

Forage Extension Program

Caution on Grazing Non-traditional Forages

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For the past five years, many Montana producers have experimented with using alternative forage crops as pasture or hay. With low cattle and grain prices, growers are looking to reduce input costs and stretch their forage resources as far as possible. Consequently, many producers are using annual forage crops to supplement their forage base, reduce or eliminate haying costs, or to delay the investment costs of establishing new perennial pastures or hay fields. Some of the alternative crops being used for forage include winter wheat, winter rye, spelt, spring seeded barley or wheat, peas, and some of the warm-season crops, such as sudangrass and millet. These crops have proven themselves to have a myriad of benefits, but not without a few drawbacks.

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Nitrate Toxicity

Ruminant livestock can be severely affected by nitrate contained in small grains, hay, or weeds. Nitrate is the primary form of nitrogen transported in plants for protein production, and during early stages of growth or stress, the nitrate can be present in toxic concentrations. Early symptoms of this poisoning in cattle include watery eyes and reduced appetite, and further progression can lead to abortion, muscle tremors, and death. Elevated levels of nitrate are common in Montana hay barley and oats, but the nitrate concentration usually diminishes to a safe level by haying time in the clear to soft dough stage. Nitrate problems are unpredictable but frequently occur following stress, such as drought, hail, frost, or a prolonged cloudy period. Any winter wheat, spring wheat, barley, oats, sudangrass, or millet grazed at any stage has the potential to have toxic levels of nitrate.

Most of the county agents have a quick assay that can detect potentially high nitrate levels, so before grazing you should have your crop checked. Also, check any weeds that are present, since any broadleaf or grassy plant in the vegetative growth stage can have high nitrate concentrations. Quackgrass and kochia were both found to be sources of high nitrate levels in 1998. If high levels are detected, then delay grazing or haying the crop.

Bloat

Alfalfa is notorious for causing pasture bloat and causes a few livestock deaths most years in Montana. Pasture bloat is primarily caused by the rapid release of soluble proteins, which form a stable mat in the rumen that prevents gas pressure from being released. Discomfort, swelling, and even death can occur if the animal can not belch the excess gas from the rumen. High-protein forages, such as alfalfa and clovers, are known to be high-risk pasture crops, but bloat can occur on a wide range of plants when they are succulent.

Similar to the nitrate problem, bloat hazard can be unpredictable. Recently, a rancher lost 10 cows that had been grazing peas for two weeks. In this case, the cattle had been moved from one field to another field of lush peas. Apparently the cows were stressed from being moved, and immediately after grazing in the new field they bloated. We know that peas can have forage quality similar to alfalfa, as well as similar bloat hazard. Lush, vegetative plant tissue from many crops or weeds are highly digestible (low in crude fiber), and can cause

bloat under some circumstances. Prior to turning cattle or sheep into a "new" pasture, have them well-fed and watered. Monitor them daily for a week or so to assure that they have become accustomed to the forage, and avoid any major shifts in quality of their diet. You can provide blocks containing "bloat guard", or you can prepare a solution with water and poloxalene (purchased from your veterinarian) which will break up the gas bubbles when an animal bloats. Do not graze immediately after a frost in the fall. Instead, wait for about a week until the forage dries down.

Grass Tetany and Prussic Acid Toxicity

There are several other potential grazing problems that may occur, including grass tetany and prussic acid toxicity. Grass tetany can occur in grass or small grain pastures and is due to a magnesium deficiency (or imbalance between magnesium and other elements). Grass tetany, which is linked to soils with high potassium levels, occurs frequently in crested wheatgrass in the early vegetative stage. Prussic acid levels can be high in sorghum or sorghum/sudangrass crops, although the hazard decreases in sudangrass. Because of potential nitrate problems, sudangrass should not be grazed too early, or immediately after a frost.

Many alternative crops have excellent palatability, production and quality, but few have been widely grazed under Montana conditions. Producers should closely monitor livestock that are grazing an alternative crop and note any unusual behavior or physical characteristics.