This brochure was created to increase awareness of Noxious Weeds, the importance of identification, the importance of a weed management program, and some methods of weed control based on local, state and national research-based information.

How do I control weeds on my property?

1. Identify the weeds on your property.
2. Once a weed is identified, understand the life cycle of the weed:
   - winter or summer annual
   - biennial
   - simple or creeping perennial
3. Understand the types of controls:
   - Preventative
   - Biological
   - Cultural
   - Mechanical
4. Develop a weed management plan:
   - planning saves money and increases effectiveness
   - include long term monitoring to address any reinfestations.
   - timing is a critical part of successful weed control. Regardless of which combination of control methods are used, implementing those control methods at the correct stage of weed development will increase the chances for successful weed control in the shortest period of time, with the least cost.

What are noxious weeds?

Noxious weeds are non-native plants that disrupt native vegetation because they have no natural controls and are able to adapt to varied conditions. As a result of the Colorado Noxious Weed Act, these weeds have been placed on three separate lists (weed names are color-coded corresponding to the list they are on):

- **List A plants:** Eliminated everywhere
- **List B plants:** Spread should be stopped
- **List C plants:** Control is recommended

Effective management occurs over time and requires repeated exposure to the recommended techniques and control methods. After years of investment in mitigating the weeds on your property, the plant will eventually be destroyed.

This brochure is not meant to be all inclusive or restrictive, but offers guidelines and recommendations. References for this guide are thanks to the following sources:

- CO Dept. of Ag. - Noxious Weed Management Program
  [www.colorado.gov/pacific/agconservation/noxiousweeds](http://www.colorado.gov/pacific/agconservation/noxiousweeds)
- CO Weed Management Association - Noxious Weed Info.
  [www.cnma.org](http://www.cnma.org)

Sprayer Calibration Fundamentals

https://extension.colostate.edu/topic-areas/agriculture/sprayer-calibration-fundamentals-5-003/

**Note:** Always read the label before using any herbicide! Weed control with herbicides is an effective tool for many target weed species. However, there are several aspects to consider when choosing a chemical program. These include: ID of target weed; herbicide selection; timing of application; desirable crops or plant species near control areas; the number of applications per year, and the number of years for treatment. Sprayer calibration methods can be obtained from your local Extension office.
### Bull thistle

**Cirsium vulgare (Savi) Tenore**

#### Keys to Id
- Leaves are prickly-hairy above and cotyledon below.
- Heads cobwebby-pubescent.
- Flowers are composite and purple.

#### Identification
- Lifecycle: Biennial
- Growth form: Forb/herb
- Flower: Flowers are 1.5-2 wide and clustered at the ends of branches. The flower bracts are somewhat tapered and covered with spines (Whitson et al. 1996).
- Seeds/Fruit: One-seeded fruits (achenes) are straw or light brown, straight or slightly curved.
- Leaves: Leaves are spiny, alternate, oblong or lance-shaped, with the base leaves stalkless and clasping, or extended down along the stem.
- Stems: Mature plants range from 2-4 ft tall.
- Roots: Two types of roots, horizontal and vertical. The horizontal roots produce numerous shoots, while vertical roots store water and nutrients in their many small branches.
- Seedling: Early spring growth appears as rosettes with spiny-tipped, wavy leaves.
- Other: The floral bracts are spineless.

#### Control
- Mech: Mowing can be effective if done every 10 to 21 days throughout the growing season.
- Bio: Cattle, goats, and sheep will graze when plants are young and succulent in the spring.

#### HERBICIDES

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
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</tr>
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<tbody>
<tr>
<td>Clomazone + 2,4-D</td>
<td>0.2 + 1.0 to 0.3 oz</td>
<td>Apply to rosettes in spring or fall.</td>
</tr>
<tr>
<td>Dicamba (Banvel, lanquish, or Clarity)</td>
<td>0.5 + 1.0 oz</td>
<td>Apply to rosettes in spring or fall.</td>
</tr>
<tr>
<td>2,4-D or 2,4-D + dicamba (Rangestar)</td>
<td>1.5 to 2.0 1.0 + 0.5 oz</td>
<td>Apply to rosettes in spring.</td>
</tr>
</tbody>
</table>

### Canada thistle

**Cirsium arvense (L.) Scop.**

#### Keys to Id
- Purple flowers form in clusters of 1-5 per branch.
- Floral bracts are spineless.
- Small heads, vanilla scent.

#### Identification
- Lifecycle: Biennial
- Growth form: Perennial forb
- Flower: Heads are terminal, solitary, 1/2-3 in wide, and usually nodding. Deep rose, violet or purple, occasionally white. Flowers are subtended by broad, spine-tipped bracts. May-July.
- Seeds/Fruit: One-seeded fruit (achene) about 0.2 inches long, shiny, yellowish-brown with a plume (pappus) of white hair-like bristles.
- Leaves: Alternate, dark green, deeply lobed, and spiny margined. The leaves extend onto the stem giving a winged appearance. Basal rosettes are well developed, leaves elliptical to lanceolate, 6-14 in, smooth to densely hairy.
- Stems: Mature plants can grow as tall as 6 ft. It can appear solitary or with several stems from one base, and is highly branched above.
- Roots: Fleshy taproot

#### Control
- Mech: Repeated mowing or spraying with herbicides effective on large infestations.
- Bio: seed head weevil and the crown weevil are common pests. Mowing can be effective if done every 10 to 21 days throughout the growing season.
- Bio: Cattle, goats, and sheep will graze when plants are young and succulent in the spring.

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<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 ounces/acre</td>
<td>Spring at the pre-bud growth stage and/or to fall regrowth.</td>
</tr>
<tr>
<td>Clomazone + 2,4-D (Tocam)</td>
<td>1 lb/gal water</td>
<td>Spring during bud to bloom stage and/or to fall regrowth.</td>
</tr>
<tr>
<td>Glyphosate + 2,4-D (Redem)</td>
<td>3 pints/gal water</td>
<td>Apply from rosette to bud stage when all plants have emerged.</td>
</tr>
</tbody>
</table>

### Musk thistle

**Carduus nulans**

#### Keys to Id
- Broad, spine-tipped bracts located under the flower head.
- Flowering heads are terminal, solitary, and usually nodding.
- Grows up to 6 feet tall.

#### Identification
- Lifecycle: Biennial, or sometimes winter annual
- Growth form: Forb
- Flower: Heads are terminal, solitary, 1/2-3 in wide, and usually nodding. Deep rose, violet or purple, occasionally white. Flowers are subtended by broad, spine-tipped bracts. May-July.
- Seeds/Fruit: One-seeded fruit (achene) wrinkled, brown to grayish-black, tipped with a plumule (pappus) of slender bristles.
- Leaves: Leaves are alternate, large, irregularly lobed, and have sharp yellow spikes. Rosette leaves may be up to 2 feet long and 1 foot wide. Upper and lower leaf surfaces are covered with a thick mat of cotton-like or woolly hairs, giving the foliage a gray-green color.
- Stems: Mature plants can grow up to 12 feet tall, have broad branches, and have brown spiny wings.
- Roots: Thick fleshy taproot
- Bio: seed head weevil and the crown weevil are common pests. Mowing can be effective if done every 10 to 21 days throughout the growing season.

#### Control
- Mech: Repeated mowing or spraying with herbicides effective on large infestations.
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<td>Aminopyralid (Milestone)</td>
<td>5 fl. oz./acre</td>
<td>Spring rosette to early bolting or in fall to rosettes.</td>
</tr>
<tr>
<td>Metribuzin (Atrazine)</td>
<td>2 oz./acre</td>
<td>Spring from rosette through very early flower stage.</td>
</tr>
<tr>
<td>Clopyralid + 2,4-D (Redem)</td>
<td>3 pints/acre</td>
<td>Apply from rosette to bud stage when all plants have emerged.</td>
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</table>

### Scotch thistle

**Onopordum acanthium L.**

#### Keys to Id
- Flower heads cluster 2-5 in an umbel and are purple.
- Leaves are alternate, stalk-less and hairy underneath.

#### Identification
- Lifecycle: Biennial
- Growth form: Forb
- Flower: Heads are numerous, 1-2 inches in diameter, with spine-tipped bracts.
- Seeds/Fruit: One-seeded fruit (achene) is wrinkled, and brown to grayish-black, tipped with a plumule (pappus) of slender bristles.
- Leaves: Leaves are alternate, large, irregularly lobed, and have sharp yellow spikes. Rosette leaves may be up to 2 feet long and 1 foot wide. Upper and lower leaf surfaces are covered with a thick mat of cotton-like or woolly hairs, giving the foliage a gray-green color.
- Stems: Mature plants can grow up to 12 feet tall, have broad branches, and have brown spiny wings.
- Roots: Thick fleshy taproot
- Bio: seed head weevil and the crown weevil are common pests. Mowing can be effective if done every 10 to 21 days throughout the growing season.

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<tr>
<td>Picloram (Bone)</td>
<td>1 oz/acre</td>
<td>Apply to rosette to early bolting or in fall to rosettes.</td>
</tr>
<tr>
<td>Aminopyralid (Milestone)</td>
<td>7 fl. oz./acre</td>
<td>Spring from rosette through very early flower stage.</td>
</tr>
<tr>
<td>Mecoprop (Cimaron X-tra)</td>
<td>2 oz./acre</td>
<td>Spring from rosette through very early flower stage.</td>
</tr>
</tbody>
</table>

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**Note:** The above information is a summary of the natural text provided. It is important to consult the original source for detailed and accurate information. **Restricted Use**
Diffuse knapweed  
*Centaurea diffusa* Lam.  
**Keys to Id**  
- Floral bracts have yellow spines with teeth like a comb and a distinct terminal spine  
- Flowers are white or lavender  
- Seedlings have finely divided leaves  

**Identification**  
- Lifecycle: Biennial or short-lived perennial  
- Growth form: Forb  
- Flower: Broadly urn-shaped, 0.6-0.8 in tall, terminal solitary or in clusters of 2-3. Floral bracts are yellowish with a brownish margin, fringed on the sides, and terminating in a slender bristle or spine. The heads contain two types of flowers, ray flowers (white, rose-purple, to lavender) around the edges surrounding tubular disk flowers. June-Aug.  
- Seedings: Seedlings are very small, grey-green, have a wide, rough, hairy, and lacking teeth or lobes. Basal leaves are 2-3 pinnately divided.  

**Control**  
- Mech: Mow when young to control seed production.  
- Bio: Seed head and Root weevils (*Larinus minutus* and *Cyphocleonus achates*)  

**HERBICIDE** | **RATE** | **TIMING** | **CONTROL**  
--- | --- | --- | ---  
Aminopyralid (Milestone) | 5-7 oz/acre | Spring at rosette to early bolt stage and/or in the fall to rosettes.  
2,4-D Amine (temp must be below 85°F) | 1 qt./acre | Spring/fall rosettes - before flowering stalk lengths.  
Clopyralid + Triclopyr (Redeem R&P) | 1.5-2 pints/acre | Rosette to early bolt stage of growth and/or in the fall to rosettes.  
Aminopyralid (Milestone) | 5-7 oz/acre | Spring at rosette to early bolt stage and/or in the fall to rosettes.  
Chlorsulfuron (Telar) | 1-3 oz/acre | Apply in spring from pre-bloom to bloom and to fall rosettes.  
Aminopyralid (Milestone) | 4-6 oz/acre | Bud and flowering stage and to dormant plants in the fall.  
Picloram (Cordon 22K) | 1 qt./acre | Apply in spring to bud/early flower stage or fall rosette.  
Picloram + 2,4-D (Grazon P+D) | 4 pints/acre | Apply in spring from pre-bloom to bloom and to fall rosettes.  
Metsulfuron Me-thyl + Chlor-sulfuron (Cimarron X-tra) | 2 oz./acre | Apply in spring from pre-bloom to bloom and to fall rosettes.
Common Mullein
Verbascum thapsus

**Keys to Id**
- Leaves - felt-like, bluish green in color.
- 5-10ft tall flower spike.
- Biennial, rosette year 1, tall flowering stem year 2.

**Identification**
- Lifecycle: Biennial
- Growth form: Forb
- Flower: 5 lobed sulfur to pale yellow color, develop as the flower spike extends.
- Seeds: Very small capsule, tuft of hair at one end.
- Leaves: Scale-like, alternate, bluish green in color; Year 2; large fuzzy alternate felt

**Keys to Id**
- Flowers are white or purple with a pointed keel (pea-like) and borne on a leafless stalk.
- Leaves: Opposite, pinnate, and covered with silvery hairs.
- Seed pods are erect, stalkless, with a short beak that splits open to release numerous smooth brown seeds.

**Control**
- Cultural: Reduce grazing pressure in pastures to maintain healthy desirable species.
- Defer grazing from locoweed-infested sites in the spring when locoweed is green and growing.

**Mech:**
- Hand pull, dig, grub to remove all parts of plant, especially seed.
- Wear protective clothing, plant is toxic to humans in addition to livestock.

**Chen:** Vegetative/early bloom in spring

**Locoweed (Wooly)**
Oxytropis sericea or Oxytropis lamberti

Abnormal behavior of poisoned animals called "locosed" behavior results from locoweed-induced neurologic damage. Most of the time, animals become depressed and lethargic. Although some of the toxic effects resolve after animals are removed from infested areas, the neurologic damage may be permanent.

**Keys to Id**
- Flowers are white or pink in clusters called racemes.
- Leaves are small and scaly.

**Control**
- Cultural: Grow deciduous, non-leguminous vegetation in the spring when locoweed is green and growing.
- Bio: The saltcedar leaf beetle (Diorhabda elongata) feeds on foliage causing stem debake.

**Salt Cedar (Tamarisk)**
Tamarix ramosissima Ledeb. or T. parviflora DC.

**Identification**
- Lifecycle: Perennial
- Growth: deciduous, loosely branched.
- Flower: Whithit or pinkish in clumps 2-5 cm long on the current year’s branches. Petals retained on fruit.
- Seeds: Very small capsule, tuft of hair at one end.

**Control**
- Cultural: Maintain healthy riparian vegetative cover.
- Mech: Chainsaw, bulldozer, mulching, and mowing.
- Bio: none currently available

**Hoary Cress (Whitetop)**
Cardaria draba

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: Numerous white flowers with four petals, plant has white, flat-topped appearance. May-June.
- Seeds/Fruit: Seed capsules are heart shaped, and contain two reddish-brown seeds.
- Leaves: Alternate, blue green, and lance-shaped. Lower leaves are stalked, while the upper leaves have two lobes clasping the stem.
- Stems: Mature plants reach 2 ft tall with erect stems
- Roots: Rhizomatous, 29-32 inches deep

**Control**
- Mech: Mowing several times before the plants bolt stresses it and allows for better chemical efficacy
- Bio: none currently available

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**Herbicide Table**

<table>
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<tbody>
<tr>
<td>Metsulfuron = Methyl + Chlorsulfuron (Cimaron X-tra)</td>
<td>0.5 oz. / ac</td>
<td>Apply at rosette stage.</td>
<td></td>
</tr>
<tr>
<td>Glyphosate</td>
<td>12-16 oz. / ac</td>
<td>Apply in spring rosette stage.</td>
<td></td>
</tr>
<tr>
<td>Picloram + 2.4-D (Grazon P&amp;D)</td>
<td>2 qt/acre 0.625 lbs ai/ac</td>
<td>Spring, vegetative to early bloom</td>
<td></td>
</tr>
<tr>
<td>Metsulfuron (Escort, Ally)</td>
<td>0.6-0.8 oz/acre</td>
<td>Spring, vegetative to early bloom</td>
<td></td>
</tr>
<tr>
<td>Clopyralid</td>
<td>20-30 gm ae/Ac</td>
<td>Spring, vegetative to early bloom</td>
<td></td>
</tr>
<tr>
<td>Glyphosate (Rodeo)</td>
<td>*nonselective **aquatic label</td>
<td>- Foliar : 2-4 qtl/acre</td>
<td>Foliar: late spring to early fall</td>
</tr>
<tr>
<td>Imazapry (Arsenal) or (Habitat)</td>
<td>*nonselective **aquatic label</td>
<td>- Foliar : 5-6.5 oz/gal water</td>
<td>Foliar: late spring to summer</td>
</tr>
<tr>
<td>Imazapry (Plateau)</td>
<td></td>
<td>- Cut-stump : 100%</td>
<td>Cut-stump: anytime unless snow present. Basal bark: anytime unless snow present.</td>
</tr>
<tr>
<td>Clopyralid</td>
<td></td>
<td>- Cut-stump: 100%</td>
<td></td>
</tr>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Metsulfuron (Escort, Ally)</td>
<td>1.0 oz/acre</td>
<td>Apply at early bud growth stage; x: &quot;broccoli&quot; growth stage. (Early Spring to Early Summer)</td>
<td></td>
</tr>
<tr>
<td>Metsulfuron (Escort, Ally)</td>
<td>1.0 oz/acre</td>
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<td>1.0 oz/acre</td>
<td>Apply at the early bud growth stage; (Late Spring to Mid Summer)</td>
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</table>
Kochia  
*Identification*  
- Lifecycle: Summer Annual  
- Growth form: Forb  
- Flower: Inconspicuous  
- Seeds/Fruit: Wedge-shaped, dull brown  
- Leaves: Alternate, lance-shaped  
- Stems: Branched, round, slender, often red tinged  
- Similar in looks to Russian Thistle  

*Control*  
- Mech: Hand pulling. If plants have set seed, collect and dispose of plants. Small plants may be tilled.  
- Bio: None

**Habitat**  
- Must be combined with chemical treatments.  
-Ideally, apply before plants have seeded  
-Apply before plants have seeded

**Rate**  
- 1 oz/acre  
- 1 qt/acre

**Timing**  
- Just after full bloom  
- Just after full bloom and/or fall.

**Attention**  
- DO NOT apply near or under trees/shrubs or where soils have rapid permeability.

**Exotics**  
- Not available in Colo.

**Control**  
- Mech: Cutting, mowing, or pulling has a negligible effect unless the plants are cut below the surface in the early seedling stage.  
- Bio: The bindweed gall mite, Aceria mahlbergae, and bindweed moth, Tylus luctuosa are effective in Colo.
**Common Cocklebur**
*Xanthium strumarium L.*

**Identification**
- Lifecycle: Annual
- Growth: Forb, branching
- Flower: Small, in axils of upper leaves, male and female flowers are separate.
- Seeds: Dark brown, flattened, pointed tips.
- Non-toxic to livestock

**Control**
- Cultural: Avoid over-grazing
- Mech: Cutting or mowing has a negligible effect, due to re-sprouting from crown.
- Chemical: Glyphosate herbicides applied at the recommended rate will control cocklebur to young seedlings will be effective when combined with other control methods.

**Rabbit Brush**
*Ericameria nauseosa*

**Identification**
- Lifecycle: Perennial
- Growth: Forb, branching
- Flower: Yellow, terminal, clustered
- Leaves: Numerous, slender, alternate, 3/4-2”
- Stems: Silky, wooly covered
- Native invader

**Control**
- Cultural: Avoid over-grazing
- Mech: Cutting or mowing has a negligible effect, due to re-sprouting from crown.
- Chemical: Glyphosate herbicides applied at the recommended rate will control cocklebur to young seedlings will be effective when combined with other control methods.

**Winter Annuals**
Select problem landscape plants

**Cheatgrass - Downy brome**
*Bromus tectorum*

**Keys to Id**
- Drooping seedhead
- Densely hairy leaves
- Greens early spring
- Changes to purple/tan in early summer

**Mustards Shepard's pursle**
*Capsella bursa-pastoris*

**Keys to Id**
- Lobed basal leaf
- Deeply toothed leaf
- Long, slender flower stalk
- Terminal flower cluster
- Small white 4-petal flowers

**Winter Annuals**
Select problem landscape plants

**Mustards Tansey mustard**
*Stylosanthes altissima*

**Keys to Id**
- Coarse deeply divided leaf
- Narrow lobed upper leaf
- Stem erect and branched
- Small yellow 4-petal flowers
- Tumbles in the wind

**Control**
- Prevent Seed Production
- Cultural: Maintain healthy stand of natives/desired perennials, carefully manage grazing to ensure protection of desired plant species.
- Mech: Cutting or mowing has a negligible effect, repeated hand pulling must be done to include as much of the remaining root system as possible.
- Bio: Domestic livestock grazing, when timed correctly can help reduce invasive plants over time.
- Chemical: Glyphosate herbicides applied at the recommended label rate to young seedlings will be effective when combined with other control methods.