

Colorado Grazing Lands Conservation Initiative Technical Note 5

Managing Weeds in Drought

Combating Weeds in Healthy Pastures

The management of noxious weeds in grazing lands focuses on two principles: don't let weeds get established; when they do get started, eradicate them while they are still small acute populations. Healthy native plant communities resist infestation of noxious weeds if healthy, vigorous, and properly managed.

Properly managed grazing, careful monitoring and working with the natural plant community cycles can dramatically reduce the likelihood of weed infestation. Prompt action taken against new weeds will require certain investments but has been documented to be only a fraction of the cost incurred if weeds become well-established.

Integrated Weed Management

Responsible grazing lands managers utilize Integrated Weed Management or "IRM" to manage weeds. IRM is the practice of utilizing combinations of cultural, biological, and chemical methods to effectively manage weeds. The emphasis is to prevent or limit ecological impact while incurring the smallest financial and manpower investments and the largest level of weed control.

In all cases, it is crucial to understand a specific weed's growth pattern and physiology. After a manager carefully identifies a weed problem, relates it to the native plant community, and reviews the alternatives for management, a combination of cultural, biological, and chemical methods can be effective and economical. Most managers are looking for better ways to manage chronic weed infestations.

Cultural management techniques involve physical disturbances to a noxious weed's growth cycle. Such practices might include mowing newly established weeds, prescribed grazing to remove seed heads and prevent spread, or prescribed burning if the weed species is not fire propagated. Hand pulling weeds is a "cultural" practice.

Biological management techniques usually refer to exposing weed populations to an insect, animal, or other plant that either directly preys on the weed or vigorously competes with the weed for space, nutrients, and water. In situations where specific animals prefer to eat the weeds and leave desirable plants alone, such as goats grazing leafy spurge, both cultural and biological methods are in place at the same time.

Chemical methods usually involve the application of herbicides onto a weed infestation. In a few instances the application of fertilizer can enhance competition with weeds. The use of "weed & feed" on lawns is this type of chemical control practice. Following herbicide label instructions is crucial to reduce risk of problems and enhance the effectiveness of chemical methods.

Drought Sets Back All Management

Colorado can experience extended periods of drought conditions that challenge the integrity of all grazing lands and manager in the state. The extended stress on native and introduced grassland species has harshly impacted desirable plant communities during a period when the fiscal resources of grazing lands manager are also greatly diminished.

Plant community losses have been documented across Colorado that had never been documented, especially on such a state-wide scale. These impacts created “open space” between desirable plants that lay barren until moisture events come back to Colorado. Then those open spaces served as a platform for species to upsurge into prominence, many of the noxious weeds.

It is intuitive to most grassland managers that the economic resources are far overwhelmed by the need to control weeds on the landscape. If something is not implemented the condition and productivity of Colorado grazing lands will diminish with the spread of weed infestations.

A Weed Management Approach for Grazing Lands in Colorado (Post-Drought)

Since many grassland managers “de-stock” to protect the integrity of Colorado grazing lands, their earning power and budget was reduced to almost nothing eliminating resources for weed control. Any implementation must be practical and economical. To allow time for managers to regain management ability it is recommended that they:

- Identify and learn about the weeds on pastures.
- Contain those infestations that are very large, chronic or beyond means.
- Eradicate those infestations that are new, small, acutely noxious weeds, or in crucial sites such as riparian areas.
- Plan for the next phase to further control existing infestations.
- Carefully manage existing pastures to prevent further opportunity for weed infestation.

Evaluating the Cost of Weed Management

Managers always begin by looking at the cost of introducing beneficial insects, using herbicides, or conducting “prescribed” grazing on weeds. They should begin by assessing the impact on productivity since pre-drought periods and then evaluate the impacts of NOT managing weeds.

- If you have a 1,000 acre pasture that supports 800 Animal Unit Month at \$15/AUM it generates \$12,000 of value each year (gross – not net).
- The drought impacts reduced productivity to 240 Animal Unit Months or \$3,600 per year – a loss of \$8,400 in value.
- Weed infestations, left unmanaged, could easily reduce productivity by another 20% each consecutive year resulting in an additional \$720. Within five years the grazing value of the site could be \$0.00.
- Under this scenario any investment less than the total loss ($\$12,000/5 = \$2,400$) may be something to consider, especially since effective management brings income gradually back up and offsets the investment.
- No matter what combination of IRM you implement – it’s going to cost.

Herbicide Applications on Grazing Lands

Since net income on range or grazing lands usually equates to about \$50-\$80 per acre, applying herbicides is often the last option for managers. Most choose to evaluate biological and cultural processes first since those are less costly. Some may incur little more than manpower, while others involve fuel, equipment or fencing costs.

The use of herbicides on pastures is only feasible if the cost of the methodology is equal to or less than the benefit of weed control. On a short-term basis this is often not the case. But on a long-term basis herbicide application can be extremely cost-efficient. Typical herbicide costs can range from \$3 to \$45 per acre depending on the product.

If a manager only had to look at the economics, the choices made for herbicides would be easy. However, each management tool has different characteristics that have bearing on your pasture operations. These characteristics include timing of application, residue, grazing restrictions, use near trees and water, and license requirements to name a few. Applying herbicides carefully according to the label is a good safeguard. If it's not labeled for pasture use – do not use it!

Consideration Factors With Herbicides

Several issues should be considered before selecting and applying an herbicide.

- Is the herbicide right for my pasture or rangeland?
- How smooth is my pasture or rangeland? Will I be making handgun or boom applications?
- Is it a Restricted Use Pesticide (RUP) that requires a license?
- What type of a surfactant should I use?
- Do I have the equipment, training, and knowledge to apply it correctly? If not, can I get it? Or can I hire someone to make the application?
- Does it leach into water?
- Does it impact desirable plants?
- Does it harm beneficial insects?
- Is it cost-effective for me?
- Are there any cost-share programs available?
- Is it available in the local area?
- Will it freeze?
- Is it easy and safe to store?
- What is the toxicity level for animals and people?
- What is the grazing, haying and reseeding restrictions?
- Where will I keep the animals if there are grazing restrictions?
- Does it leave a residue? Is this beneficial?
- Do I apply it before or during weed growth?
- What size containers can I get it in?
- Am I buying a "brand name" or can I get the same thing cheaper as a generic?
- What is its mode of action?
- Are there any other special precautions I need to be aware of?
- Can I get the same quality of weed control without using an herbicide?

Licensing for Herbicide Application

It is recommended that all citizens planning to use herbicides acquire a Private Applicators License from the Colorado Department of Agriculture. The process of studying for and taking the online test provides a valuable education on safe and effective herbicide use. The cost is relatively small.

Higher levels of certification are necessary and available if you wish to apply herbicides for others, such as a business, or as part of your job. These levels are more extensive and have higher fees associated with them.

In addition to licensing, it always helps to have some ready references available. These include contacts with your local CSU Extension Office, Weed District, Conservation District, sales representative with the manufacturer as well as salesmen. There are also websites such as www.cdms.net to look-up labels and SDS sheets for products.

Herbicide Resistance

Many weeds will develop a resistance to a specific herbicide, especially if the applications were not implemented correctly. It may be necessary to vary which herbicides, biological, and cultural methods are used. It's advisable to research the weed species you are working with to determine treatments.

Multi-Species Grazing

Since different species have different grazing tolerances, habits, and physiology, it is possible to use the characteristics to manage specific weeds. If forced to concentrate on one patch of pasture, animals will eat and impact weeds, such as thistles, leafy spurge, kochia, etc.

You must be careful that the weed targeted is both non-toxic and of value for the specific grazing species. Goats and sheep tend to be more tolerant to a wider range of weed use but are not able to use all plants. When using grazing animals to target weeds we must be very cautious to identify and avoid intense grazing in areas where poisonous plants are present. Often poisonous plants spread into "open ground" created during drought impacts on rangelands.

Acute vs. Chronic Infestations?

Weed managers differentiate weed infestations into two basic categories, acute and chronic. Acute infestations are newer weed incursions of small acreage size, huge potential for expansion and a weed species that has noxious potential. The encouraged approach is to eradicate these infestations with extreme malice.

Chronic infestations are well-established and usually include large acreage that has exceeded the economic response potential of a manager. These large weed areas need to be "contained". If at all possible, treat the outer boundaries of the infestation and start "shrinking" the size of the infestations. It is important to identify newly seeded "spot infestations" which start from the seed bank of the large initial infestation and eradicate these before they become chronic.

Summary

Post-drought weed control guidelines include: identifying the weed species, address the weeds by using an integrated methods approach, be practical and do your homework.