Noxious Weed Management Pocket Guide

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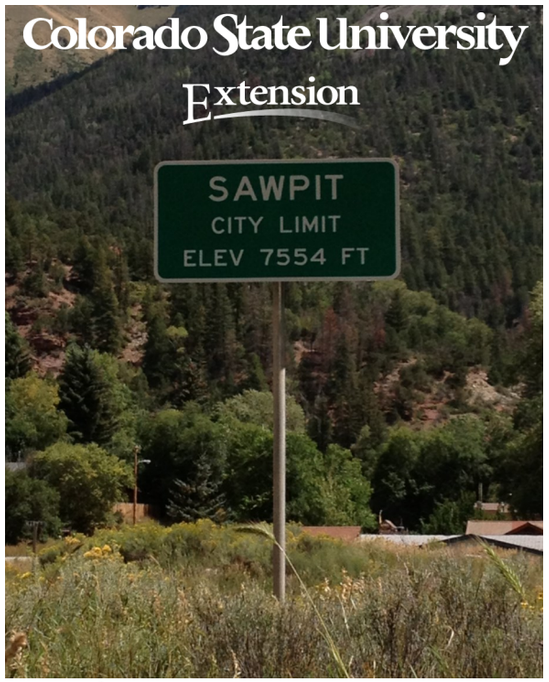

Colorado State University Extension | USDA NRCS United States Department of Agriculture Natural Resources Conservation Service

Sustainable Small Acreages

First Edition - 2014

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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, 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/cs/Satellite/Agriculture-Main/CDAG/1167928159176

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

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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/farmmgt/05003.html

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

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)

Sulfur Cinquefoil

Potentilla recta

Keys to Id

- Leaves - palmately compound, 5-7 toothed leaflets.
- Flowers are light yellow with five petals.
- Leaf stalks have perpendicular hairs.

Identification

- Lifecycle: Perennial
- Growth form: Forb
- Flower: Light-yellow with 5 petals, deeply notched.
- Seeds/Fruit: Each flower produces numerous small seeds (.05 in long) that are slightly flattened.
- Leaves: Alternate, palmately compound with 5-7 toothed leaflets on each leaf. Stalks have conspicuous perpendicular hairs,
- Stems: Reaches 1-1.5 ft tall with one to several stems growing from well-developed rootstocks.
- Roots: Fibrous roots and lateral rhizomes

Control

- *Mech:* Hand pull or dig when soil is moist and infestations are small, be sure to pull up all roots. Mowing is not effective, stop seed spread by removal.
- *Bio:* Animals dislike due to high tannin content. There are no insect biological controls currently available.

HERBICIDE	RATE	TIMING
Picloram (Tordon 22K*) *Restricted	1 pint/acre	Surfactant is absolutely necessary. Apply in summer or at fall regrowth.
Aminopyralid (Milestone)	6 oz/acre	Surfactant is absolutely necessary. Prebud / early flower (late spring or early summer).

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 Colorado.

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)

Downy brome (Cheatgrass)

Bromus tectorum

Keys to Id

- Drooping seedhead
- Densely hairy leaves
- Green-up in early spring
- Changes to purple/tan in early summer

Identification

- Lifecycle: Summer/Winter Annual.
- Growth form: Grass
- Flower: panicles (loose, irregularly compound flowering part of plant with flowers borne on individual stalks).
- Seeds: Spikelets including awns are 0.8-2”long, nodding, with 2-8 florets.
- Leaves: Light-green and hairy. Lower sheaths are conspicuously hairy, upper sheaths are smooth.
- Stems: Erect, slender, glabrous, or slightly hairy.
- Roots: Fibrous root system.

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 or grazing before seed set.

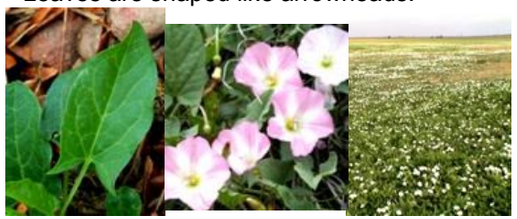
HERBICIDE	RATE	TIMING
Glyphosate	6 - 12 oz / acre	Apply early spring prior to seed set
Imazapic (Plateau)	2 - 12 oz / acre	Late summer to early fall before emergence

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 Colo.

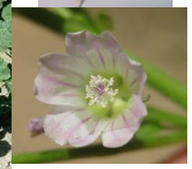
HERBICIDE	RATE	TIMING
Clarity + 2,4-D Amine (temp must be below 85°)	1 qt/acre 1 oz/gal water	Just after full-bloom and/or fall. DO NOT apply near or under trees/ shrubs or where soils have rapid permeability.
Tordon 22K* *Restricted Use	1 qt/acre 1 oz/gal water	Just after full-bloom and/or fall. DO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

Common Mallow

Malva neglecta

Keys to Id

- Geranium shaped leaves
- White to pink flower
- Round stem, deep taproot



Identification

- Lifecycle: winter annual, short lived perennial
- Growth form: Forb—brushy
- Flower: 5 crinkly pedals, small, white to pale pink or lavender and not very noticeable. Blooms from summer to fall.
- Leaves: Hairy geranium-shaped leaves attach to the stem with a petiole (stalk). Leaves have 5 to 7 shallow lobes with round teeth and veins that radiate out from the base.
- Stems: Tough, slightly hairy, and round.
- Roots: Taproot.
- Seedling: second set of leaves have geranium look.
- Other: Seed looks like cheese wheel—round flattened disk with wedge shaped sections.

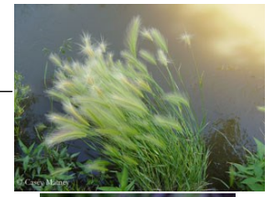
Control

- *Mech:* Hand pull, dig, cultivate when small. Mow is not effective
- *Bio:* None known. Can be toxic to livestock (nitrate accumulation).

HERBICIDE	RATE	TIMING
Glyphosate	***is NOT***	***Effective***
Triclopyr + clopyralid (Redeem)	As specified on the label	Apply early in growth before flowering stage
2,4-D products	As specified on the label	Before seed production and when plants are small an young.

Foxtail Barley

Hordeum jubatum



Keys to Id

- Showy seedhead
- Seeds have barbed awns
- Dangerous to grazers.
- Pale green color.

Identification

- Lifecycle: Perennial-short lived (Native)
- Growth form: Bunch grass
- Seeds: Nodding, bristly spike up to four inches long; readily breaks apart when mature; center spikelet has a single, rough awns up to two inches long, thus the bristly appearance.
- Leaves: Glabrous sheaths sometimes pubescent; blades flat, up to 3/8 inches wide and 5 inches long with raised veins on the upper surface; leaves rolled in the bud; ligules short, membranous and collar-shaped; auricles absent.
- Stems: Erect, smooth.
- Roots: Shallow fibrous root system.

Control

- *Cultural*: Maintain healthy stand of natives/desired perennials, carefully manage grazing to ensure protection of desired plant species.
- *Mech:* Tillage or mowing has a negligible effect, but can help reduce amount of seed produced if done repeatedly before seed set.
- *Bio:* Domestic livestock grazing, when timed correctly can help reduce invasives over time. No other biocontrols currently exist in CO.

HERBICIDE	RATE	TIMING
Glyphosate	6 - 12 oz / acre	Apply early spring prior to seed set

Russian Thistle

Salsola tragus

Keys to Id

- Prickly annual
- Erect stems can reach over 5 ft.
- Red/Purple striping on stems

Identification

- Lifecycle: Summer annual
- Growth form: Forb—brushy
- Flower: Lack petals and are borne above a pair of small spine-tipped bracts.
- Leaves: Young plants - fleshy, dark green, narrow, and about 1 inch in length. Mature plants - short and stiff with a sharp-pointed tip.
- Stems: woody at maturity, forms shrub looking forb.
- Roots: Taproot.
- Seedling: very finely dissected leaves that almost look like pine needles.
- Other: seeds spread prolifically by tumbleweed mechanism over vast distances

Control

- *Mech:* Till seedlings early in spring. Hand pull when small. Mow or slash plants before flowering to reduce seed production.
- *Bio:* None known. Livestock may graze early in growth season.

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

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
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

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 plants

Mustards - Shepherd's-purse

Capsella bursa-pastoris

Keys to Id

- Lobed basal leaf
- Deeply toothed leaf
- Long, slender flower stalk
- Small white 4-pedal flowers
- Terminal flower cluster

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:

San Miguel County Weed Control Program
(970) 327-0399
www.sanmiguelcounty.org/departments/weeds/

Sawpit Weed Committee (Susie St.Onge)
(970) 708-1287

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