



Cattle Producer's Handbook

Drought Advisory: Managing Irrigated Pastures and Grass Haylands

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Drought, an environmental stress with periods of limited or no water during the growing season, reduces forage production for grazing and haymaking. Prolonged drought forces livestock and hay producers to better manage their fields to maximize recovery after the drought ends. Forage produced during a drought may be stressed enough that livestock risk death by simply eating it. The following strategies will help maintain healthy perennial pastures and hayfields, reduce death losses to livestock consuming drought stressed forage, and improve recovery of lands after the drought ends.

Strategy 1: Protect the Plant Crowns

Irrigated pastures and grass hayland plants have a safety mechanism for survival—the crown. A crown develops at the base of all pasture grass and legume plants as they mature. The crown is also commonly referred to as “the stubble” or “that bottom 3 or 4 inches of growth that is next to the soil surface.” Each crown acts like a bank account for the plant storing sugars and carbohydrates used for plant growth and life-supporting respiration.

Without an adequate crown many forage plants simply die. This is one reason why pastures deteriorate from overgrazing. Avoid grazing all pastures below a 3-inch stubble height. Pasture stubble height can easily be measured with a ruler over a pasture. The crown stores sugars so livestock will want to graze down to the soil surface to eat these sweet plant tissues.

To ensure pastures are not overgrazed, use a designed sacrifice area where damage is restricted to one location for the duration of the drought. By feeding hay or other feedstuffs in the sacrifice area you will protect those crowns of the highly productive perennial forages. Above all, save the crown.

Strategy 2: Know the Plants in the Pastures

Identifying the dominant grasses and legumes in each field increases flexibility in prioritizing fields that are able to withstand drought from those that cannot. Drought tolerance is related to the extensiveness and depth of the plant's roots. Some irrigated grasses, such as orchardgrass and tall fescue, have larger and deeper root systems, which make them more tolerant of drought conditions.

Specific vegetative parts can be used to identify desirable grasses. Contact your County Extension Educator or Natural Resource Conservation Service (NRCS) personnel for resources to help identify grasses on your operation. Weeds are water wasters. Identifying and controlling weeds early in the season will save valuable water for desirable species and increase quality of forage since some weeds accumulate high concentrations of nitrates.

Strategy 3: Sample Soils and Change Fertilizer Applications

Sample soils as early as possible. Forage plants must rebuild their root systems every year, and this requires adequate phosphorus. Apply phosphorus as early as possible to stimulate root rebuilding. Maintain soil potassium and sulfur based on soil test results. Reduce nitrogen applications by 50 percent or more. This will reduce total forage yield, but the forage that is produced should be lower in nitrates that causes nitrate poisoning and death in livestock.

Nitrate-poisoned livestock will have chocolate brown blood that quickly turns red once exposed to air. Test all grazed and hayed forage for nitrate accumulation before feeding to livestock. Monitor forage nitrate levels closely if grazed, as nitrates will increase with greater drought stresses.

Pregnant cattle are more susceptible to nitrate toxicity and should not receive feeds containing greater than .5 percent (or 5,000 ppm) nitrate on a dry matter basis. Nitrate levels greater than 1 percent (or 10,000 ppm) should not be fed, or fed with great discretion, to limit nitrate intake. Sudangrass, sorghum, oats, millet corn, pigweeds, and lambsquarter weeds are usually high in nitrates.

Strategy 4: Rotational Grazing

By using rotational grazing the pastures have longer to recover if they have received any irrigation water or rainfall. Longer recovery periods, intermixed with using the sacrifice area, will ensure the stubble height is maintained at 3 inches and above. Feeding hay on the pasture is not recommended because the stubble growth will likely have higher sugar concentrations than the hay, therefore, livestock are likely to select the pasture stubble over the hay. If land were being taken out of perennial pastures for the summer, areas could be planted with a summer annual crop, such as sudangrass, for higher forage production during the highest heat of the season. Sudangrass should also be rotational grazed, maintaining a minimum stubble height of 6 inches.

Strategy 5: Reducing Herd Size or Purchasing Additional Forage

Using low quality forage or grass seed straw with cheaper supplements may prevent excess culling of the herd. Purchasing cheaper forage products early and using them will save both the herd and the need to replant an overgrazed, destroyed pasture. Often the cost of reseed-ing will exceed \$200 per acre, excluding labor costs. In addition to replanting costs, forage production will be lost while the new pasture is establishing. Overgrazing a pasture during droughty conditions is penny-wise and pound-foolish when carried over 10 years.

During a drought, it is also advantageous for managers to evaluate substituting grain for hay because more energy per ton can be transported compared to hay. Developing a proper feeding ration is necessary before supplementing grain concentrates for forages in a cattle ration.

Long-term drought conditions may require managers to reduce livestock numbers according to current and future forage supplies and the economic status of the farm. If the herd needs to be culled, do it early to save as much forage as possible for the remaining high-quality animals. Early weaning of calves, depending upon the condition of the cow, age of the calf, and the economic status of feed and beef cattle may prove to be beneficial during severe drought conditions and periods of high cost feed.

Strategy 6: How to Repair a Damaged Field

If the pasture plants were strong before the drought, they have a better chance of recovery than those constantly overgrazed. Weaker plants will die leaving bare spots and holes on the soil surface. Blowing weed seeds can establish themselves in those bare spots, so early identification and control of establishing weed seedlings is important.

Increasing phosphorus applications will enhance forage root development making those plants stronger and more competitive with weeds and the forces of nature. Continue limiting nitrogen until plants have recovered, establishing adequate crown area and new crop development.

In some cases, overseeding is possible, but certain conditions should be met to increase success. Harrow the pasture with tines down in order to scratch and open up the surface. Broadcast or drill the seed at about 1.5 times the recommended seeding rate when rains or irrigation water returns.

For forage grasses and legumes, the depth of seeding should not exceed 1/2-inch. Small seeds should be planted shallower than large seeds. When mixtures are sown, the depth of seeding should favor the smaller seeded species.

Graze the pastures after overseeding until the new grass is about 4 inches tall and then remove livestock. Allow the newly establishing plants an opportunity to grow and reach sunlight. After establishing plants reach 10 inches or so in height, then graze lightly the remainder of that season so the new plants develop their own crowns for winter survival.



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