

Noxious Weed Management Pocket Guide



Third Edition - Jan 2013

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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
 - Cultural
 - Mechanical
 - Biological
 - Chemical
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.

It takes consistent persistence to win the war on weeds!

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



Palisade Insectory - Home of Colorado's Biological control program (CO Dept of Ag)

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, eventually you can succeed.

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

CO Dept. of Ag. - Noxious Weed Management Program
<http://www.colorado.gov/ag/weeds>

CO Weed Management Association - Noxious Weed Info.
<http://www.cwma.org/>

USDA Plants Database - Plants information
<http://plants.usda.gov/java/>

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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/farmmgmt/05003.html>

Always add a nonionic surfactant @ 0.32 oz/ gal (1qt/100 gal) unless otherwise noted.

Bull thistle

Cirsium vulgare (Savi) Tenore



Keys to Id

- Leaves are prickly-hairy above and cot-tony 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 (Whitson et al. 1996).
- Seeds/Fruit: Seeds are capped with a circle of plume-like white hairs.
- Leaves: Leaves are alternate. Bull are the only thistles in Colorado that are prickly 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.

HERBICIDE	RATE	TIMING
Clopyralid + 2,4-D (Curtail)	0.2 + 1.0 to 0.3 + 1.5 oz	Apply to rosettes in spring or fall.
Dicamba (Banvel, Vanquish, or Clarity)	0.5 + 1.0 oz	Apply to rosettes in spring or fall
2,4-D or 2,4-D + dicamba (Rangestar)	1.5 to 2.0 1.0 + 0.5 oz	Apply to rosettes in spring.

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, 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.

HERBICIDE	RATE	TIMING
Aminopyralid (Milestone)	5-7 ounces/acre 1 t./gal water	Spring at the pre-bud growth stage and/or to fall regrowth.
Chlorsulfuron (Telar DF)	1-3 ounces/acre 0.50 gr/1 gal water	Spring during bud to bloom stage and/or to fall regrowth.
Clopyralid + 2,4-D (Redeem)	3 pints/acre 1.25 oz/gal water	Apply from rosette to bud stage when all plants have emerged.

Musk thistle

Carduus nulans



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 solitarily 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.

HERBICIDE	RATE	TIMING
Aminopyralid (Milestone)	5 fl. oz./acre	Spring rosette to early bolting or in fall to rosettes.
Metsulfuron (Escort XP)	1 oz. product/acre	Spring from rosette through very early flower stage.
Chlorsulfuron (Telar)	1 oz. product/acre	Spring from rosette through early flower stage.

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

HERBICIDE	RATE	TIMING
Picloram (Tordon 22K)	1 pint/acre	Apply spring or fall in the rosette stage.
Aminopyralid (Milestone)	7 fl. oz./acre	Apply spring or fall in the rosette stage.
Metsulfuron (Cimarron X-tra)	2 oz./acre	Apply rosette to early bolt stages of growth. (Spring)

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.
- 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.
- Seedling: Finely divided leaves; covered by short hair

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*)

HERBICIDE	RATE	TIMING
Aminopyralid (Milestone)	5-7 oz/acre 1 t./gal water	Spring at rosette to early bolt stage and/or in the fall to rosettes.
2,4-D Amine (temp must be below 85°)	1 qt./acre 1 oz/gal water	Spring/fall rosettes - before flowering stalk lengthens.
Clopyralid + Triclopyr (Redeem R&P)	1.5-2 pints/acre 0.75 oz/gal	Rosette to early bolt stage of growth and/or in the fall to rosettes.

Spotted knapweed

Centaurea maculosa L.

Keys to Id

- 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: Spotted knapweed has a stout taproot.
- Seedling: Rosettes of spotted and diffuse knapweed are nearly indistinguishable. Leaves are narrow and 1-2 times pinnately divided

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 minutes* and *Cyphocleonus achates*)

HERBICIDE	RATE	TIMING
Aminopyralid (Milestone)	5-7 ounces/acre or 1 t./gal water	Spring at rosette to early bolt stage and/or in the fall to rosettes.
Clopyralid (Transline, Stinger)	2/3 - 1 pint/acre	Apply to spring/fall rosettes - before flowering stalk lengthens.
Clopyralid + 2,4-D (Curtail)	2-3 qts./acre	Apply in spring and fall to rosettes.

Russian knapweed

Acroptilon repens (L.) De Candolle

Keys to Id

- Distinguished by the pointed papery tips of the floral bracts.
- The roots are dark 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 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 when young are covered with soft, short, gray hair.
- Roots: Well-developed, recognizable by their black color and presence of small scale leaves.
- Seedling: The seed leaves 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*)

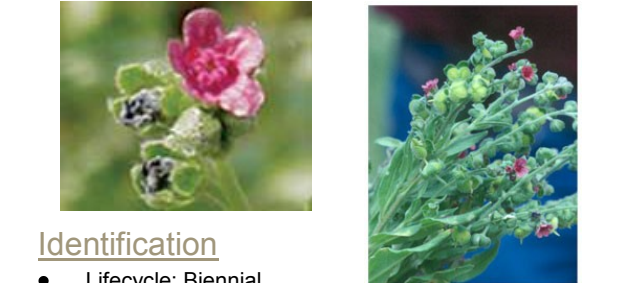
HERBICIDE	RATE	TIMING
Aminopyralid (Milestone)	4-6 ounces/acre	Bud and flowering stage and to dormant plants in the fall.
Picloram (Tordon 22K) *Restricted Use	1 qt./acre 1 oz/gal water	Apply in spring to bud/early flower stage or fall rosette.
Chlorsulfuron (Telar)	1-3 oz/acre 2/3 gr./gal water	Apply in spring from pre-bloom to bloom and to fall rosettes.

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.
- Stems: Produces a single flowering stem. Stem is erect, stout, heavy, 1.5-3 ft tall, branched above.
- Roots: Thick, black, woody taproot.
- Seedling: 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

HERBICIDE	RATE	TIMING
Metsulfuron Methyl + Chlorsulfuron (Cimarron X-tra)	2.0 oz. / acre	Apply in spring rosette to early bud growth stages.
Picloram + 2,4-D (Grazon P+D) *Restricted Use	4 pints / acre	Apply in spring rosette stage.

Leafy spurge

Euphorbia esula L.



Keys to Id

- Flowers are yellowish-green and have a pair of heart shape yellow-green bracts below each inconspicuous flower.
- 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, grayish to purple, in a capsule.
- Leaves: Alternate, narrow (1/4” wide), 1-2.5” long.
- Stems: Erect and unbranched (except at flower), thickly clustered, can reach 3 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. Foliage of the plant is smooth and hairless.

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. Flea beetles (*Aphthona* spp.), are effective especially when combined with grazing and/or herbicides

HERBICIDE	RATE	TIMING
Picloram (Tordon 22K *Restricted Use*)	1 qt./acre 1 oz/gal water	Spring, just after full-bloom and/or fall.
Imazapic (Plateau)	12 oz/acre 0.4 oz/gal water	Fall only treatment prior to hard freeze.
2,4-D Amine	2-3 qts/acre 2-3 oz/gal water	Early spring and fall. Prevents seed formation

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.

HERBICIDE	RATE	TIMING
Metsulfuron (Escort XP)	1 oz/acre	Surfactant is absolutely necessary. Apply at flowering growth stage. (Summer)
Chlorsulfuron (Telar)	1 oz/acre	Surfactant is absolutely necessary. Apply at flowering growth stage. (Summer)

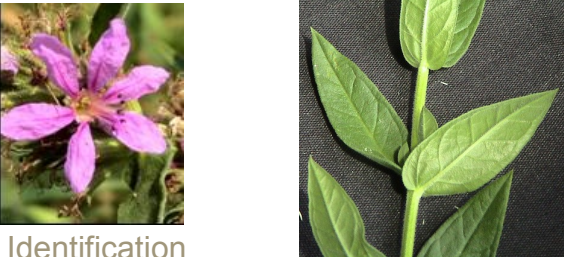
Purple loosestrife

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 rootstock. 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 rootstalk. Flowerheads must be cut and disposed of properly before a herbicide is applied.
- *Bio:* Inappropriate, as eradication is the goal, a root feeding weevil (*Hylobius transversovittatus*)

HERBICIDE	RATE	TIMING
Triclopyr (Garlon 3A)	1-2 qts./acre 1.3-2.5 oz/gal water	Summer. If plants are flowering, cut and properly dispose of flower heads before
Glyphosate* (Rodeo - aquatic safe) *nonselective	1-2 qts./acre 1.3-2.5 oz/gal water	Summer during the flowering stage. Cut and properly dispose of flowerheads before applying Rodeo.

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 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

HERBICIDE	RATE	TIMING
Metsulfuron (Escort XP)	1 oz/acre	Apply at the early bud growth stage; i.e. “broccoli” growth stage. (Early Spring to Early Summer)
Chlorsulfuron (Telar)	1 oz/acre	Apply at the early bud growth stage; (Early Spring to Early Summer)
Imazapic (Plateau)	12 fl. oz./acre + 2 pints/acre methylated seed oil or crop oil concentrate	Apply at late flower to post-flower growth stage. (Late Spring to Mid Summer)

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



- 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.
- 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

- *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 CO.

HERBICIDE	RATE	TIMING
Picloram (Tordon 22K)	1.5 pint/acre	Apply during rosette growth stage or when actively
Aminopyrlid (Milestone)	5 fl oz/acre	Apply during rosette and bolting growth stages.
Clopyralid (Transline)	0.67 pint/acre	Apply during rosette to mid-bolt growth stages.

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, or tilling 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 CO.

HERBICIDE	RATE	TIMING
Picloram (Tordon 22K*) *Restricted	1.5 qts/acre 1 oz/gal	Apply at mid-flowering to late fall
Chlorsulfuron (Telar)	1.25 oz/acre added to Tordon	Apply at mid-flowering to late fall (Aug thru Sept)

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*, *Tyta luctuosa* are effective in CO.

HERBICIDE	RATE	TIMING
Clarity + 2,4-D Amine (temp must be below 85°)	1 qt/acre 1 oz/gal water	Just after full-bloom and/or fall. DO NOT apply near or under trees/ shrubs or where soils have rapid permeability.
Tordon 22K* *Restricted Use	1 qt/acre 1 oz/gal water	Just after full-bloom and/or fall. DO NOT apply near or under trees/ shrubs or where soils have rapid permeability.
Roundup Ultra* *non-selective herbicide	4-5 qts/acre 4-5 oz/gal	Apply at full-bloom and/or in fall.

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 is not effective. Instead, mow in spring before seed-set and combine with chemical treatments.
- *Bio*: none currently available, eradication is goal in Mesa County. Do NOT graze—toxicity is high.

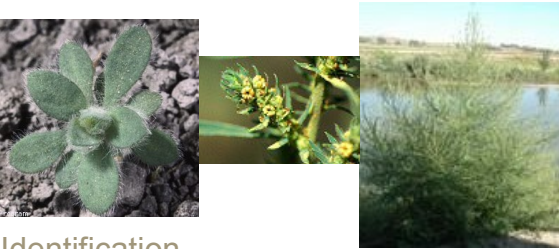
HERBICIDE	RATE	TIMING
Chlorsulfuron (Telar)	1 oz / acre	Bolting to early flower. (Early Spring to Early Summer)
Metsulfuron (Escort XP)	1 oz / acre	Bolting growth stage. (Spring)
Imazapyr (Plateau)	12 fl oz / acre + 2 pt / ac. seed oil	Flower to late flower growth stages. (Summer)

Kochia

Kochia scoparia (L.) Roth

Keys to Id

- Grooved branches
- 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.
- Stems: Multi branched from base, erect, reddish tint
- 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 mechanism over vast distances

Control

- *Mech*: Till seedlings early in spring. Mow or slash plants before flowering to reduce seed production.
- *Bio*: None known.

HERBICIDE	RATE	TIMING
<i>Most Effective</i>	<i>When Combined</i>	<i>With Mechanical</i>
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

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



Showey Milkweed

Asclepias speciosa

Keys to Id

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



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)

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-pedal flowers



Mustards - Tumble mustard

Sisymbrium altissimum

Keys to Id

- Coarse deeply divided leaf
- Narrow lobed upper leaf
- Stem erect and branched
- Small yellow 4-pedal 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.

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.

The best weed control is prevention!

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:

- CSU Ext, Small Acreage Management Webpage
<http://www.ext.colostate.edu/sam/>
- 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.html#garden>

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