NOXIOUS WEEDS:
WHY SHOULD WE CARE?

Cecily Mui

List B Noxious Weed Specialist

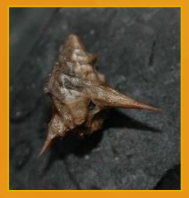
COLORADO
Department of Agriculture
Conservation Services Division

Noxious Weed Impacts

Recreation

In 1996, **77 million Americans spent $101 billion** on wildlife-associated recreation, including: birdwatching, wildflower viewing, and hiking.

- U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census



Puncturevine

Noxious Weed Impacts

Wildlife Habitat

Alfred Viola, Northeastern University, Bugwood.orgv

Getty Images

DanielS, Among the Leaves

49% of the nation's threatened and endangered species are adversely affected by non-native species that place increasing pressures upon sensitive, native species.

- Environmental Defense

Scotch thistle

Noxious Weed Impacts

Fire Regimes

In the US, over $1.5 billion spent on wildland fires in 2014.

- National Interagency Fire Center

Cheatgrass

Diffuse knapweed

Noxious Weed Impacts

Water Quality

Eurasian watermilfoil

Noxious Weed Impacts

Agriculture

Gerald Holmes, Valent USA Corporation, Bugwood.org


www.agric.wa.gov.au

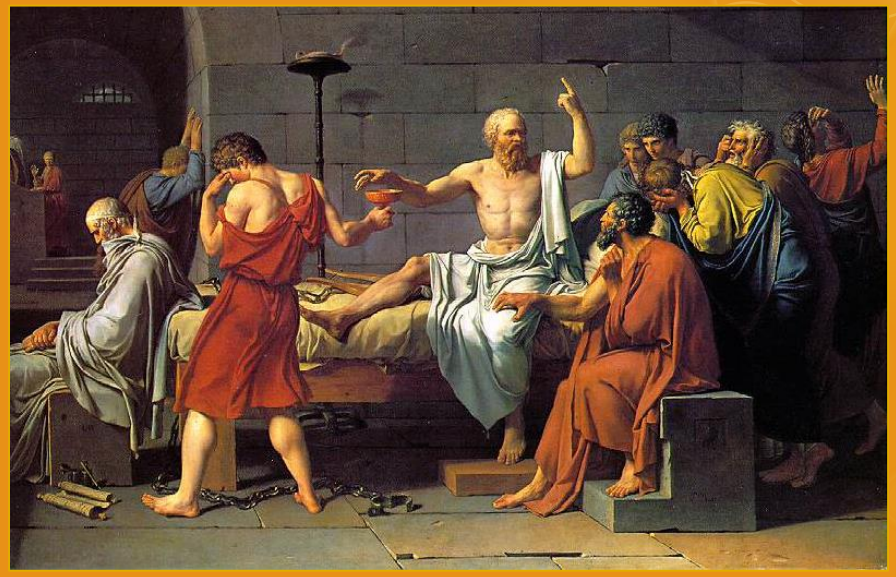

Eddy Lewis

Over the last 30 years, the estimates for total losses due to weeds range from $6 to $18 billion per year.

Russian knapweed

Noxious Weed Impacts

Human health



Myrtle spurge

Poison hemlock

Noxious Weed Impacts

Native Plants

Oxeye daisy

Noxious Weed Impacts

Wildlife Habitat

Agriculture

Recreation

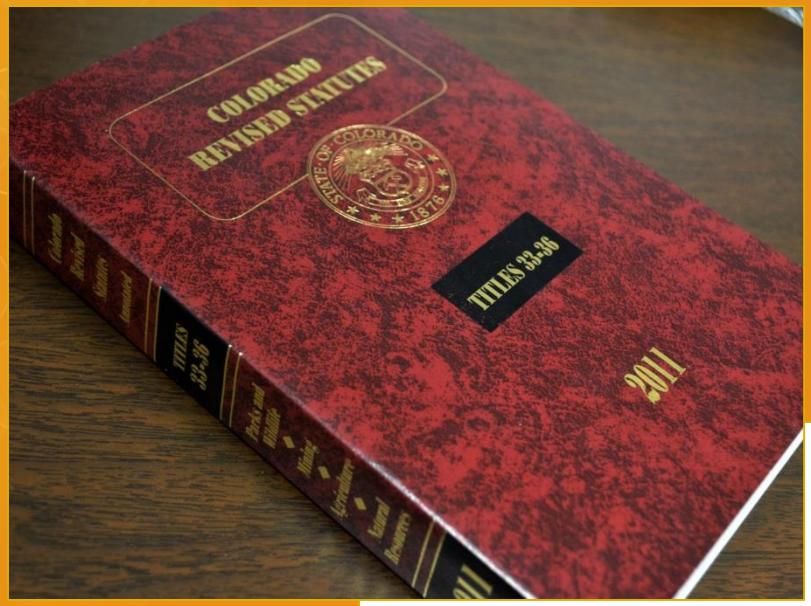
Fire Regime

Human Health

Water Quality

Native Plants

Noxious Weed Act



TITLE 35
AGRICULTURE

ARTICLE 5.5
Colorado Noxious Weed Act

35-5.5-101.	Short title.
35-5.5-102.	Legislative declaration - rule of construction.
35-5.5-103.	Definitions.
35-5.5-104.	Duty to manage noxious weeds.
35-5.5-104.5.	Intentional introduction, cultivation, or sale of noxious weeds - costs.
35-5.5-105.	Noxious weed management - powers of county commissioners.
35-5.5-106.	Noxious weed management - municipal authority.

Integrated Weed Management

Mechanical

Chemical

Biological

Cultural

Mechanical Weed Control

Digging, Pulling, Mowing, Tilling

Our key to success comes from understanding plant life cycles

- **Annual, Biennial, Short-lived or Persistent Perennial**
- **Reproduction – seeds, vegetative fragments, rhizomes**

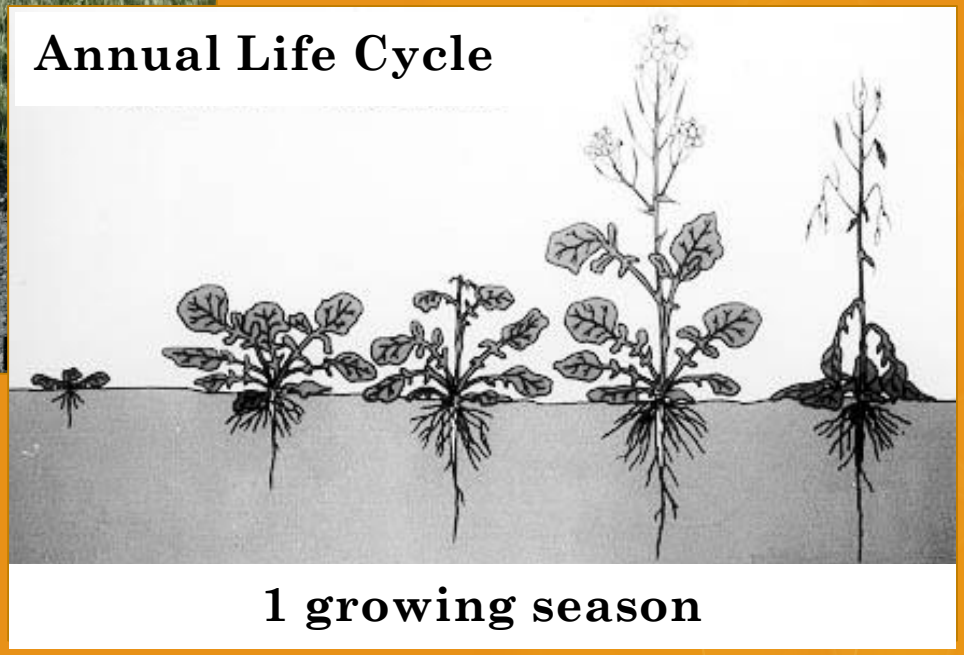
Downy Brome/Cheatgrass

(*Bromus tectorum*)

Chris Evans, University of Georgia, Bugwood.org

Tom Heutte, USDA Forest Service, Bugwood.org

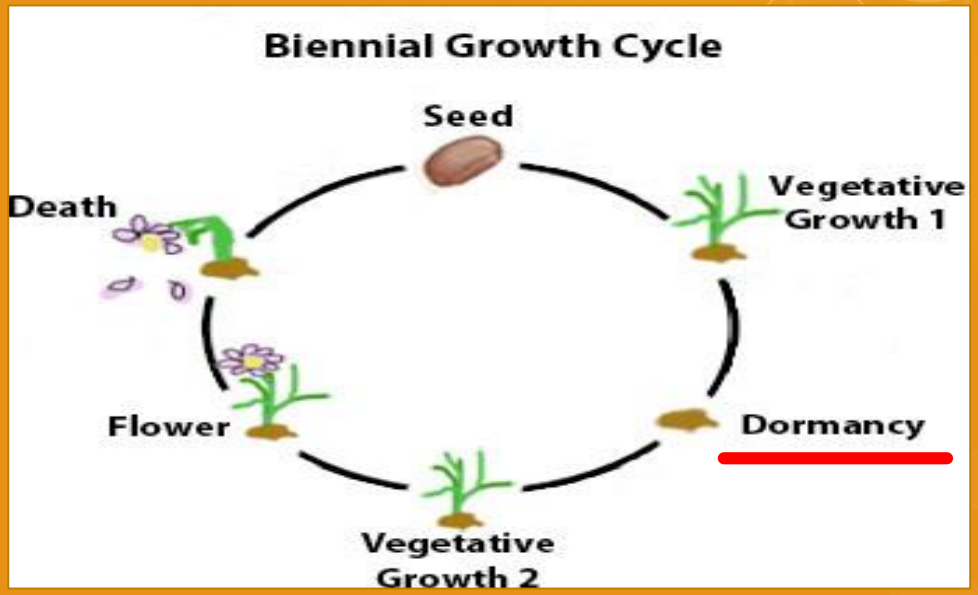
Annual

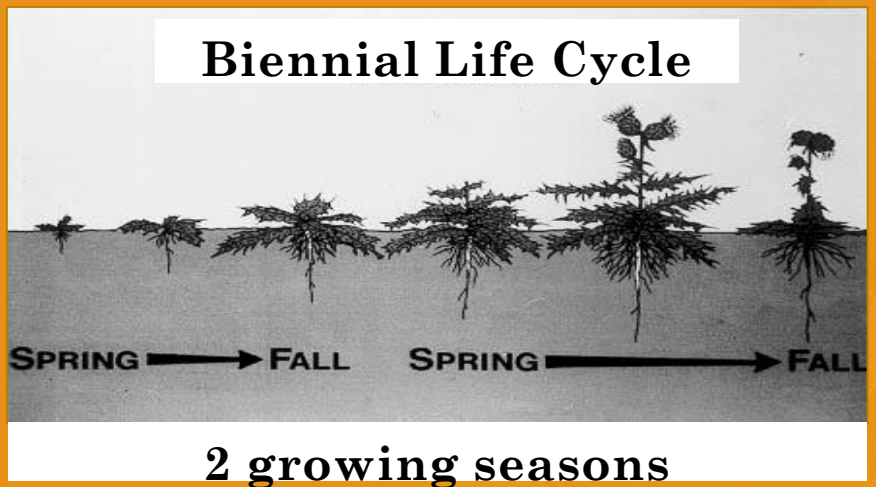


University of Kentucky – Extension Service

Common mullein (*Verbascum thapsus*)

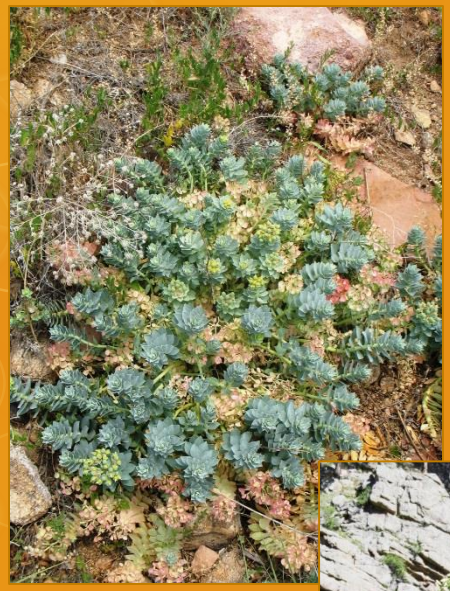
Biennial





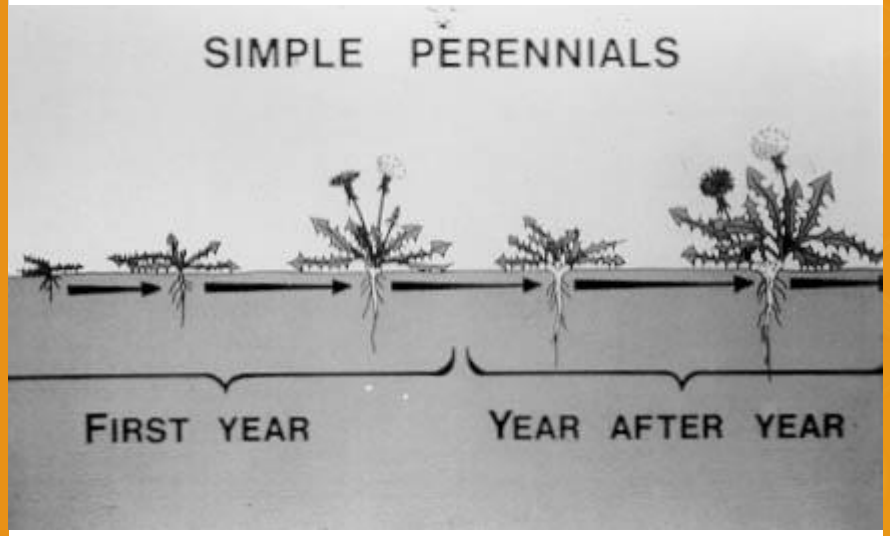
2 growing seasons

Myrtle spurge (*Euphorbia myrsinites*)



Short-lived Perennial

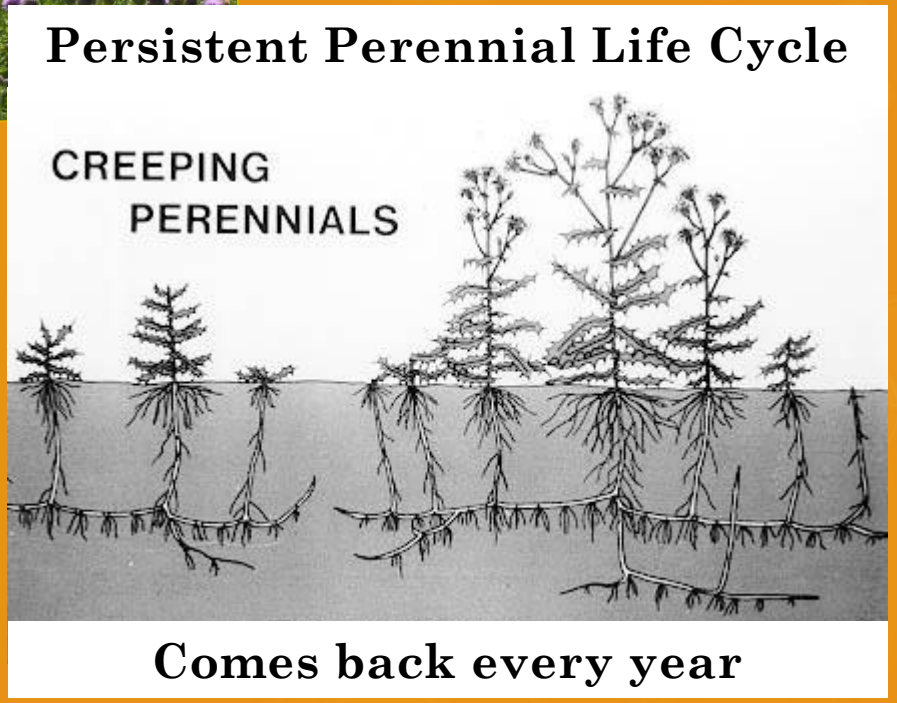
Short-lived Perennial Life Cycle



Comes back every year

Canada thistle (*Cirsium arvense*)

Persistent Perennial



Mechanical Weed Control

Digging, Pulling, Mowing, Tilling

Works well for annuals and biennials

- Works well on small patches
- Excellent if you have the labor

Used strategically, can weaken perennials

- Timed to weaken plant
- Wrong usage can encourage growth
- Used improperly, can reduce herbicide effectiveness

Do NOT dig or till <u>persistent perennials</u> that can grow from <u>root fragments or rhizomes!</u>

Chemical Weed Control

Herbicides

Our key to success comes from

1. **Selecting the "right" herbicide**
2. **Applying it properly**

Chemical Weed Control

List B

Integrated Weed Management Recommendations

Russian knapweed
Acroptilon repens

The most effective control for Russian knapweed is to prevent its establishment through proper land management. An integrated weed management approach can be effective when dealing with Russian knapweed. It can be managed with herbicides or insects, but long-term control must include planting competitive plant species to occupy bare ground once infested by the weed.

CULTURAL
Maintain healthy pastures and prevent bare spots caused by overgrazing. Bare ground is prime habitat for weed invasions. Establishing sod-forming grasses or vegetation with dense shade can be an effective cultural control of Russian knapweed. Contact your local Natural Resources Conservation Service for seed mix recommendations.

BIOLOGICAL
The gall midge, *Jaapiella ivannikovi*, is a fly that lays eggs in the shoot tips of Russian knapweed. It forms galls that reduce flowering, seed production, and stunts the plants' growth. This biocontrol will stress the stand of Russian knapweed but will not likely eliminate it. The Palisade Insectary of the Colorado Department of Agriculture, 970-464-7916, is currently establishing this biocontrol . It is not yet available to the public.

MECHANICAL
Mowing several times before the plants bolt stresses Russian knapweed and forces it to use nutrient reserves stored in the root system. However, mowing alone will not eliminate the infestation and it can stimulate shoot sprouting the following year. Mowing combined with a fall herbicide application will enhance control. Tilling and disking can create root fragments that can sprout. However, repeated deep tillage (1 feet) over 3 years can kill much of the root system.

CHEMICAL
The following are recommendations for herbicides that can be applied to range and pasturelands. Always read, understand, and follow the label directions. Please read label for exact rates. The herbicide label is the LAW!

HERBICIDE	RATE	APPLICATION TIMING
Aminopyralid (Milestone)	5-7 oz/acre	Apply in the fall when above-ground stems die back and root buds are highly susceptible; can also apply in the bud to senescence stages. Add non-ionic surfactant @ 0.32 oz/gal water or 1 qt/100 gal water.
Picloram (Tordon 22K *this is a Restricted Use Pesticide*)	1 qt/acre or 1 oz/gal water	Apply in the fall when above-ground stems die back and root buds are highly susceptible; can also apply in spring to bud/early flower stage and/or fall rosette. Add non-ionic surfactant @ 0.32 oz/gal water or 1 qt/100 gal water.
Chlorsulfuron (Telar)	1-2.6 oz/acre or 2 g/3 gal water	Apply in spring from pre-bloom to bloom and to fall rosettes. Add non-ionic surfactant @ 0.32 oz/gal water or 1 qt/100 gal water.

COLORADO DEPARTMENT OF AGRICULTURE

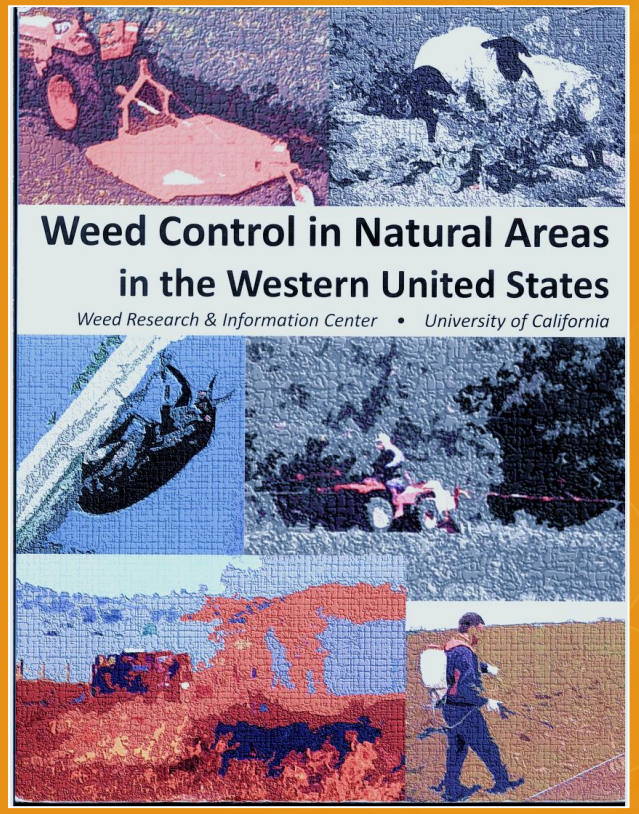
Colorado Department of Agriculture - Conservation Services
700 Kipling Street, Suite 4000
Lakewood, CO 80215
303-239-4100
www.colorado.gov/ag/weeds

Colorado State University Extension

Rev. 9/2013

Selecting the "right" herbicide

1. **Effective on target weed**



Chemical Weed Control

Specimen Label

Dow AgroSciences

Milestone®

Specialty Herbicide

- **Rangeland**
- **Pasture**
- **CRP**
- **Non-crop**
- **Industrial**
- **Non-irrigation ditch banks**
- **Natural areas**
- **Grazed areas**
- **Rights-of-way**

Not Turf, Cropland, or Aquatic!

®Trademark of Dow AgroSciences LLC

- For control of susceptible weeds and certain woody plants, including invasive and noxious weeds, on rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP) acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.

READ THE LABEL!

Selecting the "right" herbicide

1. **Effective on target weed**
2. **Approved application sites**

Chemical Weed Control

Selecting the "right" herbicide

1. **Effective on target weed**
2. **Approved application sites**
3. **Impact on other plants - Selectivity**

   - Broad-leaf/Forbs
   - Grasses
   - Not selective!

READ THE LABEL!

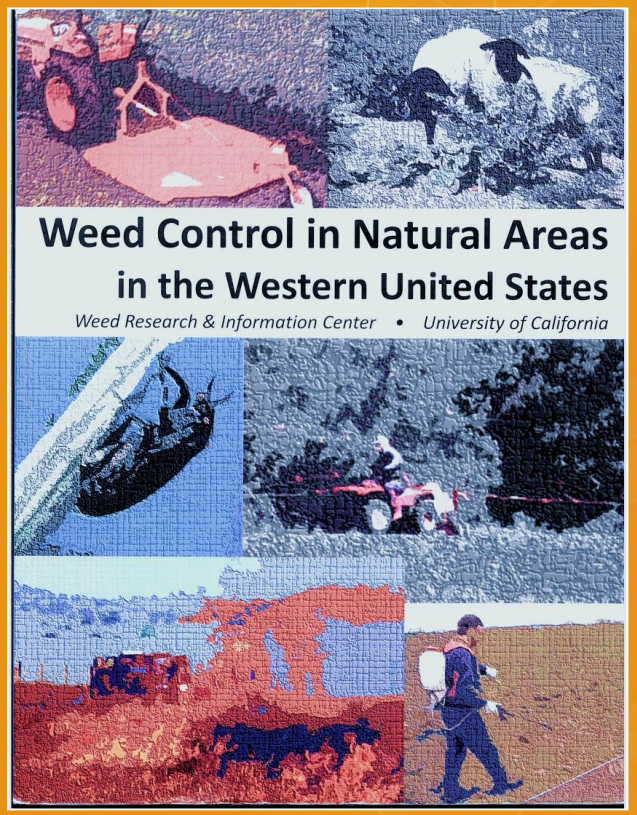
Chemical Weed Control

Applying it properly

1. **Treat weeds at the correct growth phase**

Scotch Thistle
Biennial

Canada Thistle
Persistent perennial



READ THE LABEL!

Chemical Weed Control

Applying it properly

1. **Treat weeds at the correct growth phase**
2. **Avoid drift and off-target treatment**

Spotted knapweed
(Centaurea stoebe)

Chemical Weed Control

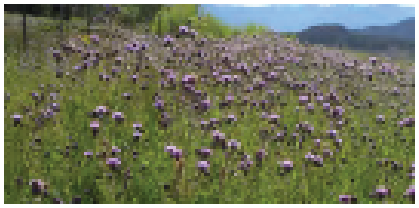
Applying it properly

1. Treat weeds at the correct growth phase
2. Avoid drift and off-target treatment
3. Accurate mixing

READ THE LABEL!

Canada thistle

Cirsium arvense



BIOLOGICAL

Cattle, goats, and sheep will graze on Canada thistle when plants are young and succulent in the spring. Follow up grazing with a fall herbicide application. Insects are available, and provide limited control. Currently, collection and distribution methods for Canada thistle rust (*Puccinia punctiformis*) are being refined. For more information on Canada thistle biocontrol, contact the Colorado Department of Agriculture - Palisade Insectary at (970) 464-7916.

MECHANICAL

Due to Canada thistle's extensive root system, hand-pulling and tilling create root fragments and stimulate the growth of new plants. Mowing can be effective if done every 10 to 21 days throughout the growing season. Combining mowing with herbicides will further enhance Canada thistle control.

CHEMICAL

The table below includes recommendations for herbicides that can be applied to rangeland and some pastures. Treatments may be necessary for an additional 1 to 3 years because of root nutrient stores. Always read, understand, and follow the label directions.

HERBICIDE	RATE	APPLICATION TIMING
Aminopyralid (Milestone)	5-7 oz/acre or 1 teaspoon/gal water	Apply in spring until flowering and/or to fall regrowth. Add 0.25% v/v non-ionic surfactant (equivalent to 0.32oz/ gal water or 1 qt/100 gal water). Can also add chlorsulfuron (Telar) at 1 oz/acre to the mix.
Aminoclopyrachlor + chlorsulfuron (Perspective)	5.5 oz product/acre + 0.25% v/v non-ionic surfactant	Apply in spring from rosette to flower bud stage and/or fall regrowth. Important: Applications greater than 5.5 oz product/acre exceeds the threshold for selectivity. DO NOT treat in the root zone of desirable trees and shrubs. Not permitted for use in the San Luis Valley.
Clopyralid + triclopyr (Prescott; others)	3 pints product/acre or 1.25 oz/gal water	Apply in spring until flowering and/or fall regrowth. Add 0.25% v/v non-ionic surfactant.

Colorado Department of Agriculture - Conservation Services
305 Interlocken Parkway
Broomfield, CO 80021
(303) 869-9030
www.colorado.gov/ag/weeds

Rev. 10/14

Chemical Weed Control

Applying it properly

1. Treat weeds at the correct growth phase
2. Avoid drift and off-target treatment
3. Accurate mixing and adjuvants
4. Wear proper protective equipment

READ THE LABEL!

Chemical Weed Control

Herbicides

Our key to success comes from

1. **Selecting the "right" herbicide**
2. **Applying it properly**

- Online resources
- Contact CSU Extension & local weed manager
- Contact herbicide sales representatives
- Hire someone with good references

READ THE LABEL!

COLORADO
Department of Agriculture
Conservation Services Division

Cecily Mui

List B Noxious Weed Specialist

cecily.mui@state.co.us

303-869-9036