



U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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Introducing Horses to Spring Pasture

It is tempting to turn horses out into spring pastures at the first sight of green grass, especially after a long winter. However, spring grazing should be introduced slowly and delayed until grasses reach 6 to 8" in height to optimize both the health of the horse and pasture. When horse pastures reach 6 to 8", begin grazing 15 minutes the first day, increasing the grazing time each day by 15 minutes until 4 to 5 hours of consecutive grazing is reached. After that, unrestricted or continuous grazing can resume. Why is this recommendation so important?

Change feedstuffs gradually. Even though hay and pasture are both forms of forages, there are significant differences. Dried hay is approximately 15% moisture compared to fresh pasture that is 85% moisture. A gradual change from one feedstuff to another provides enough time for the microbial populations to adjust, reduce the chance of colic and laminitis.

Ask the Expert

Q: I use rubber mats over a concrete floor in my box stalls. I use only enough sawdust to absorb the urine and moisture in the stall and clean it out completely each day. I have never seen a horse lay down in the stall. Is there any reason to add more bedding in the stalls?

A: Horses need to lie down in order to get an adequate amount of deep sleep and will eventually, over weeks or months, become sleep deprived if they cannot or will not lie down for some reason. Opinions vary, but research on the subject suggests that relatively hard ground doesn't usually deter horses from lying down and getting enough sleep. Wet ground and deep mud will be a significant deterrent, however, as will a slippery

Pasture Health. Pasture grasses need sufficient growth before grazing is allowed. Photosynthesis (the process of converting solar energy to chemical energy) occurs mainly within the leaves of plants. If leaves are grazed too early (prior to 6" tall) or too often, plants can lose vigor, competitiveness, and root structure due to the lack of photosynthetic ability. This will lead to eventual die back of desired forages and these areas being replaced by undesirable plant species or weeds. Grazing should cease when forages have been grazed down to 3 to 4 inches. At this time, move horses to another paddock or a dry lot. Grazing can resume when grasses re-grow to 6 to 8". On average, 2 to 3 acres of well-managed pasture can provide the forage needs for one horse from spring to fall.

Following these recommendations will help ensure both horse and pasture health.

By: Krishona Martinson, PhD, U of M

By: Christie Ward, DVM, Univ. of Minn.

surface.

If it were only one of your horses that never seemed to lie down, I would worry about musculoskeletal or lameness pain playing a role. Older or arthritic horses, for example, tend not to lie down as much as they should and go on to suffer sleep deprivation. In those cases, treatment of the pain is very helpful. If none of your horses lie down while in the barn, it makes me wonder whether they prefer to lay down outdoors for some reason. If you are worried, it is certainly worth running an experiment by bedding them more deeply for a time and looking for any change in their sleeping behavior.

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Upcoming Events

Lunch and Learn Webinar
Wednesday, May 4 at noon
What Every Horse Owner Should Know About Equine Nutrition by
Marcia Hathaway, PhD
To join the free webinar log onto
umconnect.umn.edu/horsenutr/

Horse Pasture Management Program
Customized pasture and grazing management plans for horse farms.
Contact Jennifer at
612-624-7455 or
jeearing@umn.edu

Get Involved in Equine Research at the U of M
EMS is characterized by three main features: obesity or regional adiposity, insulin resistance, and laminitis. Our goal is to better understand EMS. To do this, we need the help of horse owners. Visit www.cvm.umn.edu/equine/genetics/ems/home.html and complete the initial survey (see survey link on right hand side).

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Determining The Value of Rained On Hay

The summer of 2010 was a challenging hay making season because of frequent rainfall. As we approach another haying season, rainfall is not far from our minds.

Rain occurring while cut hay is laying in the field causes both yield and quality losses that reduce the value of the crop as an animal feed and a marketable commodity. Weather-induced losses are caused by: 1) prolonged plant respiration reducing water-soluble carbohydrates and overall energy content; 2) leaching of water-soluble carbohydrates, protein, and certain minerals from the hay; 3) leaf shattering and loss, removing the highly digestible and high protein portion of the forage; 4) microbial activity metabolizing soluble carbohydrates and reducing energy content; and 5) color bleaching.

How much does rainfall reduce dry matter yield? Several researchers have studied the effects of rainfall on cut alfalfa. Wisconsin researchers measured dry matter losses of 22% when alfalfa was exposed to 1 inch of rain after 1 day of drying (curing), mostly from loss of water-soluble carbohydrates. Similar hay dried without rain damage lost only 6.3% of the initial yield. Losses appear to be greatest after partial drying of the forage has occurred. In this same study, alfalfa exposed to 1.6 inches of rain over several days suffered a 44% loss in dry matter. Michigan researchers conducted several different studies to examine the effects of rainfall on field cured alfalfa. The first study reported maximum dry matter losses of 34%. In a second study, rainfall intensity was kept constant at about 0.7 inches but spread over periods of 1 to 7 hours. Dry matter

losses ranged from 4 to 13%, with highest losses occurring when the rain was spread over a longer duration. Overall, dry matter losses were much lower in these experiments even though rainfall amounts were about 2 inches.

Other species have been studied as well. Yields losses of birdsfoot trefoil appear to be less than alfalfa, while red clover shows even less dry matter loss due to rain, and grasses suffer the least amount of dry matter losses. Dry matter losses are most crucial to the person responsible for baling the hay. Dry matter losses usually represent a significant decrease in income since less hay is available for baling, feeding, and selling.

How does rainfall reduce dry matter yield? Three primary factors are involved in dry matter losses, leaching, respiration, and leaf loss.

Leaching is the movement of cell solubles out of the plant. Components of the plant that are very water soluble are leached out of the forage and lost when rain occurs. Unfortunately, most of these compounds are those highly digested by the animal. They include such components as readily available carbohydrates and soluble nitrogen, minerals, and lipids. About one-half of the dry matter leached by rain are water-soluble carbohydrates.

Unlike other livestock, losses of soluble carbohydrate can be beneficial for some horses. Laminitis is a painful and debilitating disease of the horse hoof. Laminitis typically occurs during periods of increased or rapid intake of water soluble and nonstructural carbohydrates. In order to manage laminitic horses and reduced

amounts of carbohydrates in harvested forage, horse owners have resorted to soaking hay. A number of research trials have confirmed removal of carbohydrates from hay by soaking in either 30 minutes of warm or 60 minutes in cold tap water. Soaking hay is a cumbersome, messy, and time consuming process. Purchasing rained-on hay with naturally low levels of carbohydrates is a possible alternative.

Respiration (breakdown of soluble carbohydrates by plant enzymes) occurs at nearly 2% dry matter per hour in fresh forage, and declines almost in proportion to the decrease in moisture content until the plant reaches approximately 60% moisture. Every time the forage is wetted by rain, respiration is either prolonged or begins again in cases where the cured forage was below 60% moisture. In either case, additional dry matter is lost.

There is some disagreement in the research literature regarding the amount of leaf loss that occurs in cut alfalfa as a direct result of rainfall. Leaf loss is important since more nutrients are located in the leaves vs. the stems. In Wisconsin studies, leaf loss ranged from 8 to greater than 20% as a percent of the initial forage dry matter when rainfall amounts were from 1 to 2.5 inches. In Michigan studies, direct leaf loss was much lower (0.5 to 4.2%). Experience and common sense tell us that rain damaged alfalfa is more predisposed to leaf shatter after it dries, and rainfall often means additional raking and more lost leaves.

Next month we will conclude our discussion on the value of rained on hay. *Authors: Dan Undersander, PhD, Univ. of WI and Krishona Martinson, PhD, Univ of MN.*