

Targeted Livestock Grazing to Suppress Cheatgrass

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Introduction

Cheatgrass, or downy brome (*Bromus tectorum*), is an annual, invasive grass that reproduces solely by seed. Cheatgrass is a prolific seed producer that can form dense monocultures that decrease biological diversity and forage production, and increase soil erosion. In some areas, cheatgrass also promotes more frequent wildfires that can eventually remove and exclude all perennial shrubs, forbs, and grasses from a landscape.

Cheatgrass throughout western North America is usually a “winter annual”. Its seed germinates in the early fall when moisture is sufficient and cheatgrass plants grow rapidly until cold temperatures arrive. Above-ground growth sometimes continues during winter if the weather is warm and rainy. Cheatgrass seeds germinate at very high rates (up to 95%), and ungerminated seeds do not usually remain viable in the soil for longer than one or two years. Cheatgrass plants from seeds that germinated in the fall break dormancy in late winter or early spring when warm weather returns. Cheatgrass plants grow and develop rapidly in the spring, usually flower in early May, ripen seeds by early June, and the plants are fully dried one to two weeks later. Cheatgrass seeds also can germinate in the spring, but spring-germinated plants are often less numerous and less vigorous. Spring-germinated cheatgrass plants produce fewer seedheads, and if cheatgrass seeds germinate in late spring or early summer no seedheads are usually produced.

Large amounts of plant mulch, or plant litter, on the soil surface favors the establishment of cheatgrass seedlings, and the amount of seed mass produced by cheatgrass often provides sufficient mulch for its own seeds to subsequently germinate. Mulch cover from cheatgrass also may inhibit establishment of perennial grasses.

Targeted Grazing Prescription

Grazing Objective: The targeted grazing objective is to suppress cheatgrass plant biomass and seed production for 2 to 3 consecutive years.

Grazing Intensity: If targeted grazing is applied in spring, cheatgrass plants should be grazed until their seedheads have been removed. However, be sure to monitor the residual height of desirable plant species. If targeted grazing occurs during the growing season, most desirable plants need a 3-inch or greater residual stubble to remain healthy.

When grazing is applied in late fall or winter, perennial grasses are dormant and more tolerant of defoliation as long as sufficient residue remains to insulate plant bases from severe cold. Desirable grasses can generally tolerate 2-inch residual stubble heights when grazing occurs during plant dormancy. Livestock browsing of shrubs during summer or winter will have minimal impact on shrub vigor as long as utilization does not exceed 50 to 60%.

Timing and Frequency of Grazing: Targeted grazing in spring should begin when winter rosettes of cheatgrass are accessible and palatable. If livestock are allowed access to a site too early in the spring, they may selectively graze other grasses instead of cheatgrass (e.g., Sandberg bluegrass or bottlebrush squirreltail) that may initiate spring growth and become green and accessible to

livestock before the cheatgrass. Cheatgrass seeds are viable before they reach seed maturity, so it is important that targeted grazing in spring occur **before** cheatgrass plants turn purple in color. The seed must be prevented from reaching the dough stage. At least 2 defoliations are needed in spring each year because cheatgrass can regrow and produce new seedheads about 3 to 4 weeks after the first defoliation. Graze an area for 1-3 weeks and then re-graze the area 1-3 weeks later. New seedheads that may form after the second grazing period usually do not produce viable seeds.

Targeted grazing in fall or winter will reduce the buildup of cheatgrass mulch, which will enhance seedling establishment of perennial plants. Targeted grazing in fall also can target the fall germinating crop of cheatgrass plants, prior to winter dormancy, thereby reducing the vigor of cheatgrass plants in the following spring. When targeted grazing is applied to dried, mature cheatgrass plants in fall, targeted grazing should be delayed until after cheatgrass seedheads break off and fall to the ground. This will prevent livestock injury from the sharp awns present in cheatgrass seed heads.

Duration of Grazing: Dramatic decreases in cheatgrass abundance can occur when targeted grazing is applied for 2 or more consecutive years.

Livestock Considerations: Sheep, goats, cattle, and horses will readily consume cheatgrass-dominated diets, provided cheatgrass is plentiful and palatable. All four of these livestock species can be used to suppress cheatgrass.

Livestock perform well on cheatgrass-dominated diets when grazing occurs in spring, producing weight gains similar to those from uninfested rangeland. Weight gains decline as cheatgrass matures. Livestock will likely need to be supplemented with protein and energy whenever targeted grazing is applied to mature or dormant stands of cheatgrass. Supplement can be strategically located and moved when needed to achieve desired grazing intensities.

Cheatgrass does not contain alkaloids, terpenes, or other aversive chemicals in sufficient quantities to cause toxic effects or decrease cheatgrass palatability. However, cheatgrass seed heads sometimes harbor ergot, a fungus that is poisonous to livestock. Wet weather conditions during flowering favor ergot development.

As mentioned earlier, targeted grazing applied to dried cheatgrass plants exposes livestock to eye, flesh, or fleece damage from the long, sharp awns in the mature seed heads. The awns can become embedded in an animal's muzzle or mouth, causing cysts and inflammation. In severe cases, these awns can penetrate an animal's gums, causing irritation and infection in a condition called lump jaw. Two- to 3-year-old cattle are especially susceptible to bony lump jaw, which occurs when the infection enters the jawbone. The commercial value of wool or hair clips also can be reduced when cheatgrass seeds and awns become embedded in livestock fleeces.

Other Considerations: If targeted grazing occurs after cheatgrass plants have turned purple in color, viable cheatgrass seeds will remain in livestock feces. Consequently, livestock should be held in a corral for 5 to 7 days before moving livestock to uninfested areas. Most cheatgrass seeds pass within 5 days.

Targeted livestock grazing of cheatgrass can be used to prepare sites for artificial seeding. Cheatgrass seeds often germinate following disking, burning, or herbicide applications for broad-leaved weeds. Targeted grazing can defoliate the cheatgrass plants and prevent them from producing seed. After targeted grazing, sites can be drill-seeded. Another option is to broadcast

seed immediately before the targeted grazing treatment and use the livestock to trample in the seed. A high stock density for a brief period on moist ground usually works best. If soils are too wet, excessive trampling damage and soil compaction will occur.

Summary

Sheep, goats, cattle, and horses can be used to suppress cheatgrass via targeted grazing. Targeted livestock grazing can reduce the yield, density, seed production, and mulch accumulations of cheatgrass, thereby favoring perennial plant species and improving biological diversity. Targeted livestock grazing of cheatgrass also can favor perennial plants by disrupting fine fuel continuity, reducing fine fuel loads, and lengthening fire-free intervals. To limit plant biomass and seed production of cheatgrass, targeted livestock grazing can be applied in either spring or fall. Targeted grazing in spring should defoliate cheatgrass plants twice in spring each year, separated by 1 to 3 weeks, to prevent cheatgrass seeds from reaching the dough stage. Targeted livestock grazing should be repeated in spring or fall for at least 2 consecutive years. However, desirable perennial grasses and forbs, if present, may suffer if spring grazing occurs for more than 2 years in a row.

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