

# HERBICIDES

Herbicides are chemicals that kill or injure plants.

There are many kinds of herbicides; some are derived from plants and others are manufactured synthetically. Herbicides can be classified in terms of their mode of action. These chemicals include growth regulators, amino acid inhibitors, grass meristem destroyers, cell membrane destroyers, root and shoot inhibitors and amino acid derivatives which interfere with plant metabolism in a variety of ways. See Appendix 9 on page 315 for a brief description of the modes of action of different herbicides. This appendix also contains a list of commonly used herbicides, along with active ingredients and trade names.



## Herbicides work best for ...

- Eradicating some weed species in certain situations. Herbicides are most effective on pure stands of a single weed species where desirable non-target plants are scarce or absent. In this situation, one often has the option of selecting from several different herbicides.
- Rhizomatous weed species that are unpalatable to livestock, require repeated pulling or cutting for control, or are located in remote areas where pulling or cutting are not feasible.
- Small patches of weeds where hand pulling or cutting is not effective or feasible.
- Use in combination with other control methods. For example, Canada thistle can be controlled by repeated cutting during the growing season followed by treatment with clopyralid herbicide in the fall. As noted previously, tamarisk, Russian olive and Siberian elm can be controlled very effectively by cutting stems very close to the ground in the fall then immediately spraying or painting the cut stems with triclopyr herbicide.



## Herbicides have limitations such as...

- Damaging or killing non-target plants. Herbicides are not completely selective in their toxicity to the target plant species. Effects on non-target plants can be minimized by selecting an appropriate herbicide and using a wick or a backpack sprayer. A wick is made from adsorbent material and saturated with herbicide. This wick is rubbed directly against the weeds so the herbicide is not applied to adjacent, desirable plants.
- Difficulty of using herbicides to control small weeds when they occur among taller desirable plant species.
- Toxicity to humans to varying degrees. Thus, their use is regulated by federal and state laws. People who use herbicides need to know these regulations. Certain herbicides are classified as “restricted use herbicides” whose application is limited by federal and state regulations.
- Restricted use herbicides are often available only at licensed outlets such as your local farm coop or by ordering through reputable distributors.
- Property owners must possess a private applicator’s license to apply a restricted use herbicide on their property. This license is obtained by passing a test administered by the U. S. Environmental Protection Agency in Denver. Call the Private Pesticide Applicator office at (303) 312-7283 for more information.
- Herbicides must be applied in conformance with the label. With herbicides, the label is the law, and applying an herbicide beyond the bounds specified on the label is illegal.
- Certain herbicides may not be used around or on water. This is an important consideration for weeds such as Canada thistle, perennial pepperweed, purple loosestrife, and tamarisk that grow in wetlands or riparian areas.
- One must possess the proper equipment and requisite knowledge to apply chemicals safely. Proper clothing must be used, and materials to contain spills must be on hand when using herbicides. See Appendix 10 on page 321 for Herbicide Use Guidelines and tips on how to use herbicides properly and safely.
- Herbicides can move beyond the area where they are applied and affect non-target plants and animals. This drift can be eliminated by using a wick or reduced by spraying under calm wind conditions and by adjusting the sprayer apparatus to produce large droplets.
- Populations of weeds may develop resistance to a particular herbicide over time.
- Opposition to the use of chemicals in the environment, especially in urban areas. Local opposition in some areas may pose challenges for the use of some or all herbicides.

### Pitfalls of herbicides include:

- Simplifying diverse plant communities by suppressing certain plant species, although this effect may be temporary.
- Herbicide applicators who cannot distinguish noxious weeds from desirable plant species, resulting in accidental damage to the latter.

### Cost of herbicide controls:

- The cost of herbicide alone commonly runs from about \$5 – \$20 per acre.
- The cost of herbicide application (not counting the chemical) depends greatly on the size of the area being treated, the chemical(s) are being used, and whether you apply the herbicide yourself or hire someone to do it for you. Cost for custom application runs from about \$50 - \$75 per acre for areas from one to one hundred acres using small equipment. For larger areas that are accessible for large equipment, costs can drop dramatically. Aerial application can run about \$20 per acre (not including the cost of the herbicide) for areas over one hundred acres. Note that any person who applies herbicide for a fee must be licensed by the State of Colorado.