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Forage Focus: Alfalfa Management Considerations in a Drought

[Rory Lewandowski](#), Extension Educator Wayne County and Crossroads EERA &
[Mark Sulc](#), OSU Extension Forage Specialist

An established alfalfa plant has a deep taproot that enables the plant to extract moisture from the soil and continue growing even under drought conditions. In addition the alfalfa plant has the ability to go into a prolonged dormancy under severe moisture stress and then recover once rainfall begins again. Many areas across the state of Ohio are facing drought conditions and the short term forecast is not encouraging. There are reports of alfalfa regrowth beginning to bloom at 4 to 6 inches of height in some fields and growers have questions about alfalfa management under these conditions.

Dry matter accumulation in alfalfa is most rapid when the plant is in vegetative and early reproductive growth stages. Once the plant begins to flower dry matter accumulation slows down. By the time the plant is at full flower or 100% bloom, no further dry matter accumulation will occur. So, in our example of alfalfa beginning to bloom at 4 to 6 inches of height, there will be very little additional tonnage added by delaying harvest.

Here are some things we know about alfalfa growth under drought conditions.

- * The number of basal buds and the number of shoots or stems/plant is reduced when the alfalfa plant experiences moisture stress in the first 14 days after a harvest.
- * The stem internode length is reduced under moisture stress; thus the blooming that is being seen at 4 to 6 inches of height.
- * Leaf area/leaf size and leaf growth rate is reduced under moisture stress, although to a lesser degree than stem growth. The result is that the leaf to stem ratio is higher under drought stress. A higher leaf to stem ratio equals higher forage quality.

If a decision is made to cut the alfalfa stand under drought conditions, alfalfa should be mowed at the normal cutting height. There is no advantage to raising the cutting height. Alfalfa can regrow from either axillary buds higher up on the stubble or from buds on the crown, but stems produced from axillary buds are smaller and produce lower yield than stems growing from the crown buds. So cutting at a high stubble height will not result in increased regrowth and may even result in lower tonnage of the regrowth. Besides, if nonstructural carbohydrate reserves are adequate in the plant, most of the regrowth will occur from the crown even if a higher stubble is left on the plant. So you might as well harvest alfalfa at normal height and gain all the yield that is there to be had.

The bottom line is that drought induced moisture stress can cause plants to move through maturity stages quicker, and plants bloom sooner on fewer and shorter stems. While quality may be improved, quantity is reduced. Since quality is not declining as rapidly with advancing maturity as is the case under normal growing conditions, it may be a good idea to let the plants approach 100% bloom before harvest. This will allow the plant to build nonstructural

carbohydrate reserves. In some cases there may not be enough quantity to make a machine harvest cost effective.

One option that might be considered if livestock are available is to salvage a low tonnage yield by grazing the alfalfa. Take precautions to prevent livestock bloat if alfalfa is grazed. Those precautions include, do not turn livestock into alfalfa hungry, do not graze alfalfa when the dew is on it, make sure stocking density is high enough to prevent animals from selectively grazing only the tops of plants, and, consider the use of a bloat preventative.