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# MANAGING IRRIGATED PASTURES AND GRASS HAY LAND

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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 minimize recovery after the drought ends. Forage produced during a drought may be so stressed that livestock risk death by simply eating it. Following are several strategies to maintain healthy perennial pastures and hayfields, to reduce loss of livestock from consuming drought stressed forage; and practices to consider after the drought ends.

## Strategy 1.

### Protect Plant Crowns

The safety mechanism for survival of grass legume plants on irrigated pastures and grass hay lands is the plant crown. A crown develops at the base of all pasture grass and legume plants as they mature. The crown maybe referred to as “the stubble” or “that bottom 3 or 4 inches of growth next to the soil surface.” Each crown acts as a bank account for the plant, storing sugars and carbohydrates for plant growth and life-supporting respiration. Without an adequate crown many forage plants simply die. Crown loss is one of the main reasons why pastures deteriorate from overgrazing. Because the crown stores sugars, livestock want to graze down to the soil surface to eat these sweet plant tissues.

Avoid grazing all pastures below 3-inch stubble height. You can easily measure stubble height with a ruler over a pasture. To ensure pastures are not overgrazed, designate a sacrifice area to restrict damage to one location for the duration of the drought. By feeding hay or other feedstuffs in the sacrifice area you will protect crowns of the

highly productive perennial forages. Above all, save the crown.

## Strategy 2.

### Know the Plants in the Pastures

Identify the dominant grasses and legumes in each field so you can increase management flexibility and prioritize fields that can withstand drought from those that cannot. Drought tolerance is related to extensiveness and depth of roots. Orchardgrass and tall fescue have larger and deeper root systems, characteristics that make them more tolerant of droughty conditions. You can identify desirable grasses by vegetative parts; for example, orchardgrass always has flattened stem bases at the crown.

Weeds are water wasters. Identifying and controlling weeds early in the season will save valuable water and increase quality of forage. Some weeds accumulate high concentrations of nitrates, which can harm livestock.

## Strategy 3.

### Soil Sample and Change Fertilizer Applications

Take soil samples as early as possible. To rebuild their root systems every year, forage plants require 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% or more. This will reduce total forage yield but the forage produced should be lower in nitrates that may cause 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 cut hay forage for nitrate poisoning before feeding to livestock.

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Monitor forage nitrate levels closely if grazed, as nitrates increase with greater drought stresses.

#### **Strategy 4. Rotational Grazing**

By using rotational grazing, you allow the pastures longer to recover if they have received any irrigation water or rainfall. Longer recovery periods, and use of a sacrifice area, will ensure maintaining the stubble height at 3 inches and more. We do not recommend feeding hay on the pasture since livestock will still want to eat the stubble with its higher sugar concentrations. If you plan to take land out of perennial pastures for the summer, plant with a summer annual crop such as sudangrass for higher forage production during the highest heat of the season. Rotational grazing of sudangrass will be important. Leave at least a 6-inch stubble after each grazing.

#### **Strategy 5. Reducing Herd Size or Purchasing Additional Forage**

Using low quality forage or grass seed straw and cheaper supplements may prevent excess culling of the herd. Purchase cheaper forage products early and use them to save both the herd and replanting an overgrazed, destroyed pasture. Often the cost of reseeded will exceed \$200 per acre, before labor costs. Also count the loss of forage during the time it would take for the new pasture to become established. Overgrazing a pasture during droughty conditions will prove “penny wise and pound foolish” for the next 10 years. If the herd needs to be culled, do it early to save as much forage as possible for those animals that remain.

#### **Strategy 6. How to Repair a Damaged Field**

Pasture plants that were strong before the drought have a better chance of recovery than those constantly overgrazed. Weaker plants will die, leaving bare spots and holes on the soil surface. Because blowing weed seeds can establish themselves in the

bare spots, early identification and control of establishing weed seedlings is important. Increasing phosphorus applications will enhance forage root development making plants stronger and better able to compete with weeds and drought in the face of environmental stress. Continue limiting nitrogen until plants have increased the crown area and have begun new crop development.

In some cases, overseeding is possible, but certain conditions should be met to increase success. Harrow the pasture with tines down 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 return. For forage grasses and legumes, the depth of seeding should not exceed 1/2 inch. Plant small seeds more shallowly than large seeds. When sowing mixtures, the depth of seeding should favor the smaller seeded species. Graze the pastures after overseeding until the new grass is about 4 inches tall, then remove livestock. Allow the newly establishing plants an opportunity to grow and reach sunlight. After establishing plants reach about 10 inches in height, graze lightly for the remainder of that season. Light grazing will allow the new plants to develop their own crowns for overwintering and survival.

Information on soil moisture monitoring and crop evapotranspiration from Washington’s Public Agricultural Weather Stations (PAWS) and Washington Irrigation Scheduling Expert (WISE) are available on the Scientific Irrigation Scheduling (SIS): web page <http://sis.prosser.wsu.edu>

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