

Preparing Your Ranch for the Next Drought

Larry A. Redmon and Mark McFarland
State Forage Specialist and State Soil Fertility Specialist, College Station

They say hindsight is 20-20. The question is: What lessons can we learn in hindsight to minimize the negative effects of the next drought? Because there certainly *will* be a next drought. Below are several key factors to help prepare for, and survive, the next drought.

Adjust Stocking Rate

Even when the production system is irrigated, drought will be part of the risk associated with forage production, and by extension, livestock production. One immediate and dramatic strategy that can mitigate the negative effects of future drought events is to adjust the stocking rate of the cow herd to 75% of what could be maintained based on long-term precipitation and forage production records. This stocking rate *should* be based on several years (more is better) of observing the quantity of forage produced under the typical management strategy. Additionally, cow size has increased over the years. Larger cows require more forage; thus the stocking rate should also be adjusted for a difference in cow size if the ranch used to run 100 cows 25 years ago when average cow size was 900 to 1000 pounds/head.

When stocked at 75%, livestock producers usually will not be overstocked during most drought years. This prevents having to purchase expensive feed in an attempt to “feed your way out of a drought”. The 75% stocking rate also will reduce the need to sell cows at a time when many others are being sold and prices are deflated. During years of good forage production, stocker calves may be used as flex grazers to utilize excess forage. Calves may come from the producer’s own herd (keep them longer) or may be purchased or grazed on a gain or head/day basis. Excess forage in good years also may be harvested and stored for drought years or sold as hay.

Forages should never be grazed “to the roots” under any circumstance; removal of most or all green leaves deprives the plant of the ability to convert sunlight into carbohydrates (energy) vital for plant growth. Decreased carbohydrate production results in decreased root production, thus reducing the plant’s ability to obtain necessary water and nutrients from the soil. The relationship between leaves and roots is critical at all times, but especially during drought. Besides allowing the plant to carry out optimum photosynthetic activity, adequate green leaf residue also reduces soil moisture evaporation and promotes infiltration of precipitation that is received. When there is little or no forage residue, raindrop impact on bare ground can damage soil structure resulting in surface crusting, reduced rainfall infiltration and much greater water loss as runoff. For bermudagrass, a target residue height should be no less than 4 inches while other species will be different depending on their growth habit. Some of the tall, bunch grasses like little or big bluestem should not be grazed shorter than 10 to 12 inches.

Store Hay and Use Hay Substitutes

If you do not produce your own hay, “drought management hay” should be purchased in non-drought years and properly stored. Properly stored hay will retain its nutritive value for many years. Hay should be stored under a roof on a well-drained or impervious surface. Hay tarps may also be used but the life expectancy is less than a storage barn. Finally, round bale hay may be stored in the field, but the loss due to weathering will be much higher compared to hay stored in a barn or under a tarp. Hay stored outside should be stored in rows oriented north-south on a well-drained slope. Flat ends should be together, but there should be 2-3 feet between the round sides of the rows. More importantly, purchasing hay during a drought can be difficult and costly, and often producers are forced to buy what is available even if it is low quality. To stretch limited hay supplies, use corn or other plant by-products as substitutes for hay. However, forage should generally comprise at least 50% of the diet. One pound of corn will replace about 2.25 pounds of hay, so 450 pounds of corn could substitute for a 1000-pound round bale of hay. Nevertheless, be aware that attempting to “feed your way out of a drought” can be very expensive. Do not be afraid to sell the cattle! Cut your losses!!

Manage Fertilizer Inputs






Fertilizer is never inexpensive, and all fertilizer nutrients have increased in cost dramatically in recent years. Thus, the first inclination of livestock producers is to not fertilize during drought. This is seldom a wise strategy. Nitrogen is essential for photosynthesis, which enables the plant to produce its own food. Phosphorus and potassium are critical for root development, water use efficiency, and overall plant vigor. Soil testing and implementing a well-balanced fertility program can help plants survive drought and recover more rapidly after the drought has ended.

If fertilizer already has been applied, but there has been no significant precipitation, fertilizer will remain in the upper soil profile. Although nitrogen is subject to some volatilization loss as ammonia gas to the atmosphere under certain conditions (wet soil or sod, high soil pH, elevated temperatures), the fertilizer investment in the pasture program will not have been wasted. When precipitation does occur, the plant will re-initiate growth and plant uptake of the fertilizer nutrients will occur.

If fertilizer has not been applied, the tendency of many producers is to take a “wait and see” attitude regarding a break in the prevailing dry weather pattern. This strategy reduces financial risk but may result in missing the first good precipitation event. Pay attention to weather forecasts and if it appears that the pattern may change and offer a higher potential for precipitation, make every attempt to get the fertilizer in the field before that next rain. Fertilizing immediately AFTER a rainfall event is not recommended. Addition of a urease inhibitor to urea-containing fertilizers (urea and liquid 32%) also may be justified to reduce potential nitrogen volatilization losses when chances for rainfall are uncertain.

Summary

The following key points should be remembered regarding preparation for the next, and inevitable, drought event.

-  For commercial livestock producers, attempting to feed your way out of a drought is usually not economically viable and should not be attempted.
-  The cow herd should be stocked for 75% of what the forage resource can produce based on long-term records.
-  Properly fertilized forages tolerate and recover from drought better than poorly fertilized forages.
-  It is generally better to have fertilizer in the field waiting on a precipitation event than to fertilize after rain, so that the rainfall can move nutrients into the plant root zone for uptake.
-  Do not be afraid to sell cows; protect your forage resources by culling deeply before the drought becomes too severe.

Produced by the Department of Soil and Crop Sciences
For more information, go to: soilcrop.tamu.edu

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas AgriLife Extension Service is implied.

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin. The Texas A&M University System, U.S. Department of Agriculture, and County Commissioners Courts of Texas Cooperating.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture, Edward G. Smith, Director, Texas AgriLife Extension Service, Texas A&M stem.