

Drought Risk Management Practices for Beef Cattle Farms

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If you ask a beef producer what their output is, they may say meat, when in fact, their answer should be forages. Without abundant forages, producers cannot increase the mass of grazing stock. The volume of forages in a pasture affects stocking densities and the amount of time cattle can spend in a pasture. Maximum forage production is accomplished by providing maximum cover, balanced fertility, deep well drained soils, and plant-available water.

The water that falls on and over a farm's landscape is transient. A producer's goal should be to preserve water on the farm until it can be replenished again by the next precipitation event. This means that infiltration and water retention need to be maximized and the volume of runoff that can cause erosion should be minimized. Producers who focus on these goals should be able to enhance beef production and will be able to manage better the moderate agricultural droughts that we encounter in our area. Drought preparedness starts with the implementation of Best Management Practices (BMPs) on farms by utilizing an Ag Water Quality Plan.

Implementing BMPs that support the following "Principles of Drought Preparedness" can improve a producer's ability to cope with the additional stress a drought can add to soil, plants and livestock.

Principles of Drought Preparedness

- **Implement Rotational Grazing.** Keep soil covered in vegetation to eliminate erosion. Raindrops can hit exposed soil with an explosive effect, launching soil particles and degrading soil structure. Once dry, the surface of the soil can experience hydrophobic (water repellent) capping, which can further limit the infiltration of water. All these effects will be more problematic on sloped pastures.
- **Control Animal and Vehicle Traffic.** Overgrazing and compaction are stresses that lower water holding capacity, infiltration rates, organic matter content, and forage yield. At the same time, overgrazing and compaction increase pasture deterioration, evaporation, and runoff.
- **Increase Soil Organic Matter Content.** Each one percent increase in organic matter holds approximately 27,000 gallons of water per acre, which is the equivalent of infiltrating one hundred percent of a one-inch rainfall event.
- **Utilize Terracing.** Subsoiling compacted soils heaves up the ground where the ripper passed through the soil profile. When subsoiling is conducted along the contours of hillsides, it creates a mini terrace. These terraces reduce the steepness and slope length, thereby slowing water runoff, and increasing infiltration rates. The combined effects increase forage production when properly grazed.
- **Establish Forage Diversity and Fertility Management.**
- **Choose an Appropriate Stocking Density and Rotation Timing.**

- Harvest Water and Develop Water Sources. These practices facilitate rotational grazing. Water harvesting has the added benefits of using collected rainwater to reduce water bills, while providing water for cattle and possibly reducing runoff and erosion.
- Provide Plenty of Shade. Adequate shade reduces the water requirements of cattle, while providing relief from solar radiation.
- Situational Confinement. Producers can reduce the long-term effects of overgrazing during a drought by confining animals to a dry lot with shade and hauling feed to them. Lots that have been reinforced with all-weather surfaces, which can facilitate manure management are ideal.

Overtaxing soil resources can and will lead to damage. In extreme cases, the damage caused can be very difficult to correct. Simply removing the cattle or allowing natural methods to correct the damage may not work or may take many years to correct using natural forces. In some cases, improving infiltration rates requires mechanical correction. All these negative effects are magnified when drought strikes. Producers should implement practices that preserve topsoil and increase organic matter content, while avoiding compaction.

The previously suggested practices are presented as a systematic approach to dealing with drought. They require a producer to implement adaptive management strategies that modify the operation to the environment instead of modifying the environment to the operation. Practices that increase, secure, and optimize the available water on the farm should be chosen to increase the effectiveness and efficiency of the operation. Producers should prioritize addressing areas that are the most limiting production areas through self-evaluation and implement additional BMPs or practices to offset the limitations. Providing a source of water makes a field usable but, may reveal soil fertility issues or the need for improved forages, indicating that this is a dynamic process. More than likely, the processes and practices implemented in this procedure complement a producer's agriculture water quality plan. The beauty of this process is the improvement of the overall productivity of the farm, while maintaining and improving the integrity of natural resources.