Herbicides for Downy brome (cheatgrass) control: What works?

A webinar presented on April 4, 2018, by Richard D. Lee, Integrated Pest Management Specialist, DOI-BLM, Denver, CO.
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Access original webinar - https://youtu.be/fTVruUDXmgI

Summary

- Five herbicide active ingredients have the potential to reduce cheatgrass abundance
- Successful control of cheatgrass includes herbicide treatments and encouraging growth of desirable vegetation
- Management of resistant and resilient ecosystems requires substantial site knowledge and thoughtful planning

Severity of the Downy Brome Problem

A 2014 survey of BLM-administered lands found that downy brome occurs on nearly 41.8 million acres, primarily in the West. Nearly 20 million acres in Nevada, 7.3 million acres in Utah, 4.3 million acres in Idaho, and about 6 million acres in Oregon and Washington have downy brome on BLM-administered lands.

In consultation with Brian A. Mealor, Extension Weed Specialist, University of Wyoming, and Corey Ransom, Associate Professor, Weed Science, University of Utah, Lee described five different active ingredients found in herbicides, which offer control of downy brome in rangeland settings.

Herbicide Active Ingredients to Treat Downy Brome

Of the five active herbicide ingredients, each has its own application timing requirements and post-application restrictions. Successful management of downy brome through the use of herbicides requires an understanding of those application methods, rates, and timing that provide for maximum control.

Imazapic. Herbicides with imazapic as an active ingredient are often applied as post-emergent treatments, however, at lower rates can be used as a pre-emergent treatment. Benefits of this treatment are best when used in conjunction with establishment or release of desired vegetation.

Glyphosate. Herbicides with glyphosate as an active ingredient are applied as post-emergent treatments. These herbicides are non-selective and proper use requires timing applications so that damage to desirable species is minimized.

Rimsulfuron. Herbicides with rimsulfuron can be applied as a pre- or post-emergence treatment. For use on downy brome, applications are recommended when most downy brome is in the early flower stage, before plants change color. Fall applications are recommended where fall germination causes increased downy brome abundance. Grazing of rimsulfluron-treated sites is not recommended for at least one year, while non-weed vegetation establishes in areas with downy brome mortality.

Aminopyralid. Herbicides with aminopyralid as an active ingredient are considered reduced risk pesticides and primarily applied as pre-emergent treatment for downy brome. Control will be poor if any of the winter annual seeds have germinated prior to applying aminopyralid. This active ingredient has extensive hay and manure restrictions. Treated plant residues, including hay or straw, are not to be used in compost, mulch, or for seed collection for 18 months after herbicide application. Aminopyralid applications may also increase the palatability of certain poisonous plants and treated sites should not be grazed until poisonous plants are dry.

Indaziflam. This herbicide ingredient is a pre-emergent that persists on the soil surface for up to two months and is activated by precipitation. Application timing is determined by expected sufficient, but not heavy precipitation, and should occur before target species have germinated.

Figure 1. *Cheatgrass grows in between native sagebrush and juniper trees in southern Idaho.*

Herbicide Cost Comparisons

Cost will likely be an important consideration when determining what herbicide to use to control downy brome.

Active ingredient	Pre-emergent application rate	Estimated cost/ acre
Imazapic	6 oz	$7.50
Rimsulfuron	4 oz	$70
Aminopyralid	7 oz	$23
Indaziflam	5 oz	$45
Glyphosate	Recommended post-emergent rate	$3-4

Herbicides and Management of Downy Brome

As indicated on the labels of these herbicides, successful site management includes downy brome removal and encouraging growth of desirable vegetation. Support and development of resistant and resilient ecosystems, requires substantial knowledge about the site, thoughtful planning for treatments, and the flexibility to adapt and adjust.

Figure 2. *High degree of cheatgrass infestation on Spruce Mountain in Nevada.*

Figure 3. *Cattle grazing in cheatgrass-infested sagebrush-grassland vegetation at the base of the Owyhee Mountains in Idaho.*

As an exercise in the many considerations and questions to think about when determining how best to integrate herbicides into site restoration, consider the following scenario. You have a 1,000-acre site infested with downy brome, it is early fall, and you finally have time to devote to this project. You will need to know:

- Has the site been assessed; have the strengths and weaknesses of the site been identified; what is the degree of the downy brome infestation and the abundance of desired perennial vegetation?
- What are the site characteristics beyond vegetation (e.g., soils, moisture anticipated)?
- Will timing allow for use of a pre-emergent herbicide to coincide with moisture delivery so that it eliminates downy brome germination?
- Are there other species that will be impacted by a post-emergent herbicide application; is that risk acceptable?
- Will you be seeding the site following herbicide treatment(s)?
- What other management strategies are planned for the site (targeted grazing, mowing, haying)? What are the post-treatment restrictions related to your herbicide?

Reference

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