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 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 control methods. After years of managing weeds on your property, infestations should be significantly reduced enabling you to limit efforts to the occasional, scattered plant.

This brochure is not meant to be all inclusive or definitive. It takes persistence to win the war on weeds!

Preventive: Prevention is the first and, perhaps, the most important step in a weed control program. 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/lamng/05003.html

It takes persistence to win the war on weeds!
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: Flowerheads are purple and borne in clusters of 1-5 per branch. Heads are about 3/4 in. wide. June-Sept.
- Seeds/Fruit: One-seeded fruits (achenes) are straw or light brown, straight or slightly curved
- Leaves: Leaves are spiny, alternate, obovate 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.

**HERBICIDE**
- Aminopyralid (Milestone)
- Chlorsulfuron (Telar)

**RATE**
- Aminopyralid: 5-7 oz./acre
- Chlorsulfuron: 1-3 oz./acre

**TIMING**
- Apply to rosettes in spring or fall.
- Spring at the pre-bud growth stage and/or to fall regrowth.

**HERBICIDE**
- Metsulfuron (Escort XP)
- Chlorsulfuron (Telar)

**RATE**
- Metsulfuron: 1 oz. product/acre
- Chlorsulfuron: 1 oz. product/acre

**TIMING**
- Spring from rosette to early blooming or in fall to rotellae.
- Spring from blooming to bud stages.
- Spring from rosette through early flower stage.

**Plumeless Thistle**
Carduus anachoreides L

**Keys to ID**
- Flower heads occur in clusters of 2-5, purple to dark red in color.
- Alternate leaves, stalk-less, hairy on bottom.

**Identification**
- Lifecycle: Biennial
- Growth form: Forb
- Flower: Solitary at the ends of branches or in clusters of 2-5. Bracts appear as sharp spines. Purplish-pink; heads are 1-2 inches in diameter
- Leaves: Alternate, stalk-less, hairy underneath, coarsely lobed, basal leaves spiny.
- Stems: Spiny, can reach 48" tall.
- Roots: Fleshy taproot.
- Other: Plumeless thistle are distinguished from musk thistle by the leaf-like spines on stem and hairy leaf underside; flowers are 1/3rd size of musk.

**Control**
- Mech: Sever roots below soil surface; mow in full bloom and dispose of flowering heads-seeds can mature after plant is cut. Monitor and retreat as necessary to prevent reoccurrences.
- Bio: Seedhead weevil (Larinus minutus).

**HERBICIDE**
- Aminopyralid (Milestone)
- Chlorsulfuron (Telar)

**RATE**
- Aminopyralid: 5 fl. oz./acre
- Chlorsulfuron: 1 oz. product/acre

**TIMING**
- Spring rosette to early blooming or in fall to rotellae.
- Spring from blooming to bud stages.
- Spring from rosette through early flower stage.
Scotch thistle
Onopordum acanthium L.

**Identification**
- **Lifestyle:** 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, stalk-less and hairy underneath.

**Control**
- **Mech:** Sever the root below the soil surface. Mowing is most effective before bloom.
- **Bio:** Livestock, seedhead weevil (Larinus minutus), and the root weevil fly (Cyphocleonus achates)

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clopyralid + Triclopyr</td>
<td>1 qt./ac</td>
<td>Apply spring or fall in the rosette stage.</td>
</tr>
<tr>
<td>(Redeem R&amp;P)</td>
<td>1 oz./gal.</td>
<td></td>
</tr>
<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 oz/ac</td>
<td>Spring at rosette to early bolt stage and/or in the fall to fall rosettes.</td>
</tr>
<tr>
<td></td>
<td>1 l/gal.</td>
<td></td>
</tr>
<tr>
<td>2,4-D Amine (temp must be below 85”)</td>
<td>1 qt./ac</td>
<td>Spring/fall rosettes - before flowering stalk lengths.</td>
</tr>
<tr>
<td></td>
<td>1 oz./gll.</td>
<td></td>
</tr>
<tr>
<td>Metsulfuron (Cimarron X-tra)</td>
<td>2 oz./ac</td>
<td>Apply spring or fall in the rosette stage.</td>
</tr>
<tr>
<td></td>
<td>1 oz./gal.</td>
<td></td>
</tr>
<tr>
<td>Clopyralid + Triclopyr</td>
<td>1.5-2 pints/acre</td>
<td>Rosette to early bolt stage of growth and/or in the fall to fall rosettes.</td>
</tr>
<tr>
<td>(Redeem R&amp;P)</td>
<td>0.75 oz/gal</td>
<td></td>
</tr>
</tbody>
</table>

**Identification**
- **Lifestyle:** Biennial or short-lived perennial
- **Growth form:** Forb
- **Flower:** Floral bracts have yellow spines with teeth like a comb and a distinct terminal spine.
- **Flowers:** Are white or lavender
- **Seeds:** Have finely divided leaves

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aminopyralid (Milestone)</td>
<td>4-6 ounces/acre</td>
<td>Bud and flowering stage to and dominant plants in the fall.</td>
</tr>
<tr>
<td></td>
<td>1 l/gal.</td>
<td></td>
</tr>
<tr>
<td>Piclarmor (Tordon 22K)</td>
<td>1 qt./ac</td>
<td>Apply in spring to bud/earlier flowering stage or fall rosette.</td>
</tr>
<tr>
<td><em>Widely Used</em></td>
<td>1 oz./gll.</td>
<td></td>
</tr>
<tr>
<td>Chlorsulfuron (Talor)</td>
<td>1-3 oz/ac</td>
<td>Apply in spring from pre-bloom to bloom and to fall rosettes.</td>
</tr>
<tr>
<td></td>
<td>2 gr/3 gal</td>
<td></td>
</tr>
</tbody>
</table>

**Identification**
- **Lifestyle:** 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. Lower stem leaves are narrowly oblong to lance-shaped, and deeply lobed. The upper leaves are oblong, 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, thin, stiff, branched, and with short, stiff hairs on the angles.
- **Seeding:** The seed heads are oval, with shallow toothed or smooth edges. The surface of the leaves looks grayish-green, but is not hairy.

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

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aminopyralid (Milestone)</td>
<td>5-7 ounces/acre</td>
<td>Spring at rosette to early bolt stage and/or in the fall to fall rosettes.</td>
</tr>
<tr>
<td></td>
<td>1 l/gal.</td>
<td></td>
</tr>
<tr>
<td>Aminocyclopyralid (Persplica)</td>
<td>8 oz/acre</td>
<td>Apply to spring to pre-bloom and/or in the fall to fall rosettes.</td>
</tr>
<tr>
<td></td>
<td>0.25 l/gal.</td>
<td></td>
</tr>
<tr>
<td>Clopyralid + 2,4-D (Curtail)</td>
<td>2.3 qts./acre</td>
<td>Apply in spring and fall to rosettes.</td>
</tr>
<tr>
<td></td>
<td>1.5 oz./gal.</td>
<td></td>
</tr>
</tbody>
</table>

**Identification**
- **Lifestyle:** Biennial or short-lived perennial
- **Growth form:** 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 oblong, 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, thin, stiff, branched, and with short, stiff hairs on the angles.
- **Seeding:** The seed heads are oval, with shallow toothed or smooth edges. The surface of the leaves looks grayish-green, but is not hairy.

**Control**
- **Mech:** Mowing repeatedly before the plants bolt during the summer, then herbicide in the fall.
- **Bio:** Gall midge (Jaapiella ivannikovi)
Leafy spurge
Euphorbia esula L.

**Keys to ID**
- Heart shape yellow-green bracts below each inconspicuous flower.
- The entire plant contains white, milky latex.

**Identification**
- Lifecycle: Perennial
- Growth form: Herbaceous
- Flower: Numerous small clusters of small yellowish-green enclosed by paired heart-shaped yellow-green bracts. May-July.
- Seeds: Oblong, grayish to purple, in a capsule.
- Leaves: Alternate, narrow (1/4” wide), 1-2 ft tall.
- Roots: Extensive lateral root system.
- Seedling: Seed leaves (cotyledons) are linear to lanceolate, with entire margins.
- Other: The entire plant contains white, milky latex.

**Control**
- Mech: Mowing will reduce seed production, repeat every 2 to 4 weeks during the growing season.
- Bio: Both sheep and goats can be effective grazers. Flax beets (Apthitha spp.) are effective especially when combined with grazing and/or herbicides.

---

Oxeye daisy
Chrysanthemum leucanthemum L.

**Keys to ID**
- Creeping perennial.
- Daisy-like; grows 10 inches to 2 feet tall.
- White ray flower on yellow disk; 2” diameter.

**Identification**
- Lifecycle: Perennial, short-lived
- Growth form: Forb
- Flower: Heads are solitary at the ends of branches. Heads are white ray flowers & yellow disk flowers.
- Seeds/Fruit: Fruits have about 10 ribs.
- Leaves: Alternately arranged leaves become progressively smaller upward along the stem. The upper leaves become stalk-less and toothed. Basal and lower stem leaves are 2-5’ long, spoon-shaped. Stems: Mature plants are 10-24 in tall with erect, smooth to sparsely hairy stems.
- 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
Lythrum salicaria L.

**Keys to ID**
- Showy pinkish-purple flowers bloom in long vertical racemes.
- Smooth Lance-shaped leaves.
- Four sided stem.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb or woody sub-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
- Stems: Annual stems arise from a perennial root stock. Stems are erect, 1.5-8 feet tall. Plants become taller and bushier as the rootstock matures.
- Roots: Short rhizomes and taproot.
- Other: Sometimes confused with fireweed (Epilobium spp.), which have 4-petaled flowers.

**Control**
- Mech: Hand removal, prior to seed set, of isolated individuals on small infestations. Remove the entire rootstock. Flowerheads must be cut and disposed of properly before a herbicide is applied.
- Bio: Not included in prescribed management plans by the State for List A species.

---

Hoary Cress (Whitetop)
Cardaria draba

**Keys to ID**
- White flowers.
- Grows erect 10-24” in height
- Leaf is 3/4-4” long with blunt end and fine white hairs.

**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 rhizomes 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

---

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picloram (Tordon 22K) <em>Restricted Use</em></td>
<td>1 qt/acre</td>
<td>Spring, just after full bloom and/or fall.</td>
</tr>
<tr>
<td>Imazapic (Plateau)</td>
<td>12 oz/acre</td>
<td>Fall only treatment prior to hard freeze.</td>
</tr>
<tr>
<td>2,4-D Amine</td>
<td>2-3 qts/acre</td>
<td>Early spring and fall. Prevents seed formation.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metsulfuron (Escort XP)</td>
<td>1 oz/acre</td>
<td>Surfactant is absolutely necessary. Apply at flowering growth stage. (Summer)</td>
</tr>
<tr>
<td>Chlorsulfuron (Tetal)</td>
<td>1 oz/acre</td>
<td>Surfactant is absolutely necessary. Apply at flowering growth stage. (Summer)</td>
</tr>
<tr>
<td>Glyphosate* *(Rodeo - aquatic safe) *nonselective</td>
<td>1-2 qts/acre</td>
<td>Summer during the flowering stage. Cut and properly dispose of flowerheads before applying Rodeo.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr (Garlon 3A)</td>
<td>1-2 qts/acre</td>
<td>Summer. If plants are flowering, cut and properly dispose of flower heads before applying.</td>
</tr>
<tr>
<td>Glyphosate* *(Rodeo - aquatic safe) *nonselective</td>
<td>1-2 qts/acre</td>
<td>Summer during the flowering stage. Cut and properly dispose of flowerheads before applying Rodeo.</td>
</tr>
<tr>
<td>Imazapic (Plateau)</td>
<td>12 fl. oz/acre</td>
<td>Apply at lateflower to post-flower growth stage. (Late Spring to Mid Summer)</td>
</tr>
</tbody>
</table>
Absinth wormwood
Artemisia absinthium

**Keys to ID**
- Small yellow flowers.
- Silver-grey leaves.
- Well branched, can reach 3 ft in height.
- Sage like odor.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: Small, yellow, inconspicuous, numerous, ½ in wide. July - August.
- Seeds: One seeded fruit, 1/16 in long, smooth, flat and light gray-brown in color.
- Leaves: Divided into deeply lobed leaflets, light green to olive green color, 2-5 in long.
- Stems: 20 or more stems grow from woody crown.
- Other: Strong sage-like odor.

**Control**
- Mech: Hand pull or dig, remove all parts of plant. Repeated short mowing can stress plant.
- Bio: None currently available in Colorado.

Common Burdock
Arctium minus

**Keys to ID**
- Large heart shaped leaf.
- Burs with hooked bristle.
- Biennial, rosette year 1, tall flowering stem year 2.

**Identification**
- Lifecycle: Biennial.
- Growth form: Forb
- Flower: Each head is bristly with hooked tips that form a round bur under a closely packed cluster of many individual, tube-shaped, reddish-purple flowers. Alone or grouped on short stalks attached to the end of main branches.
- Seed: 1/4”-long, brown, oblong, angular with a short, stiff bristle at one end.
- Leaves: Alternate, large rosette leaves attached to the stem by way of hollow petioles that may be purple tinged. Upper leaf surface is dark green, underside is pale gray-green and woolly.
- Stems: Year 1, stem is close to the soil surface. Year 2, the stem elongates reaches 2-6 ft tall.
- Roots: Thick fleshy taproot, brown, shredded.

**Control**
- Mech: Hand pull, dig when flowering. Mowing or top cutting is effective. Intolerant of cultivation.
- Bio: Nothing available in Colorado.

Chicory
Cichorium intybus

**Keys to ID**
- Basal rosette looks similar to dandelion.
- Stems reach 3-5 ft tall and are sticky.
- Flowers occur in clusters of 1-3 and are purple-blue-white.

**Identification**
- Lifecycle: Perennial.
- Growth form: Forb
- Flower: Purple to blue to white, in clusters of 1 to 3, each is about 1 inch in diameter with toothed petals.
- Seed: Small, obovate, light brown and darker mot ted, and finely granular.
- Leaves: Large and lobed with toothed margins, have rough petals on the upper and lower surfaces, can be 3 inches to 10 inches in length. The lobes and dissections are not opposite, like dandelions. Leaves that appear on the flowering stem are similar in shape but smaller in size.
- Stems: Can reach 3-5 feet in height and are sticky to the touch.
- Roots: Large brown taproot, milky sap if broken.

**Control**
- Bio: None currently available in Colorado.

**HERBICIDE**
- Glyphosate* *nonselective
- Imazapyr (Plateau)

**HERBICIDE**
- Aminopyralid (Milestone)
- 2,4-D + Clopyralid (Curtil) 2 qts / acre 1.5 oz/gal water
- 2,4-D + Dicamba (Rangestar, Inline-D) 1 qt / acre 1 oz/gal water
- Dicamba (Banvel, Clarify, or Vanquish) 1 qt / acre 1 oz/gal water
- Aminopyralid (Milestone) 5-7 oz / acre 1 tsp/gal water

**RATE**
- 6-7 oz / acre 1 tsp/gal water
- 2 qts / acre 1.5 oz/gal water
- 1 qt / acre 1 oz/gal water
- 5-7 oz / acre 1 tsp/gal water
- 1 tsp/gal water

**TIMING**
- Apply at spring, after reaches 12”, before flowering.
- Apply at spring, after reaches 12”, before flowering.
- Apply at spring, after reaches 12”, before flowering.
- Prior to bud formation.
- Spring at actively growing stage.
- Year 1 rosette application is most effective.
- Early growth of flower bud stage in spring.
- Early growth stage to early bolting stage.
- Spring seeding to early growth stages. DO NOT apply near trees/shrubs.

**HERBICIDE**
- Glyphosate* *nonselective

**RATE**
- 1-2.7 qts/acre
- 4-6 oz/acre

**TIMING**
- Apply early growth, before spikelets form.
- Pre-emergence (late summer) and early growth before spikelets form.
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, 1-12 inches long, 1-3 inches wide, rough, hairy, and lacking teeth or lobes. Basal leaves are elliptical and tapered at the base.
- Roots: Thick, black, woody taproot.
- Stems: Produces a single flowering stem. Stem is erect, stout, heavy, 1.5-3 ft tall, branched above.
- Seeds: Very small capsule, tuft of hair at one end.
- Leaves: Scale-like, alternate, bluish-green.
- Stems: Smooth, slender, flexible, break easily; may become 15-25 ft tall. reddish-brown bark.
- Roots: deep taproot, extensive spreading horizontal roots. Produces adventitious buds.

**Control**
- Mechanical: Cut or pull, and remove entire root crown of plants. Mow or cut flowering stems before seed nutlets develop.
- Biological: The saltcedar leaf beetle (*Diorhabda elongata*) can be used as a control.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metsulfuron Methyl + Chlorosulfuron (Cimarron X-tra)</td>
<td>2 oz. / acre</td>
<td>Apply in spring rosette to early bud growth stages.</td>
</tr>
<tr>
<td>Picloram + 2,4-D (Grazon P+D) <em>Restricted Use</em></td>
<td>4 pts / acre</td>
<td>Apply in spring rosette stage.</td>
</tr>
<tr>
<td>2,4-D + dicamba (Rangestar, Riffe-D)</td>
<td>1 qt / acre</td>
<td>Apply to rosette stage.</td>
</tr>
</tbody>
</table>

Salt Cedar (Tamarisk)

*Tamarix ramosissima Ledeb. or T. parviflora DC.*

**Keys to ID**
- Tall shrub or small tree
- Flowers are white to pink in clusters called racemes.
- Leaves-small and scaly

**Identification**
- Lifecycle: Perennial
- Growth: deciduous, loosely branched.
- Flower: Whitish 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.
- Leaves: Scale-like, alternate, bluish-green.
- Stems: Smooth, slender, flexible, break easily; may become 15-25 ft tall, reddish-brown bark.
- Roots: deep taproot, extensive spreading horizontal roots. Produces adventitious buds.

**Control**
- Mechanical: Chainsaw, bulldozer, mulching, and mowing MUST be combined with chemical treatments.
- Biological: The saltcedar leaf beetle (*Diorhabda elongata*) can be used as a control.

**HERBICIDE** | **Rate** | **Timing** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr (Garlon 4) <strong>approved aquatic label</strong></td>
<td>- Foliar : 2-4 qt/acre</td>
<td>- Cut-stump : 100%</td>
</tr>
<tr>
<td>Glyfosate (Rodeo) <strong>nonselective, approved aquatic label</strong></td>
<td>- Cut-stump : 100%</td>
<td>Anytime unless snow present. Treat the cambium after cut, fully wet the surface.</td>
</tr>
<tr>
<td>Imazapyr (Arsenal) or (Habitat) <strong>aquatic label</strong></td>
<td>- Foliar : 0.5-6.5 oz/gal water</td>
<td>- Cut-stump : late spring to early fall</td>
</tr>
<tr>
<td>Imazapyr (Arsenal) or (Habitat) <strong>aquatic label</strong></td>
<td>- Cut-stump : dilute 3-12 oz/gal water</td>
<td>- Cut-stump : Apply to cambial layer immediately after the cut-stump treatment.</td>
</tr>
</tbody>
</table>

Russian Olive

*Elaeagnus angustifolia L.*

**Keys to ID**
- A tall shrub or small tree
- Many yellowish olive-shaped fruits.
- Leaves are light green above and silvery beneath.

**Identification**
- Lifecycle: Perennial
- Growth: deciduous, small tree.
- Flower: Small, light yellow clusters, bisexual.
- Leaves: Simple, alternate, narrow 2-3 inches long, and are untoothed. Upper surface is light green, the lower surface is silvery white with dense scales.
- Stems: Has 1-2 inch thorns on trunk and branches.
- Roots: Can produce root suckers. Shade tolerant.

**Control**
- Mechanical: Chainsaw, bulldozer, mulching, and mowing MUST be combined with chemical treatments.
- Biological: The saltcedar leaf beetle (*Diorhabda elongata*) can be used as a control.

**HERBICIDE** | **Rate** | **Timing** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr (Garlon 4)</td>
<td>- Foliar : late spring to early fall</td>
<td>- Cut-stump : 100%</td>
</tr>
<tr>
<td>Glyphosate (Rodeo)</td>
<td>- Cut-stump : 100%</td>
<td>Anytime unless snow present. Treat the cambium after cut, fully wet the surface.</td>
</tr>
<tr>
<td>Imazapyr (Arsenal) or (Habitat)</td>
<td>- Foliar : 0.67 pint/acre</td>
<td>- Cut-stump : 100%</td>
</tr>
<tr>
<td>Imazapyr (Arsenal) or (Habitat)</td>
<td>- Cut-stump : 6-12 oz/gal water</td>
<td>- Cut-stump : Apply to cambial layer immediately after the cut-stump treatment.</td>
</tr>
</tbody>
</table>

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, yellow-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.
- Stems: Mature plants are 2-3 feet tall and have rigid, branching, winged stems that are covered with cottony hairs.
- Roots: Taproot.
- Seedling: Oblong, tongue-shaped cotyledons

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

**HERBICIDE** | **Rate** | **Timing** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Picloram (Tordon 22K)</td>
<td>1.5 pint/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 bolt 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>
</tbody>
</table>
**Dalmatian toadflax**
*Linaria dalmatica*

**Keys to ID**
- Yellow flowers that are like snapdragons with deep orange centers.
- Thick, waxy, bluish heart-shaped leaves that wrap the stem.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: Loose, elongate, bright yellow.
- Seeds/Fruit: Fruits are egg-shaped capsules. Seeds are sharply angular, and slightly winged.
- Leaves: Alternate, broad, clasping but crowded.
- Stems: Mature plants are up to 3 ft tall. A single toadflax plant contains from 1-25 vertical, floral stems, are thick-walled and semi-woody.
- Roots: Deep taproot, long horizontal roots that can develop adventitious buds.
- Yellow toadflax is similar, but has more linear pointed leaves, and is generally a smaller plant.

**Control**
- Mech: Hand pulling, for many years after 1st detection, is recommended for eradication.
- Bio: Calophasia lunula, a predatory noctuid moth, Eteobalea intermediella, a root boring moth and Mecinus janthinus, a stem boring weevil are currently available in Colorado.

### Table: Herbicides for Dalmatian Toadflax

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picloram (Tordon 22K®)</td>
<td>2-4 pints/acre</td>
<td>Apply at spring flowering or in fall</td>
</tr>
<tr>
<td>Chlorsulfuron (Telin)</td>
<td>1 oz/gal</td>
<td>Apply at mid-flowering to late fall</td>
</tr>
<tr>
<td>2,4-D + Dicamba (Rangelstar)</td>
<td>2 qt. + 2 qt/acre</td>
<td>Pre-bloom to flower stage (retreadment is essential)</td>
</tr>
</tbody>
</table>

**Yellow toadflax**
*Linaria vulgaris P. Miller*

**Keys to ID**
- Yellow flowers that are like snapdragons with deep orange centers.
- Stems that are woody at the base and smooth to the top.

**Identification**
- Lifecycle: Perennial
- Growth form: Forb
- Flower: Bright yellow and resemble snapdragons, singly on ends of branches, sharp thorns below.
- Seeds: Capsules are round-ovate, and two-celled. Seeds are brown or black, circular, and surrounded by a notched wing.
- Leaves: Soft, lance-shaped, and pale green. Mainly alternate; lower leaves appear to be opposite.
- Stems: Mature plants are 1-3 feet tall with 1-25 smooth erect floral stems covered with cottony hairs
- Roots: Deep taproot, long horizontal roots that can develop adventitious bud sprouts.
- Other: Closely related to Dalmatian toadflax (whos leaves are shorter, wider, and clasp the stem.)

**Control**
- Mech: Hand pulling, digging, orilling is NOT recommended for eradication.
- Bio: Calophasia lunula, a predatory noctuid moth, Eteobalea intermediella, a root boring moth and Mecinus janthinus, a stem boring weevil are currently available in Colorado.

### Table: Herbicides for Yellow Toadflax

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picloram (Tordon 22K®)</td>
<td>1.5 qts/acre</td>
<td>Apply at mid-flowering to late fall</td>
</tr>
<tr>
<td>Chlorsulfuron (Telin)</td>
<td>1 oz/ gal</td>
<td>Apply at mid-flowering to late fall (Aug thru Sept)</td>
</tr>
<tr>
<td>2,4-D + Dicamba (Rangelstar)</td>
<td>0.50 gr./gal water</td>
<td>Add to Tordon</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 claspng bases, unlike Hoary cress leaves with claspng bases.

**Control**
- Mech: Hand pull/dig is not effective. Instead, mow in spring before seed set and combine with chemical treatments.
- Bio: none currently available in Colorado. Do NOT graze—toxicity is high.

### Table: Herbicides for Perennial Pepperweed

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorsulfuron (Telin)</td>
<td>1 oz/ gal</td>
<td>Bolting to early bloom. (Early Spring to Early Summer)</td>
</tr>
<tr>
<td>Metsulfuron ( Escort XP)</td>
<td>0.5 gr./gal water</td>
<td>Bolting growth stage. (Spring)</td>
</tr>
<tr>
<td>Imazapyr (Plateau)</td>
<td>12 fl oz/acre</td>
<td>+ 2 pt/ac seed oil</td>
</tr>
<tr>
<td></td>
<td>2 tsp/gal water</td>
<td>+1% sol. seed oil</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 mahleriae, and bindweed moth, Tyletus ludens are effective in Colo.

### Table: Herbicides for Field Bindweed

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity +</td>
<td>1 oz/gal</td>
<td>Just after full-bloom and/or fall. DO NOT apply near or under trees/shrubs or where soils have rapid permeability.</td>
</tr>
<tr>
<td>Bio*</td>
<td>1 qts/acre</td>
<td>Just after full-bloom and/or fall. DO NOT apply near or under trees/shrubs or where soils have rapid permeability.</td>
</tr>
<tr>
<td>Roundup Ultra*</td>
<td>4-5 qts/acre</td>
<td>Apply at full-bloom and/or in fall.</td>
</tr>
</tbody>
</table>

*Bio*: The bindweed gall mite, Aceria mahleriae, and bindweed moth, Tyletus ludens are effective in Colorado.
Kochia scoparia (L.) Roth

**Keys to ID**
- Erect stems can reach 5 ft.
- Small green flower lacks petals

**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.
- Roots: Taproot.
- Seedling: Cotyledons are very narrow, essentially linear in outline, dull green in color, and covered with hairs.
- Other: Seeds spread prolifically by tumbleweed

**Control**
- Mech: Till seedlings early in spring. Mow or slash before flowering.
- Bio: None known.

**Poisonous Plants**
These plants are poisonous to domestic livestock

**Western Whorled Milkweed**
Asclepias subverticillata

**Keys to ID**
- Whorled linear leaves
- Greenish white flower
- Slender seed pod
- Milky latex sap

**Showy Milkweed**
Asclepias speciosa

**Keys to ID**
- Opposite elliptical leaves
- Pink/white crown like flower
- Erect stem can reach 5 ft.
- Milky latex sap

**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

**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**
- 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 invasives over time.
- Chemical: Glyphosate herbicides applied at the recommended label rate to young seedlings will be effective when combined with other control methods.

**HERBICIDE** | **RATE** | **TIMING**
--- | --- | ---
**Most Effective** When Combined | With Mechanical
Dicamba (Banvel, Vanquish, or Clarity) | As specified on the label | Apply early in growth before flowering stage
Glyphosate* nonselective | 1-2 qts/acre 1.3-2.5 oz/gal water | “Burndown” apply early in growth before flowering stage

**Rate** 2.5 oz/gal water

**Control**
- Mech: 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).

**Backyard Weed Control Tips**
Weeds (or undesirable vegetation) are a concern anytime they compete with the desired vegetation of your landscape or garden area. Weeds are opportunistic and will occupy any space that they can readily invade. Know that tolerating a few weeds can allow a healthy, functioning, attractive sustainable system.

Proper management, whether it be healthy turfgrass, adequate native plantings, or adequate mulch depth, can help to severely limit the impact that invasive and weed plants have.

An integrated management approach to weed prevention will allow for the best results to reduce any weed concerns on your property. This takes time and attention over the long term to achieve successful results.

**Some Additional Resources:**
Steve Anthony
Garfield County Vegetation Manager
(970) 945-1377 x 4305
santhony@garfield-county.com

Garfield County Vegetation Management
http://www.garfield-county.com/vegetation-management/

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/native/03106.pdf

CSU Ext, Yard and Garden Publications
http://www.garfield-county.com/vegetation-management/

Products are listed as a service to Extension clientele. CSU Extension does not guarantee nor warrant the standard of any products, nor does it imply approval of the product to the exclusion of others which also may be available, nor does it intend discrimination or criticism of products or providers that are mentioned or not mentioned. In addition, CSU Extension and Garfield County assume no liability for use of any product.