Noxious Weed Management Pocket Guide

Delta County

Colorado State University

Extension

Sustainable Small Acreages

Third Edition – May 2014

Colorado State University, U.S. Department of Agriculture and Colorado Counties cooperating. Cooperative Extension programs are available to all without discrimination. To simplify technical terminology, trade names of products will be used. No endorsement of products named is intended nor criticism implied of products not motioned.

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
   - Chemical
   - Mechanical
4. Develop a weed management plan:
   - planning saves money and increases effectiveness
   - include long term monitoring to address any reinfections.
   - 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 weeds 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
  [http://www.colorado.gov/csbe/PlantAgriculture/Main/CDAG/1157925159176](http://www.colorado.gov/csbe/PlantAgriculture/Main/CDAG/1157925159176)
- CO Weed Management Association - Noxious Weed Info.

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Sprayer Calibration Fundamentals
[http://www.ext.colostate.edu/pubs/farmmg/05003.html](http://www.ext.colostate.edu/pubs/farmmg/05003.html)

Always add a nonionic surfactant @ 0.32 oz.

Weed Control Methods

**Preventive:** Prevention is the first and, perhaps, the most important step in a weed control program. In addition, prevention is probably the most cost-effective method of weed control. Methods include: maintaining healthy pastures, using weed-free crop seed, weed-free manure and hay, and clean harvesting and tillage equipment, as well as the elimination of weed infestations in areas bordering cropland, and in irrigation ditches and canals.

**Cultural:** Methods include, and are not limited to: Establishing and managing an adequate population of desirable vegetation to compete with the weeds; utilizing livestock (cattle, goats, sheep) when possible; mulching; burning; and even plastic weed barriers.

**Mechanical:** Methods include, and are not limited to: Hand-pull, hoe, mow and tillage.

**Biological:** Biological weed control involves the utilization of natural enemies for the control of specific weed species. Biological weed control is never 100% effective, and can take 5 to 10 years for success. However, this method can be successful especially when combined with other control methods.

**Chemical:** 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.

**Sprayer Calibration Fundamentals**
[http://www.ext.colostate.edu/pubs/farmmg/05003.html](http://www.ext.colostate.edu/pubs/farmmg/05003.html)
**Bull thistle**
*Cirsium vulgare* (Savi) Tenore

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

**Identification**
- Lifecycle: Biennial
- Growth form: Forb/herb
- Flower: Flowers are 1.5-2 in wide and clustered at the ends of branches. The flower bracts are somewhat tapered and covered with spines (Whitting et al. 1996).
- Seeds/Fruit: Seeds are cAPPED with a circle of plume-like white hairs.
- Leaves: Leaves are alternate. Bull thistles are glabrous-hairy on the top surface of the leaves. They are cottony-hairy on the undersides.
- Stems: In mature plants the leaves extend down, clasping the stem and are divided into segments (i.e. strongly decurrent).

**Control**
- Mech: Sever the root below the soil surface
- Bio: *Urophora stylata*, a fly predator, can be used to help control this thistle.

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**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: Perennial
- Growth form: Perennial forb
- Flower: Flowerheads are purple and borne in clusters of 1-5 per branch. Heads are only about 3/4 in wide. June-Oct.
- Seeds/Fruit: One-seeded fruits (achenes) are straw or light brown, 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.

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**Musk thistle**
*Carduus nutans*

**Keys to Id**
- Broad, spine-tipped bracts located under the flower.
- 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 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 oblong 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: Sever the root below the soil surface. Mowing is most effective when plants are at full-bloom.
- Bio: Seed head weevil and the crown weevil are effective on large infestations.

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**Scotch thistle**
*Onopordum acanthium* L.

**Keys to Id**
- Flower heads cluster 2-5 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, brown to grayish-black, tipped with a plume (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, and have a large, fleshy taproot. Stems are numerous, branched, and have broad spiny wings.
- Roots: Thick fleshy taproot
- Seedling: Forms rosette

**Control**
- Mech: Sever the root below the soil surface. Mowing is most effective when plants are at full-bloom.
- Bio: None currently effective

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**Table: Herbicides for Thistles**

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clomax + 2,4-D (Curtil)</td>
<td>0.2 + 1.0 to 0.3 + 1.5 oz</td>
<td>Apply to rosettes in spring or fall.</td>
</tr>
<tr>
<td>*Dicamba (Banvel, Curtail)</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 (Rangelast)</td>
<td>1.5 oz to 2.0 oz</td>
<td>Apply to rosettes in spring.</td>
</tr>
<tr>
<td>Clomax + 2,4-D (Redeem)</td>
<td>3 pints/acre</td>
<td>Apply from rosette to bud stage when all plants have emerged.</td>
</tr>
<tr>
<td>Clomax + 2,4-D (Redeem)</td>
<td>1.25 oz/gal water</td>
<td>Apply from rosette to bud stage when all plants have emerged.</td>
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<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 ounces/acre 1.1 gal water</td>
<td>Spring at the pre-bud growth stage and/or to fall regrowth.</td>
</tr>
<tr>
<td>Chlorsulfuron (Telar BF)</td>
<td>1.3 pints/acre 0.50 gal water</td>
<td>Spring during bud to bloom stage and/or to fall regrowth.</td>
</tr>
<tr>
<td>Clomax + 2,4-D (Redeem)</td>
<td>3 pints/acre 1.25 oz/gal water</td>
<td>Apply from rosette to bud stage when all plants have emerged.</td>
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<tr>
<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>Metsulfuron (Tordon 22K)</td>
<td>1 oz product/acre</td>
<td>Seed from rosette through early flowering stage.</td>
</tr>
<tr>
<td>Clomax + 2,4-D (Redeem)</td>
<td>1 oz product/acre</td>
<td>Spring from rosette through early flowering stage.</td>
</tr>
</tbody>
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<tr>
<td>Pidolam (Tordon 22K)</td>
<td>1 pint/acre</td>
<td>Apply spring or fall in the rosette stage.</td>
</tr>
<tr>
<td>Aminopyralid</td>
<td>7 fl. oz/acre</td>
<td>Apply spring or fall in the rosette stage.</td>
</tr>
<tr>
<td>Metsulfuron (Cimarron X-Ira)</td>
<td>2 oz/acre</td>
<td>Apply rosette to early bolting stages of growth. (Spring)</td>
</tr>
</tbody>
</table>
**Diffuse knapweed**
*Centaurea diffusa* Lam.

**Keys to Id**
- **Key Traits**
  - **Floral bracts** have yellow spines with teeth like a comb and a distinct terminal spine.
  - **Flowers** are white or lavender.
  - **Seedheads** 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.
- **Seeds:** Seeds are light brown to black.
- **Leaves:** Basal leaves are stalked and divided into narrow, hairy segments. Stem leaves are smaller, alternate, less divided, stalkless, and become bract-like near the flower clusters.
- **Stems:** Upright, 4-24 in tall, highly branched, angled with short, stiff hairs on the angles.
- **Control**
  - **Mech:** Sever the root below the soil surface. Mowing is most effective when plants are at full-bloom.
  - **Bio:** Livestock, seedhead weevil (*Larinus minutus*), and the root weevil fly (*Cyphocleonus achates*).

**Control**
- **Mech:** Mowing repeatedly after the plants bolt during the summer, then herbicide in the fall.
- **Bio:** Gall midge (*Jaapiella ivannikovi*).

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<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 oz/acre</td>
<td>Spring at rosette to early bolt stage and/or in the fall to rosettes.</td>
</tr>
<tr>
<td>2,4-D Amine (temp must be below 65°F)</td>
<td>1 qt/acre</td>
<td>Spring/fall rosettes - before flowering stalk lengthens.</td>
</tr>
<tr>
<td>Clopyralid + Tricosopyr (Redeem R&amp;P)</td>
<td>1.5-2 pints/acre, 0.75 oz/gal</td>
<td>Rosette to early bolt stage of growth and/or in the fall to rosettes.</td>
</tr>
</tbody>
</table>

**Spotted knapweed**
*Centaurea maculosa* L.

**Keys to Id**
- **Key Traits**
  - **Floral bracts** have black tips, with comb-like spines of equal length.
  - **Flowers** are pink to purple, but rarely white.
  - **Leaves** are pinnately divided.

**Identification**
- **Lifecycle:** Biennial or short-lived perennial
- **Growth form:** Forb
- **Flower:** Flowering heads are solitary at the ends of branches. The floral bracts are stiff and tipped with a dark comb-like fringe. The flowers are pinkish-purple or rarely cream colored.
- **Seeds:** Have a tuft of persistent bristles.
- **Leaves:** Alternate rosette leaves are up to 6 in long, and deeply lobed. The principal stem leaves are pinnately divided, have smooth margins, and become smaller toward the top of the shoot.
- **Stems:** Mature plants are 1-3 ft tall, single stemmed.
- **Roots:** Rosette leaves have a stout taproot.
- **Control**
  - **Mech:** remove all roots below the soil surface. Mowing is most effective when plants are at full-bloom.
  - **Bio:** Seed head and Root weevils (*Larinus minutus* and *Cyphocleonus achates*).

**Control**
- **Mech:** Mowing repeatedly before the plants bolt during the summer, then herbicide in the fall.
- **Bio:** none currently available in Colorado.

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<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 oz/acre, 1 pt/gal water</td>
<td>Spring at rosette to early bolt stage and/or in the fall to rosettes.</td>
</tr>
<tr>
<td>Clopyralid (Transline, Stinger)</td>
<td>0.75 oz/gal water</td>
<td>Apply in spring and fall to rosettes.</td>
</tr>
</tbody>
</table>

**Russian knapweed**
*Acroptilon repens* (L.) De Candolle

**Keys to Id**
- **Distinguishable by the pointed papery tips of the floral bracts.**
- **The roots** are brown and have scale leaves.

**Identification**
- **Growth form:** Perennial forb
- **Flower:** Heads are urn-shaped, solitary, and composed of disk flowers. Floral bracts are broad, ovoid, entire, and greenish at the base with papery, finely hairy edges. The petals are pink or purple.
- **Seeds:** Oval, grayish or ivory, with long white bristles (pappus) at the tip when young.
- **Leaves:** Alternate. Lower stem leaves are narrowly oblong to lance-shaped, and deeply lobed. The upper leaves are long, toothed, and become progressively smaller. Rosette leaves are lance-shaped, tapering at both ends, broadest at the tip.
- **Stems:** Mature plants are between 18-36 inches tall. The stems are erect, stiff, branched, and when young are covered with soft, short, gray hair. The roots are thick, black, woody taproot.
- **Control**
  - **Mech:** Cut off or pull, and remove entire root crown when in the rosette stage. Remove the accumulated dense litter layer to stimulate germination of desired plants. Mow or cut flowering stems before seed nutlets develop.
  - **Bio:** Velcro-like seeds with 4 nutlets.

**Control**
- **Mech:** Cut or pull, and remove entire root crown when in the rosette stage. Remove the accumulated dense litter layer to stimulate germination of desired plants. Mow or cut flowering stems before seed nutlets develop.
- **Bio:** none currently available in Colorado.

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<tr>
<td>Aminopyralid (Milestone)</td>
<td>4-6 oz/acre</td>
<td>Bud and flowering stage to dormant plants in the fall.</td>
</tr>
<tr>
<td>Picloram (Tordon 22K)</td>
<td>1 pt/acre</td>
<td>Apply in spring to bud growth stage or fall.</td>
</tr>
<tr>
<td>Chlorosulfuron (Telar)</td>
<td>1-3 oz/acre, 2 g/l 3 gal water</td>
<td>Apply in spring from pre-bloom to bloom and to fall rosettes.</td>
</tr>
</tbody>
</table>

**Houndstongue**
*Cynoglossum officinale*

**Keys to Id**
- **Panicles** of reddish-purple flowers with 5 petals and 5 soft, hairy sepals.
- **Velcro-like seeds with 4 nutlets.**

**Identification**
- **Lifecycle:** Biennial
- **Growth form:** Forb
- **Flower:** Flowers are reddish-purple, with five petals, arranged in panicles in the upper leaf axils.
- **Seeds/Fruit:** The fruit is composed of four prickly nutlets each about 1/3 inch long.
- **Leaves:** Alternate. Lower stem leaves are narrowly oblong to lance-shaped, and deeply lobed. The upper leaves are long, toothed, and become progressively smaller. Rosette leaves are lance-shaped, tapering at both ends, broadest at the tip.
- **Control**
  - **Mech:** Produces a single flowering stem. Stem is erect, stout, heavy, 1-3 ft tall, branched above. Roots: Thick, black, woody taproot.
  - **Seeding:** Forms a rosette in the first year.

**Control**
- **Mech:** Cut or pull, and remove entire root crown when in the rosette stage. Remove the accumulated dense litter layer to stimulate germination of desired plants. Mow or cut flowering stems before seed nutlets develop.
- **Bio:** none currently available in Colorado.

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<tr>
<td>Metsulfuron Methylene + Chlorosulfuron (Cinnamon X-tra)</td>
<td>2.0 oz / acre</td>
<td>Apply in spring to rosette to early bud growth stage.</td>
</tr>
<tr>
<td>Picloram + 2,4-D (Grazon P+D) (restricted use)</td>
<td>4 pints / acre</td>
<td>Apply in spring to rosette stage.</td>
</tr>
</tbody>
</table>
Euphorbia esula L.

**Leafy spurge**

- **Keys to Id**: Leaves are yellowish-green and have a pair of heart shape yellow-green bracts below each inconspicuous flower.
- **Control**: The entire plant contains white, milky latex.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: Numerous small clusters of small yellowish-green enclosed by paired heart-shaped yellow-green bracts. May-July.
- Seeds: Oblong, greyish to purple, in a capsule.
- Leaves: Alternately arranged leaves become progressively smaller upward along the stem.
- Roots: Shallow, branched rhizomes.
- Other: Oxeye daisy is easily confused with the ornamental Shasta daisy which has a root ball and is a more robust plant with larger flowers.

**Control**
- Mech: Hand pull or dig when soil is moist and infestations are small, be sure to pull up all roots.
- Bio: Goats or sheep can be effective. There are no insect biological controls currently available.

**Purple loosestrife**

- **Keys to Id**: Showy pinkish-purple flowers bloom in long vertical racemes.
- **Control**: goats or sheep can be effective. There are no insect biological controls currently available.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb or woody shrub
- Flower: Purple/magenta with 5-7 petals arranged in long vertical racemes.
- Seeds/Fruit: Fruits are many-seeded capsules, seeds are small and ovoid.
- Leaves: Simple, entire, opposite or whorled
- Roots: Short rhizomes and taproot.
- Other: Sometimes confused with fireweed (Epilobium spp.), which have 4-petaled flowers.

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

**HERBICIDE**
- **RATE**: 1 oz/acre
- **TIMING**: Apply at the early bud growth stage; i.e. “broccoli” growth stage. (Early Spring to Early Summer)

**HERBICIDE**
- **RATE**: 1 oz/acre
- **TIMING**: Apply at early bud growth stage; (Late Spring to Early Summer)

**Cardaria draba**

**Hoary Cress (Whitetop)**

- **Keys to Id**: White flowers.
- **Control**: Mowing several times before the plants bolt stresses it and allows for better chemical efficacy
- **Bio**: none currently available

**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.
- Stem: 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
Yellow Starthistle
*Centaurea solstitialis*

**Keys to Id**
- Winged stems
- Yellow ray & disk flowers
- Stiff spines at flower base
- Plant has a unique blue-green color

**Identification**
- Lifecycle: Winter annual
- Growth form: Forb
- Flower: Heads are yellow, located singly at the ends of branches, distinguished by sharp, straw-colored thorns, which are up to 0.75 inches long.
- Seeds: Two types: plumed and plumeless.
- Leaves: Basal leaves are deeply lobed while the upper leaves are entire and sharply pointed.
- Roots: Taproot, rigid, branching, winged stems that are covered with cottony hairs.
- Stems: Mature plants are 2-3 feet tall and have rigid, branching, winged stems that are covered with cottony hairs.
- Seeds: Brown or black, circular, and surrounded by cottony hairs.
- Flower: Heads are yellow, located singly at the base and smooth to the top.

**Control**
- Mech: Hand pull, make certain to pull all the roots. Remove all parts of plant including dry skeletons. Mowing is NOT advised.
- Bio: Inappropriate, as eradication is the goal, none currently approved for use in Colorado.

**Herbicide Table**

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<tbody>
<tr>
<td>Picloram (Tordon 22K)</td>
<td>1.5 pints/acre</td>
<td>Apply during rosette growth stage or when actively growing</td>
</tr>
<tr>
<td>Aminopyralid (Milestone)</td>
<td>5 oz/acre</td>
<td>Apply during rosette and bolting growth stages.</td>
</tr>
<tr>
<td>Clopyralid (Transline)</td>
<td>0.67 pint/acre</td>
<td>Apply during rosette to mid-bolt growth stages.</td>
</tr>
<tr>
<td>Chlorsulfuron (Telan)</td>
<td>1.5 qts/acre</td>
<td>Apply at mid-flowering to late fall</td>
</tr>
<tr>
<td>Chlorsulfuron (Telair)</td>
<td>1.25 oz/acre added to Tordon</td>
<td>Apply at mid-flowering to late fall (Aug thru Sept)</td>
</tr>
<tr>
<td>Metolachlor ((whichone)</td>
<td>1 oz/acre</td>
<td>Apply at mid-flowering to late fall (Aug thru Sept)</td>
</tr>
<tr>
<td>Imazapyr (Plateau)</td>
<td>12 fl oz / acre + 2 pt / ac. seed oil</td>
<td>Flower to late flower growth stages. (Summer)</td>
</tr>
</tbody>
</table>

**Perennial Pepperweed**
*Lepidium latifolium*

**Keys to Id**
- Dense clusters of white flowers.
- Leaves and stem - covered with waxy layer.

**Identification**
- Lifecycle: Perennial, member of the mustard family.
- Growth form: Forb
- Flower: White; packed in dense clusters near the ends of branches. May-Aug.
- Fruit: Nearly round, very small and sparsely hairy.
- Leaves: Alternate, lance-shaped, may be toothed, bright-green to gray-green, basal leaves are larger than the upper leaves.
- Stems: Mature plants are 1-3 ft tall.
- Roots: Deep-seated roots.
- Other: The leaves and stem are covered with a waxy layer.
- Exotics: Do not have clasping bases, unlike Hoary cress leaves with clasping bases.

**Control**
- Mech: Hand pull/dig, or tilling is NOT recommended for eradication.
- Bio: Calophasia lunula, a predatory noctuid moth, Eteobalea intermediella, a stem boring weevil are currently available in Colorado. Do NOT graze while actively growing.
- Herbicides: none currently available, eradication is goal in Mesa County. Do NOT recommend toxicity is high.

**Herbicide Table**

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorsulfuron (Telar)</td>
<td>1 oz / acre</td>
<td>Bolting to early flower. (Early Spring to Early Summer)</td>
</tr>
<tr>
<td>Metsulfuron (Escort XP)</td>
<td>1 oz / acre</td>
<td>Bolting growth stage. (Spring)</td>
</tr>
<tr>
<td>Imazapyr (Plateau)</td>
<td>12 fl oz / acre + 2 pt / ac. seed oil</td>
<td>Flower to late flower growth stages. (Summer)</td>
</tr>
</tbody>
</table>

**Field Bindweed**
*Convolvulus arvensis*

**Keys to Id**
- Flowers are funnel-shaped, white to pink, and have two small bracts one inch below the flower base.
- Leaves are shaped like arrowheads.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: bell or trumpet-shaped, white to pink in color, and are about 1 inch long, small bracts below
- Seeds: Fruit: Seeds can remain viable for 40 years.
- Leaves: Alternate, arrowhead shaped.
- Stems: Prostrate, many feet in length
- Roots: Rhizomatous with deep taproot

**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 mahlerbae, and bindweed moth, *Tylus lucius*, are effective in Colo.
Poisonous Plants
These plants are poisonous to domestic livestock

Kochia
Kochia scoparia (L.) Roth

Identification
• Lifecycle: Summer annual
• Growth form: Forb
• Flower: Head is a spike, formed by clusters of inconspicuous, green, petal-less, stalk-less flowers that grow in the axils of reduced leaves.
• Seeds: Egg shaped, flattened, and very small.
• Leaves: Alternate, simple, linear to lance shaped.
• Stems: Multi branched from base, erect, reddish tint

Bio: None known.

Mech: Hand pulling, digging, to remove all parts of the plant when found in grazing pasture land, combine with chemical treatment option.

Chemical: Dicamba (Banvel, Oracle, Clarity) with any 2,4-D Amine product. Rate: Mix one ounce of each product into one gallon of water (1 oz/gal).

Rate: Mix one ounce of each product into one gallon of water (1 oz/gal).

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 - Sheperd's-purse
Capsella bursa-pastoris

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

Control
• Cultural: Maintain healthy stand of natives/desired perennials, carefully manage grazing to ensure protection of desired plant species.

Mustards - Tumble mustard
Sisymbrium altissimum

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
• Meth: Hand pulling, digging, to remove all parts of plant when found in grazing pasture land, combine with chemical treatment option.

Chemical: Dicamba (Banvel, Oracle, Clarity) with any 2,4-D Amine product. Rate: Mix one ounce of each product into one gallon of water (1 oz/gal).

Rate: Mix one ounce of each product into one gallon of water (1 oz/gal).

Some Additional Resources:
- CMG Garden Notes #351, Weed Management http://www.cmg.colostate.edu/gardennotes/351.pdf
- CSU Ext, Preparation of small spray quantities of pesticides http://www.ext.colostate.edu/pubs/garden/07615.pdf
- CSU Ext, Weed Management for small rural acreages http://www.ext.colostate.edu/pubs/natres/03106.pdf
- CSU Ext, Yard and Garden Publications http://www.ext.colostate.edu/pubs/pubs/htmfgarden

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