



# U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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Volume 13, Issue 11

November 2015



## Research Update: Welfare of Carriage Horses

The management and use of carriage horses, as a tourism instrument in cities, has been recently highlighted as a matter of public concern in terms of the welfare of these equines. The aim of this study was to assess changes in possible physiological welfare indicators in working horses, as a result of pulling tourism carriages under field conditions.

A descriptive field study of the work performed by tourism carriage horses and their physiological, hematological, and blood biochemistry implications was performed by researchers in Santiago, Chile. Ten tourism carriage horses were studied under normal working conditions. Description of work, speed, distance, and force were measured. To assess welfare, physiological variables including heart rate, respiratory rate, rectal temperature, and hematological and blood biochemistry parameters were evaluated before, during, and after work.

Results show that tourism carriage horses exerted a submaximal effort in terms of speed, force, and physiological variables assessed. The heart and respiratory rate showed an increase after work, but recovered to basal values within

the first 10 minutes. Blood variables did not show changes that could be related to poor welfare. Lactate and packed cell volume were the only blood variables with differences across work with lactate decreasing over time and packed cell volume increasing with work and returning to basal levels at 10 minutes after work. Physiological variables showed a possible adaptation to work by the carriage horses but were not sufficient to diagnose a welfare problem.

Most of the horses were able to recover basal values of the variables assessed within 10 minutes. The tourism carriage horses studied seem to have adapted physiologically to their work activity, and the existence of a welfare problem cannot be determined with the variables assessed. Only one welfare aspect, related to the physical status, of these horses was assessed, and future studies should also include indicators of good mental and behavioral state to provide a more holistic view of their welfare state.

For more information on this study, click [here](#). *Summarized by Krishona Martinson, PhD, University of Minnesota*

## Winter Water Needs

By: Marcia Hathaway, PhD, Univ. of Min.

Most adult horses weighing 1,000 pounds require a minimum of 10 to 12 gallons of water each day for their basic physiological needs. During winter months, water should be kept between 45 to 65°F to maximize consumption. Increasing salt intake will also stimulate a horse to drink more; adult horses should consume one to two ounces of salt per day. If using a tank heater to warm water, inspect it carefully for worn wires or other damage, and check the water for electrical sensations or shocks.

Snow or ice is not an adequate water source for horses and is not a legal option for water for horses in Minnesota (MN Pet & Companion Animal Welfare Act). Some wild horses can receive their water needs from snow, but there are serious health risks associated with snow consumption, including the length of adjustment period as horses learn to ingest snow, the actual water content of the snow, and total water intake. The risk of gastrointestinal tract problems, colic, and reduced feed intake is significant for domestic horses.

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### Upcoming Events

#### Lunch and Learn Webinar

December 1, 2015  
Noon to 1 pm (central)  
"Feeding Whole (Unprocessed) Grains"  
presented by Dr. Marcia Hathaway, Univ. of Min.  
To join, click [here](#).

#### Online Pasture Establishment and Management Certificate Course

An online, semi-self paced, six week certificate course.  
Starts January 11, 2016  
\$75 per person  
Registration will be available in December.

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

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

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## 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 trail horses who 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. Can you provide some guidelines?

Response: An adult horse at maintenance will consume between 2 – 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. When feeding small squares-bales, hay waste when a feeder was not used (hay fed on the ground) was approximately 13% compared to only 1 to 5% when a feeder was used. When feeding large round-bales, not using a feeder resulted in 57% hay waste compared to 5 to 33% hay waste when a feeder was used. 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). *Author: Krishona Martinson, PhD, Univ. of Minnesota*

## Blanketing Horses

By: Marcia Hathaway, PhD, University of Minnesota

Horses, given the opportunity to acclimate to cold temperature, often prefer and are better off outdoors. A healthy adult horse with a good winter hair coat and access to shelter does not need a blanket. 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 much more of a problem with rain, ice, and/or freezing rain)
- 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



In the absence of wind and moisture, horses tolerate temperatures at or slightly below 0° F. If horses have access to a shelter, they can tolerate temperatures as low as -40°F. However, horses are most comfortable at temperatures between 18 and 59°F, depending on their hair coat.

If a horse is blanketed, it is 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, do not put a blanket on a wet horse; wait until the horse is dry before blanketing.

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.

Keep in mind a horse's winter coat is an excellent insulator, but its insulating value is lost if it gets wet. The hair coat acts as insulation by trapping air. If the hair is wet, air is excluded, reducing its insulating value. As little as 0.1 inch of rain can cause cold stress by matting the hair. As expected, a horse with a thicker hair coat can retain more heat compared to one with a thin or summer hair coat.