Spring green grass -- nature's perfect horse food? Maybe

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Animal Corner

Dr. Gale DeJong

Spring has arrived in Whatcom County, at least on the calendar. The grass is growing. Some people have mowed their lawns. A few brave dandelions have sprung up.

This new growth of grass is like candy to the horse, literally. Almost any horse is more than willing to dive into this spring delicacy. Unfortunately, this grass can be very dangerous for some horses and ponies. Why? Primarily because of the amounts of fructans in the grass.

Fructans are complex compounds of the simple sugar fructose. They are produced by our cool-season grasses via the process of photosynthesis. They are good for the plant and in moderation are good for most horses.

During daylight hours the green grass is producing fructans by photosynthesis. At night the grass uses the stored fructans to grow more leaves and stems -- that is, if the nights are warm. If the night temperatures are in the low 40 degrees or cooler, the plant does not grow. Rather, the grass stores the fructans for later use.

These fructans accumulate to their highest concentration in the grass closest to the ground. Greatest concentrations are present in the plant less than three inches above the ground. So in the cool growing seasons of the Northwest (spring and fall), high concentrations of fructans will be present in the green grass at all times. During the warm growing season (summer), fructan concentrations will be greater in the afternoon and early evening hours.

Also, fructan concentration in grasses will vary by the environmental stress the grass is receiving. Any sudden weather stress can stimulate the grass to accumulate fructans. The plant goes into "survival mode" and stores fructans for later use. Grasses subject to drought or frost can spike their fructan concentration by 30 percent in response to environmental stress. Thus, the pasture the horses have "been on for months" can suddenly change its nutritional content because of weather stress.

These fructans are specially adapted sugars produced by our cool-season forages. These sugars are specific complex carbohydrates that are very poorly digested in the stomach and small intestine of the horse. So this complex carbohydrate passes to the large intestine (hind gut) of the horse.

The hind gut is designed as a fermentation chamber. This fermentation chamber uses microorganisms to ferment structural carbohydrates (primarily cellulose and hemicelluloses) into what are termed volatile fatty acids (VFAs). These are absorbed through the large intestine and used by the horse for energy. Unfortunately, non-structural carbohydrates (primarily sugars and starches) passing into the hind gut are not efficiently fermented into VFAs. The hind gut can easily be overwhelmed with non-structural carbohydrates. Then the microorganisms of the large intestine produce lactic acid rather than VFAs.

The lactic acid is not well used by the horse. It often upsets the microorganism balance in the hind gut, producing colic. When absorbed into the blood stream, the lactic acid can cause a stress response in the horse, resulting in laminitis (founder). Both of these disorders can be very severe and constitute an emergency medical situation for the horse. "Lactic acid accumulation in the hindgut is one of the most direct causes of colic and laminitis in horses and ponies on pasture," says one authority.

Wow, how is it that "perfect horse feed" can become "deadly horse feed"? If our Northwest grass can be so dangerous, can horses safely graze?

Unfortunately, the answer is "that depends." Any horse being turned out to pasture needs to be gradually exposed to the new feed. The horse should not be turned out hungry. Allow the horse to eat its hay diet before turning onto grass.

During the "cool seasons" (cool nights in low 40 degrees), all horses should have limited grazing times and "sensitive horses" should have no grazing time. A sensitive horse is any horse with a history of laminitis or colic episodes. It also includes overweight horses, ponies, easy keeper horses, many draft breeds and those with draft background, several of the imported breeds that are prone to gain weight easily, and any horse suspected of a metabolic disorder or carrying unusual fat deposits.

During the "warm season" when nights are warm, the lowest concentration of fructans will be in the morning. The afternoon sun will accelerate fructan production by the grass plant. During this time of the year, pasture in the late afternoon and evening will have the highest fructan concentration.

Generally, those horses that have high energy requirements can handle fructans as long as they are slowly adjusted to them and during times of weather stress pasture turnout time is reduced. Many in this category are growing horses, lactating mares, hard-working horses, and thinner horses that metabolically burn more calories. Even these horses need to be monitored because the growing pasture is constantly changing.

Pastures should not be overgrazed, as that forces the horses to consume the grass close to the ground which is higher in fructan concentration. So it is not true that "short grass is safe."

Other horses need to be monitored because they will preferentially consume this "sweet grass" close to the soil. Remember that the highest fructan concentration is close to the ground. Horses that rarely lift their heads from the pasture are more prone to problems than those who move about sporadically grazing. Thus, the behavior of an individual horse influences what pasture turnout is safe for that animal.

Grazing muzzles can be used with many horses to allow pasture turnout while limiting grass intake. The muzzle must be fit properly and kept well maintained. Some horses are adept at getting the muzzle off and others can still over-consume through the small mouth opening. Modifications may be necessary to allow an individual horse safe time in the grass pasture. Horses fitted with grazing muzzles need to be monitored to be sure they remain safely in a pasture situation.

Fructans in our cool-season grasses present a dietary challenge. They are variable in our grasses, they are weather sensitive, and they vary during our seasons. Historically, they provide the greatest challenges with our spring and fall growing seasons. Horses need to be treated as individuals. What works well for one animal's diet may not work for another. If you have questions or concerns about your horse and pasture, please consult with your veterinarian before proceeding with pasture turnout.

Dr. Gale DeJong is a veterinarian with Kulshan Veterinary Hospital of Lynden.