactivity at the girth or lateral forearm. Heart rate responses to the novel stimulus during the reactivity test were lower when horses were fed high fat compared with the no added fat diet. These results agree with previous reports, indicating that high fat diets decrease startle reactivity in horses.

For more information on this research, click [here](#).

*Summarized by Amanda Grev, MS, University of Minnesota.*

## Ask the Expert: Mold Testing in Hay

**Question:** I recently purchased some hay. I thought it was good quality, but I think the hay might be a little moldy. Can I test my hay for mold?

**Response:** Most forage testing laboratories can test hay (and other feedstuffs) for different types and amounts of molds. The costs average \$40 and takes about one week to complete. The sample is collected and submitted similar to a hay analysis for nutrient value. Watch a [YouTube video](#) on how to collect a hay sample.

All hay will have some mold; no sample will have zero mold. Mold spore counts are given in colony forming units per gram (cfu/g). Hay with less than 500,000 cfu/g of mold is considered good

quality. Hay with 500,00 to 1 million cfu/g is relatively safe, while hay with over 1 million cfu/g of mold should not be fed to horses due to the risk of respiratory issues. Most people can start to detect mold around 500,000 cfu/g.

If your hay is between 500,000 and 1 million cfu/g of mold, use precaution by pulling flakes apart before feeding, feeding outside or in a well-ventilated area, using a hay net to restrict the horses ability to bury their nose into the hay, and wetting the hay to reduce the amount of mold spores inhaled. Alternatively, you could look for a better quality hay or ask your hay supplier to exchange the hay for bales with a lower mold count. *Author: Krishona Martinson, PhD, Univ. of MN*

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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, U of MN

To join the free webinar, click [here](#).

#### Online Pasture Establishment and Management Certificate Course

An online, semi-self paced, six week certificate course.

Starts January 9 and ends February 20, 2017.

\$75 per person.

Online registration required by January 8, 2017 and is available [here](#).

#### Online Hay Feeding and Management Certificate Course

An online, semi-self paced, six week certificate course.

Starts January 9 and ends February 20, 2017.

\$75 per person.

Online registration required by January 8, 2017 and is available [here](#).

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## Managing Over-weight Horses

Managing a horse's bodyweight is essential to their over-all health and well-being and can impact performance, reproduction and incident of disease. However, it can be difficult to recognize changes in a horse's bodyweight or body condition score (BCS) over time.

The first step in managing an over-weight horse is to determine if the horse is over-weight. Owner's frequently use BCS to help determine if a horse is over-weight. Many agree that a horse with a BCS of 4 to 6 (using the Henneke 1 to 9 scale) is optimal, while horses with a BCS of 7 to 9 are over-weight. We recommend all horses be BCS monthly; to learn how to BCS a horse, watch this [YouTube video](#).

Horses that are over-weight can have difficulty with thermo-regulation, can be more prone to diseases, and commonly suffer from reproduction issues and poor performance.

Thermoregulation is a horse's ability to regulate its body temperature. Obese horses can have difficulty regulating body temperature and are more prone to over-heating.

If bodyweight gain is maintained or continues, the horse is predisposed to develop disorders and/or disease conditions. Over-weight horses are more prone to laminitis, Equine Metabolic Syndrome, insulin dysfunction and elevated concentrations of the stress hormone cortisol.

Reproduction can be hindered when horses are over-weight, making it more difficult to maintain a pregnancy and deliver a healthy foal.

When a horse accumulates excess bodyweight as adipose tissue (fat), performance and functionality are impaired. Baring excess

bodyweight impact hoof health by negatively affecting the integrity of the hoof wall, heel buttress and bars of the foot. Obesity is a risk factor in the development of osteoarthritis and negatively impacts joint health. Finally, excessive bodyweight increases musculoskeletal pain, resulting in decreased functionality.

Restricting a horse's caloric intake and a slow but steady increase in exercise are keys to reducing bodyweight. There are negative consequences to having a horse that is over-weight, but there are also negative health consequences if an obese horse loses bodyweight too quickly. When managing over-weight horses, it is important that the horse lose bodyweight slowly and steadily over time.

Over-weight horses should have their diet limited to 1.5% of their bodyweight each day. Horses at an ideal bodyweight usually consume about 2% of their bodyweight in feed (includes hay, grain and supplements) each day. For example, a 1,200 pound horse should receive 18 pounds of feed (hay and/or grain) each day. It is best to provide a majority of feed in the form of a mature grass hay; this hay type usually contains that least amount of calories. It is important to weigh out hay flakes to determine the correct amount since different bales and hay types will result in different weights. Using a slow-feed hay net can help extend the length of time it takes for a horse to consume a hay meal. For more information on slow-feed hay nets, [click here](#).

Although over-weight horses need to be on restricted diets, it is important their diet be balanced. An effective way to accomplish this is to feed a ration balancer. Ration

balancers are commercially prepared horse feeds that are designed to provide the trace minerals and vitamins a horse requires. The minerals and vitamins are concentrated so that only a small amount needs to be fed, typically 1 to 2 pounds a day for a 1,000 pound horse, depending on the product.

Over-weight horses rarely require additional grain or concentrates and should have pasture access restricted. Using a grazing muzzle restricts forage intake by an average of 30%. Owner can also limit the amount of time a horse spends grazing by housing them in a drylot for a portion of the day. Limited grazing, plus restricted hay access while housed in a drylot should result in bodyweight loss. Restricting grazing while offering free access to hay will rarely result in bodyweight loss.

Exercise not only burns calories and decreases the amount body fat that is accumulating, it also enhances the health and capabilities of muscle and bone. When a horse is over-weight, it is very important to plan a slow and steady increase in activity coupled with a decrease in calories until the horse reaches it bodyweight or BCS goals. A common exercise plan for an over-weight horse includes starting with a 30 minute combination of walking and slow trotting two or three times per week. As the horse loses bodyweight and gains fitness, the intensity, duration and frequency of exercise can increase. Exercise, combined with a reduction in calories, can have a powerful impact on bodyweight loss that can't always be achieved with exercise alone.

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