



U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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Volume 12, Issue 11

November 2016



Research Update: Omega-3 Fatty Acids

Prostaglandin E2 (PGE2) is a molecule in the body that plays a significant role in inflammation. Levels of PGE2 have been shown to increase in response to the progression of joint disease. Omega-3 fatty acids are molecules that have been shown to mitigate inflammation, including in horses that have been previously diagnosed with osteoarthritis.

Researchers at Sam Houston State University examined the effect of omega-3 polyunsaturated fatty acid supplementation on PGE2 production in young horses under training. Thirteen 2 and 3 year old horses were fed a standard diet plus fish oil. Exercise consisted of two phases; phase 1 which consisted of groundwork and early training under saddle and phase 2 which consisted of advanced maneuvers and moderate workload. Bodyweight, body condition

score (BCS) and rump fat measurements were recorded every 21 days. Blood samples were also taken to determine PGE2 levels.

Dietary treatment did not influence bodyweight, BCS or rump fat. Prostaglandin E2 plasma concentrations increased over time as exercise intensity and duration increased. No differences in PGE2 levels between treatments was found on day 0; however on days 35 and 63, treatment horses had lower PGE2 levels compared to control horses.

Researchers concluded that there is a potential use of dietary omega-3 supplementation to mitigate inflammation in young horses in an exercise program. For more information, click [here](#).

Summarized by Devan Catalano, MS, University of Minnesota

Ask the Expert: Estimating Winter Hay Needs

Question: We recently purchased a farm and will be housing our two quarter horses over the winter. They are not ridden during the winter. Because I've always boarded my horses, I'm not sure how to estimate how much hay I will need for the winter.

Response: An adult horse at maintenance will consume between 2 to 2.5% of their bodyweight in feed (hay and grain) each day. For example, a 1,000 pound horse fed a 100% hay diet would consume 25 pounds of hay each day. From October 15 to May 15 (when there is no pasture in MN), the horse would consume about 5,350 pounds of hay or 2.7 tons. This would equal 107 fifty pound small square-bales or six 900 pound round-bales during this time. For two horses, this amount would be doubled; 214 small square-bales or 12 round-bales.

It is critical to know the weight of the hay bales; not all bales weigh the same.

If the same horse was receiving 5 pounds of grain each day, their hay needs would be reduced to 20 pounds each day. From October 15 to May 15 the horse would consume about 4,280 pounds of hay or 2.1 tons. This would equal 86 fifty pound small square-bales or five 900 pound round-bales during this time. For two horses, this amount would be doubled; 172 small-square bales or 10 round-bales.

These estimates assume good quality hay is fed in a feeder to reduced hay waste. Its always best to purchase some extra hay since horses may require additional hay during the cold winter months (depending on their access to shelter and air temperature). *Author: Krishona Martinson, PhD, Univ. of Minn.*

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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.

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

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Blanketing 101

By: Marcia Hathaway, PhD and Krishona Martinson, PhD, University of Minnesota

A horse's winter coat can be an excellent insulator, but its insulating value is lost if it gets wet. If the hair is wet or full of mud, air is excluded, reducing its insulating value and increasing heat loss. As little as 0.1 inch of rain can cause cold stress by matting the hair and reducing its insulating value. It is important to keep the horse dry and sheltered from moisture. As expected, a horse with a thicker hair coat can retain more heat. Research has been conducted on the benefits of blanketing a horse to reduce the effects of cold weather.

Most horses are blanketed for various reasons (i.e. show schedules) or due to personal preference of the horse's owner. However, blanketing a horse is necessary to reduce the effects of

cold or inclement weather when:

- There is no shelter available during turnout periods and the temperatures drop below 5°F, or the wind chill is below 5°F
- There is a chance the horse will become wet (not usually a problem with snow, but a problem with rain, ice, and/or freezing rain during cold weather)
- The horse has had its winter coat clipped
- The horse is very young or very old
- The horse has not been acclimated to the cold (i.e. recently relocated from a southern climate)
- The horse has a body condition score of 3 or less

It is equally important that the

blanket fits the horse. Horses can develop rub marks or sores where the straps secure the blanket if it fits improperly. If the horse is blanketed continuously, the blanket should be removed daily, inspected for damages, and repositioned. Make sure blankets are kept dry and do not put a blanket on a wet horse; wait until the horse is dry before blanketing.

Keep in mind a horse will continue to develop a natural winter coat until December 22, while days are becoming shorter. Horses begin to lose their winter coat, and start forming their summer coat, as the days begin to get longer on December 23. Blanketing before December 22 will decrease a horse's natural winter coat and may result in the need for winter-long blanketing.

Winter Feeding Strategies for Horses

By: Marcia Hathaway, PhD Univ. of Minnesota

A horse's nutritional requirements change when the temperature dips during the winter. The ideal situation is to have a horse entering the winter acclimated to the cold with a thick hair coat and fat cover. It has been estimated that a horse with a healthy winter coat and kept dry will be comfortable at temperatures down to 18° F. If the horse has access to a shelter it can tolerate temperatures as low as -40° F.

As the temperature decreases with the onset of winter, the horse requires additional dietary energy in order to maintain its body temperature and condition. For every degree below 18°F the horse requires an additional 1% energy in their diet. For example, if a 1,000 lb horse needs 16 pounds of good-quality hay each day when the temperature was 18° F, its

requirement could be expected to increase by approximately 2 to 2.5 pounds to 18 to 18.5 pounds if the temperature dropped to 0° F. The increased dietary energy requirement would be even greater if the horse didn't have access to shelter.

The question then becomes, what is the best source of additional dietary energy during the cold winter months? A horse manages to utilize dietary energy in the winter to keep warm in a couple of different ways. First, there is the heat given off as a by-product of normal metabolic processes. Secondly, there is the heat generated from microbial fermentation of forages that occurs in the hindgut during digestion.

Many people believe that feeding more concentrates or grains (because they are energy dense),

will help keep the horse warmer. However, there isn't as much heat produced as a byproduct of digestion, absorption and utilization of concentrates and grains as there is from the microbial fermentation of forages. Consequently, increasing the amount of forage in the diet will help meet the increasing energy needs and will result in an increase in microbial fermentation which will help keep the horse warm.

An additional important point to consider is the need to provide access to clean, "warm" (45° to 64° F) water. A horse will require more water when eating dried feedstuffs like hay, compared to horses grazing on lush, moisture dense pasture. If the water is ice cold, the horse will not drink as much. The goal should always be to maximize water consumption to help prevent the possibility of dehydration and colic.