

Integrated Grassland Weed Management

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Integrated weed management is a strategy combining various preventative and control practices with the intent of increasing effectiveness and reducing costs of managing weeds. Weeds can and are adapted to control methods (e.g., herbicide resistance, root sprouting) necessitating the implementation of more than one or two control methods. An integrated strategy involves implementing practices to limit the introduction and spread of weeds, providing desirable species an advantage when competing with weeds, and preventing weed adaption to management by alternating and implementing a combination of practices.

Loss of plant community diversity from weed invasion reduces grassland resilience to disturbances such as drought and fire. Unfortunately, because many invasive weeds are prolific seed producers, elimination from a pasture or range is unlikely. Instead, management should focus on controlling the spread and reducing the prevalence of weeds by giving desirable species a competitive advantage.

Herbicide can be a short-term weed management option, although herbicides pose many challenges. Herbicides come at a cost and often have undesirable impacts on non-target vegetation including desired species needed to compete with weeds. Depending on the severity and location of invasion, financial and logistical feasibility of spraying a large area or area inaccessible to spraying equipment may be a concern. Most importantly, even if the weed population is reduced with herbicide application, unless the underlying management problems are corrected, weeds will likely invade the area.

Proper grazing management is a long-term weed management strategy that promotes the health and vigor of desirable species and provides a competitive advantage over weeds. Rotating between multiple pastures during the growing season is a fundamental principle for a proper grazing system that provides a period of no grazing in each pasture during the growing season. The rest period for a pasture is the key to grazing management success. The shorter the grazing period the longer the rest period, however, consider tradeoffs of grazing utilization and livestock gains.

Timing of grazing is also very important as livestock will focus first on desirable species, especially those actively growing. However, this is the most detrimental time to graze a plant. To reduce the negative impacts of grazing, alternate the first pasture in the rotation at the beginning of each growing season so each pasture is grazed annually at a different time of year. Consider a deferred rotation grazing system that allows a pasture(s) a full growing season deferment and is only grazed after desirable species have gone dormant.

Grazing can also directly control and reduce invasive plants. Before reaching maturity, many invasive plants are not only palatable, but also highly nutritious. Capitalize on the grazing preferences of cattle, sheep, and goats to produce grazing income instead of the resource and financial expense to

mechanically or chemically control weeds. Cattle primarily select for grasses, but will also graze forbs. Conversely, sheep prefer forbs then grasses and goats are browsers selecting first for woody plant parts and secondarily for herbaceous plants. Taking advantage of these differences can diversify your operation while saving the expense of controlling weeds without reducing your cattle operation.

Short, intensive cattle grazing can be used to control invasive grasses, such as cheatgrass (downy brome, *Bromus tectorum*), while highly nutritious early in the year before sharply declining once seeds are produced. The goal is to setback cheatgrass with heavy grazing and give desirable species a competitive advantage by not sustaining any grazing.

As soon as an area has adequate cheatgrass growth to support grazing in the fall, winter, and spring, turn cattle out or fence them in an area of heavy infestation. The timeframe for grazing cheatgrass is often very short and varies each year depending on soil moisture and temperature. Although cattle will typically consume desirable season species along with the cheatgrass, it is crucial that cattle be moved once grazing selection shifts away from cheatgrass, often once it is grazed out or produces seed. The goal is to graze cheatgrass at the detrimental stage right before producing seed, then remove animals to allow desired species to outcompete for resources and provide adequate rest to establish before grazing again.

Sheep and goats can be used to capture value from broadleaf weeds. Both animals graze herbaceous weeds, such as thistles, and goats even select for tree and shrub leaves and fresh growth. Sheep and goats can be added to a cattle operation with little to no loss of cattle grazing because of the differences in diet. Whether purchasing your own or recruiting someone else's, graze sheep and goats ahead of cattle in the same rotation to prevent cattle from spoiling weeds sheep and goats would eat. Goats will even select for saplings, helping control the spread of woody species and some have been developed for their ability to select and digest juniper species.

Invasive trees, such as eastern redcedar, are initially easily managed with pruners, low intensity fire, or even goat grazing. However, as trees grow and spread, management becomes increasingly more difficult and expensive. Land managers are utilizing a combination of mechanical cutting and fire to increase the effectiveness and reduce the cost of managing and clearing invasive woody vegetation.

Develop an integrated weed management plan as part of a grazing management plan utilizing various preventative and control practices to ensure early detection of weeds and rapid response. Focus management on promoting desirable species and capturing value from weeds, rather than short-term and expensive band-aids. Learn to identify new and existing weeds in the area and constantly survey pastures while moving and checking cattle. Once a weed is located, begin developing a management plan to prevent seed production and spread. Continue to monitor treated areas even if plants have been eradicated to ensure no new seedlings have sprouted from seeds or root systems.

Weed invasion is not a new issue and will continue to be an issue for generations. Existing weeds will likely not be eradicated and new weeds will continue to seek opportunities to invade. How grassland managers plan and implement management strategies can be the difference between a large expense and an additional enterprise that provides an opportunity to add another generation to the operation.