RANGE

Managing Small Acreage Pastures During and After Drought

no. 6.112

by L.K. Warren and P. Aravis [1]

Maintaining the health of small acreage pastures can be challenging, even in years with normal rainfall and snowpack. The semi-arid climate of Colorado prevents dry-land pastures from achieving the same level of productivity observed in states that receive greater precipitation. As a result, small, non-irrigated pastures are sensitive to grazing and hoof traffic.

Drought conditions further hamper pasture productivity. Lack of moisture suppresses plant growth and retards root development. Without adequate root structure, plants are unable to extract moisture and nutrients from the soil, which further limits plant growth. In order to survive, plants rely on the few leaves they have to capture solar energy and manufacture sugars through the process of photosynthesis. These sugars, along with small amounts of stored reserves, are used to support basic life functions.

Allowing animals unlimited access to pastures during drought can further weaken plants. Grazing and hoof traffic removes leaves necessary for photosynthesis. With growth already limited by drought, the plant is forced to utilize more of its stored sugar to grow replacement leaves. Repeated use of the pasture can eventually deplete the plant's energy reserves, resulting in death of the plant or severely reducing its chance for survival.

Quick Facts...

Small acreage pastures are too small to be a significant source of feed for grazing animals, but can provide a place for brief periods of exercise.

Allowing animals unlimited access to small, non-irrigated pastures can severely damage vegetation.

Turn animals onto small pastures only for short periods of time.

Deny animals access to pasture when grass is 3 to 4 inches high (or less), and do not allow them access until grass grows to 6 to 8 inches.

Confine animals to a "sacrifice area" when pasture cannot be used.

Minimizing Damage to Pastures During Drought

If pastures are managed properly during times of low moisture, the effects of drought will be less severe and pastures will rebound faster when precipitation is sufficient. In contrast, if pastures exit the drought in poor condition, the road to recovery is much longer. It is worthy to note that management practices that minimize damage to pastures during drought are also the same for maintaining healthy pastures in a normal year.

Decrease your animal's grazing or turnout time

Most small acreage pastures in Colorado are overused. When animals are allowed continuous access to small pastures, grazing and excessive wear from hooves will destroy all vegetation, allowing weed invasions and erosion of topsoil. In addition to being an eyesore, these conditions are unhealthy for the environment, and the dust and mud churned up from bare ground can pose health problems for your animals.

Because drought weakens plants and amplifies the effects of grazing, the key to managing small pastures is to limit the time that animals spend on pasture. Do not put animals out to pasture 24 hours a day. Instead, restrict pasture access between 30 minutes and two hours a day. This is more than enough time to give animals ample free exercise. Monitor the vegetation in your pasture to determine if you need to reduce turnout time further or completely eliminate pasture turnout altogether (Table 1).

Colorado State University Cooperative Extension

Figure1. On average, allow plants to grow 6 to 8 inches high before turning animals onto pasture. Remove animals and rest pastures when grass has been grazed or trampled down to 3 to 4 inches.

Table 1. Use plant height to determine when it is acceptable for animals to have access to pasture and when animals must be removed to give pasture a rest.

Plant Species	Minimum Plant Height (inches)	
	Pasture turnout acceptable	Remove animals and rest pasture
Alfalfa	6 – 10	3 – 4
Brome, smooth	5 – 8	3 – 4
Fescue, Tall	5 – 8	3 – 5
Fescue, Creeping Meadow	5 – 10	3 – 5
Kentucky Bluegrass	3 – 5	2 – 4
Orchardgrass	5 – 8	3 – 5
Sideoats, Grama	4 – 5	2 – 4
Switchgrass	12 – 18	8 – 10
Timothy	4 – 6	2 – 4
Wheatgrass, Crested	4 – 6	2 – 4
Wheatgrass, Intermediate	5 – 8	3 – 5
Wheatgrass, Pubescent	5 – 8	3 – 5
Wheatgrass, Western	5 – 8	3 – 5
Wheatgrass, Tall	8 – 12	5 – 8

Adapted from: Natural Resources Conservation Service Standards and Specifications, TG Notice #125, April 1985.

Leave some leaf behind

Lack of adequate forage during drought causes animals to graze available grasses down to the soil. To avoid overgrazing, remove animals from pastures when grass is grazed down to an average of 3 to 4 inches (Table 1). Leave plants with some leaf area for photosynthesis to help them rebound from grazing. Leaves also shade the ground and reduce evaporation of precious soil moisture.

Give pastures longer rest periods

Pasture plants need a rest from grazing and hoof traffic to restore their energy reserves. Reduced plant growth during drought means rest periods will be longer. As a guide, do not return animals to the pasture until grass regrows to a height of 6 to 8 inches (Table 1).

House animals in a “sacrifice” area

Designate a small area of property as a “sacrifice area” to house your animals when they cannot be on pasture. A sacrifice area can be a small paddock, dry lot, corral, or run off of a stall where loss of grass cover will not have a major impact. In effect, this area is “sacrificed” to protect your pasture from over-use at critical times. A sacrifice area allows flexibility to house your animals when pastures need a rest from grazing. It is also an ideal location to provide supplemental hay and grain and a centralized water source (Figure 2).

Subdivide pastures into smaller units

Animals often waste a considerable amount of pasture forage by trampling, grazing the best tasting plants, and avoiding areas fouled by manure. Splitting pastures into smaller areas will help control grazing by forcing animals to be less selective (Figure 2). Portable electric fences make subdividing pastures cost-effective.

Dividing pastures into three or four smaller units also makes it convenient to practice rotational grazing. While animals occupy one unit, other units can rest and recuperate. When grass has been grazed to an average of 3 to 4 inches, rotate animals into another unit. Rest units for a minimum of 21 to 30 days between grazings, and allow grass to regrow to a height of 6 to 8 inches before allowing animals back in the unit

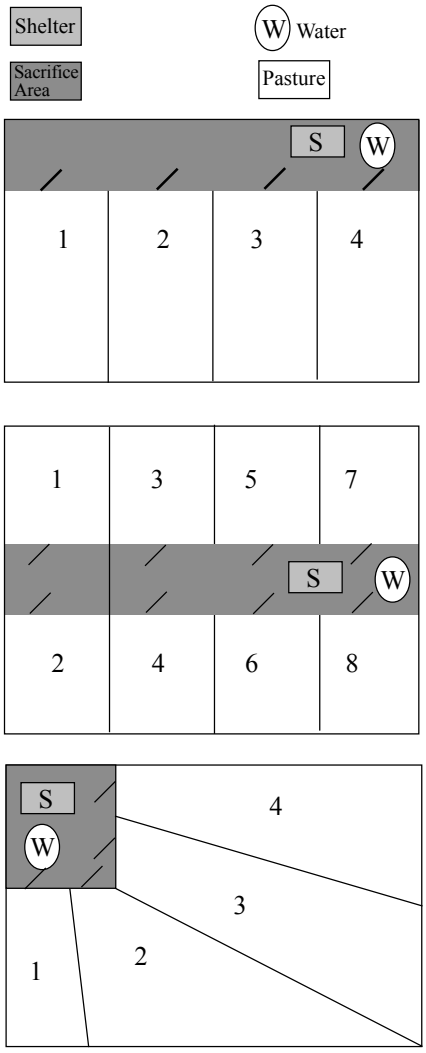

Figure 2: Incorporate a "sacrifice area" and/or subdivide your pasture into smaller, more manageable units to better control your animals' impact on your pasture.

Stay on top of weed invasions

Weeds are exceptionally hardy, so it's not surprising they thrive in drought conditions. Weeds steal sunlight, soil nutrients and water away from desirable pasture plants. They have little nutritional value and some weeds are poisonous if grazed. Ensure your animals have adequate forage or supplemental feed available so they avoid the temptation of sampling harmful plants. For more information on weed identification and control, contact your Colorado State University Cooperative Extension county office and see "Additional Resources" at the end of this fact sheet.

Be prepared to provide supplemental feed

Colorado's dry climate does not permit small, non-irrigated pastures to produce enough forage to meet the nutritional needs of most grazing animals. This is especially true in a drought when pastures are less productive. You will need to feed hay and/or grain. To avoid excessive wear on pastures, provide feed in a sacrifice area rather than directly on pasture. See "Additional Resources" for information on drought feeding alternatives.

Managing Small Pastures Coming Out of a Drought

How pastures are used coming out of a drought is just as critical as management during the drought. Precipitation levels may rebound but plants require time to recover.

Assess what has survived

When the drought breaks, assess your pastures for damage. Carefully identify plants and make sure they are truly forages and not weeds. Some pastures will recover with rest, restricted grazing, and appropriate fertilization. Other pastures may require complete renovation to be productive again.

Resist the urge to graze immediately

It can be tempting to start grazing as soon as additional moisture greens up your pastures. However, grazing too soon on drought-weakened pastures can cause plants to further decline, prolong recovery time or even kill the plants.

Moisture alone does not overcome drought stress. Plants draw from their energy stores to survive drought and need a period of recovery to replenish these reserves and establish new root growth.

Complete rest is the most effective and fastest way for pastures to recover. Ideally, pastures should rest for an entire growing season. You may have to postpone grazing for more than one season following severe drought.

Delay grazing until plants become established

If you must permit grazing in the season following a drought, plants should be at least 6 to 8 inches high before animals have access to pasture. Avoid overgrazing and re-stressing the pasture by removing animals when plants have grazed down to 3 to 4 inches (Table 1).

Apply fertilizer if appropriate

In general, pastures are more productive with proper fertilization. Resist applying anything without knowing what is needed. Perform a soil test first to identify what nutrients your pasture is lacking (see "Additional Resources").

Control weeds

Following a drought, pastures are weak and less able to compete with vigorous weeds (especially annual species). Be prepared for several years of vigilance and identify any unknown weeds that might be harmful to animals.

Tips for Maintaining Healthy Small Acreage Pastures:

- *Avoid overgrazing*
- *Graze at 6 to 8 inches, rest at 3 to 4 inches*
- *Restrict turnout time*
- *Give pastures adequate rest*
- *Create a sacrifice area to confine animals away from pasture*
- *Apply fertilizer when necessary*
- *Control weeds*

Reseeding and renovating drought-damaged pastures

Pastures with a low potential for recovery may have to be reseeded or renovated. Depending on the extent of the damage, some pastures may benefit from overseeding bare areas or introducing a legume species to improve pasture quality. Pastures hit hard by drought may only become productive after complete renovation, which can be expensive and require that the land be taken out of production for one to three years. Unless you have the experience and equipment to renovate a pasture, hire an agricultural professional. For additional information on reseeding and pasture renovation, consult with your Cooperative Extension county office or the Natural Resources Conservation Service.

Continue proper pasture management

To avoid the negative effects of future droughts and get the most out of your pastures, give pastures adequate rest by restricting turnout time and confining animals to a sacrifice area during critical times. See "Additional Resources" for more information on managing small acreage pastures.

Additional Resources

Stretching Your Horse's Hay Supply During Drought, Fact sheet 1.625, Colorado State University Cooperative Extension.

Alternative Feeds for Cattle During Drought, Fact sheet 1.626, Colorado State University Cooperative Extension.

Pasture Management for Horses on Small Acreage, Fact sheet 1.627, Colorado State University Cooperative Extension.

ABC's of Small Acreage Ownership video, XCM-214, Colorado State University Cooperative Extension.

Pasture: Your Most Valuable Resource video, XCM- 215, Colorado State University Cooperative Extension.

Weeds of Colorado, Bulletin 521A, Colorado State University Cooperative Extension.

Weed Management for Small Rural Acreages, Fact Sheet 3.106, Colorado State University Cooperative Extension

Colorado Weed Management Guide, XCM-205, Colorado State University Cooperative Extension.

Soil Sampling, Fact Sheet 0.500, Colorado State University Cooperative Extension.

Fertilizing Alfalfa and Grasses, Fact sheet 0.537, Colorado State University Cooperative Extension.

Production Agriculture: Putting Knowledge to Work CD-ROM, XCD-12, Colorado State University Cooperative Extension.

For more information, contact your Colorado State University Cooperative Extension county office.

[1]*L.K. Warren, Colorado State University Cooperative Extension horse specialist, animal sciences; P. Aravis, Cooperative Extension Boulder County agronomist and agent.*

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Milan A. Rewerts, Director of Cooperative Extension, Colorado State University, Fort Collins, Colorado. Cooperative Extension programs are available to all without discrimination. No endorsement of products mentioned is intended nor is criticism implied of products not mentioned.