



Early drought management tips for pasture-based livestock producers

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Pasture Management

Stocking rate. During a drought is a good time to evaluate a farmer's stocking rate. If pastures are overgrazed and farmers are feeding hay now it is likely because they are overstocked. Many farmers would benefit from reducing their stocking rate. They should consider culling unproductive, old or otherwise defective animals while prices are high.

Grazing management. During drought, continuously grazed fields will quickly become overgrazed and unproductive. In a rotational grazing system animals are moved through pastures utilizing available forage until no pasture is ready for grazing. At that time animals are managed in a sacrifice area where they are fed hay. Once rains return well rested pastures will recover rapidly while overgrazed pastures will not. In continuous grazing systems animals pastures need to be carefully monitored and if close grazing occurs they need to be removed until grass is above the minimum height to graze. The importance of grazing management during a drought can't be overemphasized.

Forage growth and regrowth will be slower during drought. Hence, adequate management of grazing will require extra care to balance the amount of forage available in the pasture and the amount of forage needed by the grazing livestock. In order to prevent overgrazing, remove livestock from pastures once the forage has been grazed off to the recommended heights. Guidelines to heights start and stop grazing different types of pasture are provided in AG-939: <https://content.ces.ncsu.edu/pasture-grazing-heights-for-rotational-stocking>. Because of the drought, expect much longer rest periods will be needed before another grazing event. If pastures are continuously stocked, consider removing livestock (just like when stocked rotationally) once the pastures have reached the minimum height.



Harvested forage management. It is critical that farmers plan for their winter hay supply given many are currently feeding their winter hay. Producers should do a feed inventory of their hay and any standing pasture biomass available to determine the possibility of future feed needs. Hay should be sampled for nutrients and nitrate so it can be fed in a balanced ration. Corn silage should be sampled for nutrients and nitrate for ration balancing as well. Drought damaged corn silage is usually higher in moisture and protein than you might expect. Knowing the nutritive value of all your harvested feeds will allow you to allocate the best hay or silage to the groups that have the highest requirements.

Alternative feeds

Alternative feeds are widely available that may help farmers with feed shortages. Many row crops have been damaged by the drought, so there will be opportunities to harvest and market such crops as forages.

Grazing crops to salvage feed value. Crops like corn and soybeans are sometimes grazed to recover feed value. This may be the most convenient and practical way to get value from such damaged areas. Anytime animals are turned into a new unfamiliar area they should be full of good quality hay. Hungry animals sometimes eat things they should not, and also increases the rate at which they eat. Make sure the fields to be gleaned don't have substantial amounts of toxic weeds like sicklepod. If you suspect high nitrate levels (see later section of this document) then test before grazing.

Alternatives for winter feeding. Farmers that find themselves short of hay may consider alternatives for their winter feeding plan. Consider purchasing silage, cotton gin byproducts or other alternatives to hay. Shop early and store hay properly so it is not damaged by weathering.

Corn Silage. Corn planted for silage will likely have reduced grain yield, which will mean the resulting silage may be higher in moisture and protein, but lower in energy, than in normal silage. Make sure to test for nitrate.

Corn silage or hay for salvage of grain crops. Drought damaged "Corn for Grain" with very low grain yield may be most effectively harvested as silage. In areas where silage is produced it will be common to find custom harvesters that can help harvest this material. It is also possible to make hay out of corn. It has to be cut with a roller type hay conditioner, or a rotary mower. This works well when the drought lingers. Note that about half the nitrate will be degraded in corn silage, but this will not occur if the corn is made into dry hay. Nitrate is

concentrated in the lower stalk of the plant, so increasing cutting height to 12 to 18 inches will result in a considerably lower concentration of nitrate in the resulting silage.

Corn stover. Corn Stover makes a surprisingly good feed for cows. It is low in protein and high in fiber and requires both energy and protein supplementation. During the drought of 2007 a very large amount of corn stover was harvested as part of the “Golden Hay” program that helped sustain the beef industry during that severe drought and feed shortage. Many farmers now regularly bale corn stover, and if the drought continues we can expect more to be baled this fall.

Soybeans. In situations where heat and drought has resulted in a high level of biomass but low bean yields there may be a benefit to grazing or harvesting for forage. As long as the leaf is on the plant it will be of good feeding value to cattle. As soybeans mature the stalks get unpalatable to livestock, so harvest should be done as early as possible. Soybeans can be cut and wilted to 50% moisture for baleage. Soybeans to be cut for dry hay should be handled carefully because the leaves dry out faster than the stem, resulting in a potentially high level of leaf shatter. Round bales of soybean hay take up water readily, so covered storage of some kind is recommended.

Agrochemical concerns

Make sure to identify post-application times for any chemicals used in salvaged row crops. Glyphosate has a 14 day post-application waiting period in soybeans and 7 day waiting period in corn before harvesting for forage or grazing. This information can be found in the VA Tech Field Crops Pest Management Guide (www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/456/456-016/ENTO-566.pdf).

Crop Insurance

If considering salvaging row crops for forage the farmer should contact their crop insurance agent. Often you can salvage fields but leave a designated strip for determining insurance settlements.

Lab Analysis

Feed analysis. It is critical to sample and analyze forages for nutritive value, and also to screen for high levels of nitrate. It is well known that nitrate and aflatoxin are both likely to be elevated in corn silage as a result of drought stress. Consider analyzing standing corn for nitrate now to help guide harvest, but analyze corn forages for aflatoxins and nutritive value once the silage is harvested and fermented. There is little sense in screening standing corn for aflatoxin due to difficulty sampling and potential changes in toxin level after sampling.

Sampling standing corn for nitrate. It may be desirable to sample standing corn to determine nitrate levels to plan alternative uses. Sampling would be primarily to determine nitrate levels. This may be in preparation for grazing or for chopping for silage or hay. According to Dr. Ronnie Heineger at NCSU, "Corn that has suffered drought from much of the growth phase from V5 to VT will have lower nitrate levels than that which only suffered dry weather from V10 to VT". Also "The potential for nitrates in the forage is highest where heavy manure applications or high levels of N fertilizer have been used." This is the recommended approach for screening a field to see if it might be too high in nitrate to safely green chop or chop for silage.

If you suspect high nitrate in a field and want to check it, select 10 plants at random from different areas of the field. Cut at 6 inches high, and remove the first 12 inches of stalk (from 6" to 18" above the ground, removing leaves and ears). Chop stalks into one inch pieces and mix in a bucket. Mix carefully and submit a one gallon ziplock bag full to NCDA. Go to this website to submit samples:

<https://apps.ncagr.gov/AgRSysPortalV2/forageanalysisreport>

When asked for type of analysis on the form, the drop down menu has an option of "Nitrate Only" which is a free analysis. If nitrate is above 1% consider delaying chopping or grazing. Grazing is less risky than feeding silage or hay with the same level of forage nitrate. This is because the animals eat more selectively and slower during grazing, and the nitrate is released from the plant cells into the animal's stomach.

After rainfall you can expect nitrates to be elevated in corn and other crops because the root system is able to uptake more nitrogen than the damaged plant is prepared to use. It is strongly recommended to wait at least two weeks after adequate moisture to harvest such crops.

The other scenario in which to consider sampling is routine sampling of corn silage for ration balancing. There is \$10 charge for nutrient analysis and nitrate is included. We strongly recommend all silage harvested during or following drought be analyzed because the energy value is usually less than normal corn silage, but the silage may be higher in moisture content and protein than is typical. Take care in obtaining a good sample by exposing the surface of the silage in the bunker, pit, or ag bag. Sample from multiple locations in the top third, middle third and bottom third of the exposed face. Mix in a bucket and submit a one gallon sample to the lab.

Sampling other forages for analysis. Baled hay may also contain nitrate at a level that could cause problems when feeding to animals. Sample hay using a core sampler, and get a

representative sample of 20% of a lot of hay, or at least 10 bales. Submit at least one full quart bag when sampling using this method.

Nitrate levels of concern in forages. Nitrate levels of concern need to take into account the adaptation of animals to nitrate. Prior exposure to nitrate makes animals more tolerant of higher levels. Thus, critical levels are lower in unadapted animals. Levels lower than 0.25% nitrate ion for unadapted cattle and 0.5% nitrate for adapted cattle pose no risk. Critical levels are given in the discontinued fact sheet “Nitrate Management in Beef Cattle” which is attached here for your convenience.

Interpreting Nitrate levels. Make sure you know how to interpret the nitrate levels you receive. Note that the NCDA&CS lab reports nitrate ion levels, while other labs may report ppm nitrate-N. Variations among labs in how they report nitrate levels can sometimes lead to misinterpretation of the levels presented.

Commercial labs. While the NCDA&CS lab provides a valuable forage analysis service, commercial labs often provide quicker sample turnaround and can analyze for additional forage nutritive characteristics that NCDA&CS does not test for. Dairy farmers often use these more specialized analyses. Many farmers in our area use either Cumberland Valley Analytical Services (www.foragelab.com) or Dairy One (www.Dairyone.com) for commercial forage analysis and each are certified labs that do a good job.