GUEST COLUMN

Making Forage Crop Management Choices in a Difficult Season

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Our 2021 crop year is another one for the record books, but not the sort of record most of us might have hoped for. The high pressure dome that dominated summer weather in the West has brought its effects a bit too far east into the Dakotas and even the Upper Midwest. Hot winds and high temperatures kicked off in June to take most of the yield potential out of non-irrigated crops in much of the Dakotas. Lack of early summer rainfall spread across parts of Minnesota and Wisconsin to cause leaf-rolling in the developing corn crop. That was temporary for some as rains brought relief, but there wasn't enough relief to go around.

The growing season has some scratching their heads about how to handle drought-stressed forage crops. Even where recent rains have helped provide relief, there will be downstream ramifications to overall hay supply for those who grow, sell, or purchase dry hay.

Let's review crop response to drought stress on a crop-by-crop basis, with a few management considerations sprinkled in:

Alfalfa, the queen of forages, manages to weather moderate drought better than most crops on account of her deep tap root that can access moisture from deeper in the soil. Once soil moisture is tapped out, the crop slows considerably and may even enter a dormant state with no appreciable growth until sufficient rainfall occurs. Alfalfa yields seem to have suffered most where hot drying winds occurred in June with insufficient rainfall to replenish soil moisture. In such cases, some additional growth may still be possible if late-summer rains stimulate new crown buds to grow and elongate.

Corn silage – The developing grain component of corn silage is highly dependent on pollination success. Corn suffering from extreme drought stress will be short and scattergrain, or kernel development, may stop. If drought persists, it may be better to take the existing fodder before it completely dies back from continuing drought.

Clovers – In general, the clover species are not as tolerant of drought as alfalfa because clover species have shallower root systems than alfalfa, with less access to deep soil moisture. Clovers can defoliate during severe drought and will become less competitive in mixed stands with alfalfa and some grasses, especially warm-season grasses.

Cool-season grasses are widely used for hay and haylage, and as a component of most pastures in the Upper Midwest. These grass species make their best growth in the spring. Cool-season grasses are adversely affected by drought and heat stress, so you can't expect a lot of growth during hot, dry periods. While there can be some difference in drought tolerance among cultivars within a grass species, the larger differences occur between species. Reed canarygrass, brome, and fescue species are somewhat less affected than timothy, orchardgrass, and ryegrasses.

Forage sorghum and sorghum-sudangrass hybrids are warm-season annual grass crops with the potential for very high dry matter production per acre. Sorghum species are more tolerant of drought and heat than corn or just about any other crop you can typically grow. To generalize, you can think of forage sorghum as a taller version of grain sorghum. Forage sorghum is not expected to grow again following harvest, while sorghum-sudangrass will re-grow if there is sufficient heat following harvest. If allowed to approach maturity, both forage sorghum and sorghum-sudangrass will have grain production. Production will generally be less than corn silage, but may exceed that which is possible from corn silage when both are grown under drought stress. Photoperiod-sensitive hybrids are the exception, generally making no grain in northern latitudes; instead they continue to elongate stalks with additional leaf production. Forage sorghum and sorghum-sudangrass hybrids can easily be drilled for a thick, tall canopy to aid in weed suppression. These crop species are more economical to grow than corn for silage, bring many of the same nutritional components into feed rations, and can have a distinct advantage in maintaining total forage production during crop years that turn out dry or hot.

Warm-season grass species generally have more heat tolerance than cool-season grass species. Native warm-season grasses are also quite drought-tolerant, often found in dryland pastures in the Plains states. They include big bluestem, Indiangrass, little bluestem, side-oats grama, blue grama, and others. For best persistence, allow these grasses to grow to 18" or more before grazing, and pull cattle off when stubble is 8-10" in height. Extreme drought stress can shorten or curtail the grazing potential, so be prepared with alternative feeds when stocking rates can no longer be maintained.

Small grains – At this stage, spring small grain harvest for forage is many weeks in the rearview mirror. But the opportunity to plant small grains for late fall or next spring forage harvest is coming right up. Forage oats can be an option for late-summer planting given sufficient soil moisture to sprout and grow. Winter small grain planting is around the corner. If your total forage production is less than you'll need for the coming year, small grains planted with the intention of forage harvest early next summer could be just the crop to tide you over until the next corn or sorghum-sudangrass harvest.

Be aware of the potential for excess nitrates in drought-stressed grasses, corn for silage, and the sorghum species. Nitrates can accumulate in the lower portion of the stalk or stem. If you've applied a lot of fertilizer nitrogen or manure, it can be advisable to leave 8-10" of the lower stalk unharvested in corn or sorghum species, since excess nitrates in the diet can cause animal health problems and lead to dangerous "silo-gas" during silage fermentation. Fortunately, the ensiling process reduces the overall nitrate content by up to half. Unfortunately, the excess nitrates dissipated during the ensiling process are converted to oxides of nitrogen commonly known as "silo-gas," a reddish gas with a bleach-like odor that can be most prevalent during the first few days of silage fermentation. You can reduce nitrate concerns by ensiling as haylage, and testing drought-stressed hay or haylage for nitrates. Even high-nitrate concentrations can be fed if an appropriate dilution or substitution of low-nitrate hay or haylage is added to the diet to reduce the overall nitrate in the ration. Excess nitrates in the plant will begin to dissipate following sufficient rain to relieve drought stress, as plants resume the function of converting nitrates into amino acids and proteins. Very high concentrations of nitrate can take up to two weeks to dissipate following rain and relief from drought stress.

Consult your state's Extension recommendations for information on testing and managing forage nitrate levels.