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Weed management on rangeland and pastures

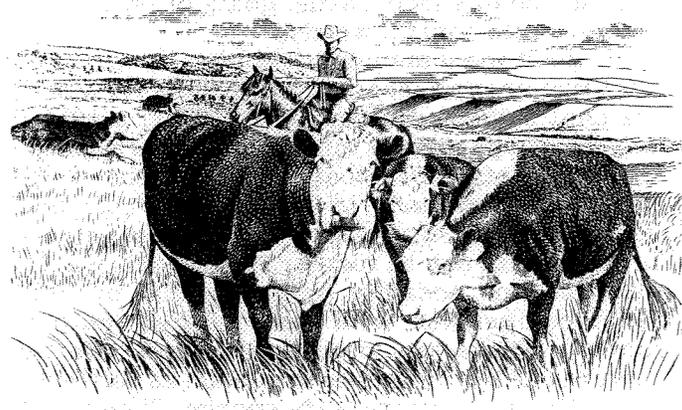
K. George Beck¹

Quick Facts

- All weed management must be applied and evaluated over an extended time to be successful.
- Mapping weed infestations is the first step in rangeland/pasture weed management.
- Integrate two or more control methods into a system of management.
- Small, scattered or perimeter infestations should be controlled before large, dense ones.
- Keep accurate records of control procedures and evaluate for success or failure.

Weeds are spreading rapidly on Colorado rangeland and pastures. Weeds should be managed during the current growing season to reduce or prevent future infestations. All too often, weed control during growing season is evaluated in terms of financial return **only** for that season and not for future impact. All weed management must be applied and evaluated over an extended time to be successful. This is particularly important with rangeland or pasture weed management programs. A good manager develops a comprehensive weed management plan and incorporates that plan into a long-term land management program.

Be persistent in weed management, particularly with perennial weeds. Most successful weed management systems require input for several growing seasons. Weed infestations occur over time and seldom can be cured in a single growing season. Seed dormancy of most weeds and the extensive root systems of creeping perennials means that weed management systems in rangeland, pasture and elsewhere need to be designed for input over extended time periods.



Mapping

A comprehensive weed management plan has several key features. First, an accurate map of weed infestations must be developed. The map should include information about infestation locations and weed species within those locations. Also, the map should indicate the type of infestation; that is, a scattered infestation less than 10 yards in diameter with just a few plants; light infestations made up of small patches up to 0.5 to 1 acre in size; moderate infestation from 1 to 10 acres; or large dense infestations greater than 10 acres. Additionally, productive value of land where infestations are located should be included as an aid to determine how much money can be spent on weed management during any year and over time. Also, habitat e.g. rangeland, irrigated pasture, around ponds or along streams and rivers, and associated desirable plant species should be determined as these will help one choose appropriate control tools to use.

Integrate Control Methods

A key aspect to weed management is to integrate control methods into a management system.

¹K. George Beck, Colorado State University Cooperative Extension weed science specialist and assistant professor, plant pathology and weed science (1/90)

Cultural controls are methods that favor desirable plant growth such as grazing management, fertility and irrigation maintenance, and seeding vigorously growing, competitive desirable plant species. **Mechanical control** physically disrupts weed growth and includes such methods as tillage, mowing, mulching, burning and flooding. **Chemical control** is the use of herbicides. **Biological control** is the use of an organism to disrupt weed growth. Classical biological control utilizes natural enemies of weeds such as insects or disease organisms. Biological control also may include use of sheep, cattle, goats or other large herbivores to control weeds.

A good weed management plan integrates at least two or more control measures into a management system. An example of such a system follows. If a pasture is infested with leafy spurge, sheep or goats (biological control) can be used to graze the weed early in the growing season to release grasses from intense weed competition. Grass growth can be further stimulated with fertilization and possibly irrigation that provides better competition with leafy spurge (cultural control). These two procedures allow effective pasture use by other livestock such as cattle that normally do not graze leafy spurge. Then in fall, the infestation can be sprayed with picloram (Tordon 22K) to control leafy spurge (chemical control). This example integrates biological, cultural and chemical controls into a weed management system. If leafy spurge is the weed problem this program might have to be repeated most growing seasons. With this procedure the manager can still use that land and see a return on his or her weed management investment.

Systematic Control Procedures

Do not attempt to control all weed infestations in a single season, except on small land parcels. The mapping procedure will indicate where dense infestations lie and where small scattered or perimeter infestations are located. Be systematic about weed management and start with perimeter infestations. These are the easiest and most affordable infestations to control and if controlled first they can be kept from becoming large and dense. If a land manager starts with weeds on large dense infestations, perimeter ones often get worse. This leads to a frustrated manager and a sense of futility in weed management. A systematic approach allows for a return on the control investment during the weed management process; that is, ground that was lightly infested can be used for productive purposes and then some of that profit used to combat heavier infestations.

Record Keeping and Evaluation

Keep good records of weed management and include procedures used, dates applied, weather conditions, growth stage and condition of weeds and desirable plants, etc. Evaluate for control success or failure. Good records and evaluation lead to successful management and fewer failures. Often, evaluation efforts provide the most accurate assessment one to three years after control application. This is important for perennial weeds where follow-up is a key to successful weed management. The worst mistake to make is to employ a weed management system, assume it will work, and not evaluate the outcome.