

## Leafy spurge

Colorado Dept. of  
Agriculture  
Conservation Services  
Division  
700 Kipling Street  
Suite 4000  
Lakewood, CO 80215  
303-239-4100

Douglas County Weed Control  
PO Box 1390, 3030 Industrial Way  
Castle Rock, CO 80104  
Ph 303-660-7480 Fax 303-663-3429  
Email: noxweeds@douglas.co.us  
Web: douglasweedcontrol.com



## Key ID Points

1. Flowers are yellowish-green and have a pair of heart shaped yellow-green bracts below each inconspicuous flower.
2. The entire plant contains white, milky latex.

Updated on:  
08/08

## Leafy spurge Identification and Management



## Identification and Impacts

Leafy spurge (*Euphorbia esula*) is a non-native deep-rooted perennial that spreads by seed and extensive, creeping roots. The roots can extend as deep as 30 feet into the soil and are extremely wide-spreading. The roots are brown and contain numerous pink buds that generally produce new shoots or roots. Leafy spurge can grow from 1 to 3 feet in height. The stems are smooth, pale green, and thickly clustered. Leaves are alternate, narrow, linear, and 1 to 4 inches long. The flowers are very small and yellowish-green. They are enclosed by very visible yellowish-green, heart-shaped bracts. The entire plant contains white, milky sap that exudes readily upon stem or leaf breakage. This sap can damage eyes and sensitive skin. Leafy spurge is one of the earliest plants to emerge in the spring. Flower clusters develop 1 to 2 weeks after stem emergence which is from mid-April to late May. One large leafy spurge plant can produce up to 130,000 seeds. Three-sided seed capsules explode when ripe and project the seeds up to 15 feet away from the parent plant.

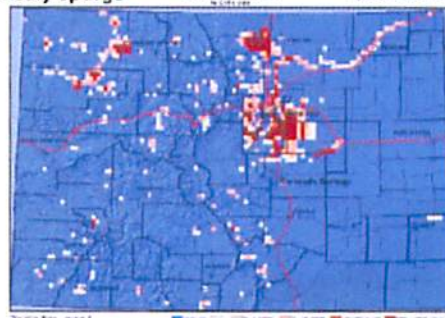
Leafy spurge has adapted to a wide variety of habitats in the state and is very competitive with other plant species. Where it becomes established in rangeland, pasture, and riparian sites, it crowds out practically all other vegetation. The competitive,

rapidly growing, and extensive root system makes leafy spurge very difficult to manage. Develop a management plan that uses several control methods that are compatible with your site.

The most effective method of control for Leafy spurge is to prevent its establishment through proper land management. Maintain healthy pastures and rangeland and continually monitor your property for new infestations. New infestations are much more easily controlled than established infestations. Details on the back of this sheet can help to create a management plan compatible with your site ecology.

Leafy spurge is designated as a "List B" species on the Colorado Noxious Weed Act. It is required to be either eradicated, contained, or suppressed depending on the local infestations. On the back of this sheet are leafy spurge management recommendations. For more information, please visit [www.colorado.gov/ag/csd](http://www.colorado.gov/ag/csd) and click on the Noxious Weed Program link. Or contact the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, 303-239-4100.

Leafy spurge



Flower photo, top, © Norman Rees, USDA, APHIS. Invasive.org. All other photos © Kelly Uhing.

Euphorbia esula

**CULTURAL**

Establishment of selected grasses can be an effective cultural control of leafy spurge. Contact your local Natural Resources Conservation Service for seed mix recommendations. Maintain healthy pastures and prevent bare spots caused by overgrazing. Bareground is prime habitat for weed invasions.

**BIOLOGICAL**

Both sheep and goats can be effective grazers of leafy spurge. The flea beetles *Apthona nigricutis*, *A. lacertosa*, and *A. cyparissiae*, are effective especially when combined with grazing and/or herbicides. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture, 970-464-7916.

Photo © USDA.

**MECHANICAL**

Due to the extensive root system, hand-pulling this plant is not a viable option. Mowing will reduce seed production if repeated every 2 to 4 weeks during the growing season, but will provide little long-term control.

*Integrated Weed Management:*

*Persistent monitoring of areas with known or potential infestations is crucial to managing leafy spurge. A combination of management methods in a long-term management plan is imperative. The management objective is to exhaust the root system and deplete the soil seed bank.*

**HERBICIDES**

**NOTE:** The following are recommendations for herbicides that can be applied to range and pasturelands. Rates are approximate and based on equipment with an output of 30 gallons per acre. Please read label for exact rates. Always read, understand, and follow the label directions. The herbicide label is the LAW!

HERBICIDE	RATE	APPLICATION TIMING
Fosamine (Krenite S) (Douglas County research - too little results for price!)	1.5 gal/acre or 6.5 oz/gal water	Spring only, during bloom to post-bloom stage. Add non-ionic surfactant @ 0.32oz/gal water or 1 qt/100 gal water.
Picloram (Tordon 22K *this is a Restricted Use Pesticide*) (Generics are now available)	1 qt./acre or 1 oz/gal water	Spring, just after full-bloom and/or fall. DO NOT apply near or under trees/shrubs or where soils have rapid permeability. Add non-ionic surfactant @ 0.32oz/gal water or 1qt/100 gal water.
Imazapic (Plateau) (Generics are now available)	12 oz/acre or 0.4 oz/gal water	Fall only treatment prior to hard freeze. Add a methylated seed oil surfactant (MSO) @ 0.32oz/gal water or 1 qt./100 gal water.
2,4-D Amine	2-3 qts/acre or 2-3 oz/gal water	Apply early spring and fall. Prevents seed formation only. Retreatment will be necessary. DO NOT apply when outside temperatures will exceed 85 degrees. Add non-ionic surfactant @ .32oz/gal water or 1qt/100 gal water.

## Leafy spurge

# Scotch thistle

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## Key ID Points

1. Flower heads cluster 2-5 and are purple to dark red in color.
2. Leaves are alternate, stalkless and hairy underneath.

Updated on:  
08/08

## Scotch thistle Identification and Management



and people. Scotch thistle invades rangeland, overgrazed pastures, roadsides, and irrigation ditches. It also prefers high-moist soil areas adjacent to creeks and rivers.

The key to effective control of Scotch thistle is maintaining healthy pastures and rangeland, guarding against disturbance or overuse, and as with most biennials limit seed production. To reduce seed production, plants with buds or flowers should be collected and immediately disposed of or destroyed. Chemical control is most effective when plants are in rosette stage, spring or early fall. Mechanical controls can be used to eliminate small patches or plants in a later growth stage. Details on the back of this sheet can help to create a management plan compatible with your site ecology.

## Identification and Impacts

Scotch thistle (*Onopordum acanthium* or *O. tauricum*) is a non-native biennial forb that reproduces solely by seed. A biennial is a plant that completes its lifecycle within two years. During the first year of growth, Scotch thistle appears as a rosette in spring or fall. Rosettes can be 1 to 2 feet in diameter. During the second year in mid to late spring the stem bolts, flowers, sets seed, and the plant dies. A prolific seed producer, Scotch thistle can produce up to 14,000 seeds per plant.

Scotch thistle can grow up to 12 feet tall. Stems are numerous, branched, and have broad, spiny wings. The leaves of species *acanthium* are large, grayish-green, spiny, and covered with fine dense hair giving the leaf a woolly appearance. The leaves of the species *tauricum* are similar in size, but are not hairy, smooth and bright green. On both species, the leaves have a distinct mid-rib. The flowers are violet to reddish in color, numerous (70-100/plant), and are surrounded by spine-tipped bracts. The plants flower from mid-June to September.

Due to the robust, spiny nature of Scotch thistle, this plant can act as a living barbed wire fence, making areas impassible for wildlife, livestock,

Scotch thistle is designated as a "List B" species in the Colorado Noxious Weed Act. It is required to be either eradicated, contained, or suppressed depending on the local infestations. For more information visit [www.colorado.gov/ag/csd](http://www.colorado.gov/ag/csd) and click on the Noxious Weed Management Program. Or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, 303-239-4100.



Photos © Map above: Crystal Andrews, Colorado Department of Agriculture; All other photos: Kelly Uhing, Colorado Department of Agriculture.

*Onopordum acanthium* or *O. tauricum*

**CULTURAL**

Establishment of selected grasses can be an effective cultural control of Scotch thistle. Contact your local Natural Resources Conservation Service for seed mix recommendations. Maintain healthy pastures and prevent bare spots caused by overgrazing. Bareground is prime habitat for weed invasions.

**BIOLOGICAL**

*Urophora stylata*, a fly predator, is used to help control this thistle. The female fly lays eggs in the seed head of the thistle. The maggot then consumes the seed in the flower. This species has overwintered in Colorado but the limited numbers will not allow for general redistribution. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture at 970-464-7916.

**MECHANICAL**

Any mechanical or physical method that severs the root below the soil surface will kill Scotch thistle. Mowing or chopping is most effective when Scotch thistle plants are at full-bloom. Be sure to properly dispose of the flowering cut plants since seeds can mature and become viable after the plant has been cut down.

*Integrated Weed Management:*

*Scotch thistle is best controlled in the rosette stage. For small infestations, Scotch thistle can be controlled by severing its taproot 1-2 inches below the ground. Control can be enhanced by a follow-up application of herbicides to the surviving rosettes. It is imperative to prevent seed production. Do not allow Scotch thistle flowers to appear.*

**HERBICIDES**

NOTE: The following are recommendations for herbicides that can be applied to range and pasturelands. Rates are approximate and based on equipment with an output of 30 gal/acre. Please read label for exact rates. Always read, understand, and follow the label directions. The herbicide label is the LAW!

HERBICIDE	RATE	APPLICATION TIMING
Aminopyralid (Milestone)	7 fl. oz. / acre + 0.25-0.5% v/v non-ionic surfactant	Apply in spring or fall in the rosette stage.
Forefront - Aminopyralid (Milestone) + 2,4-D	1 qt. / acre	Apply in spring or fall in the rosette stage. Avoid leguminous trees and aspens. Safe to waters edge.
Chaparral - Aminopyralid (Milestone) + Metsulfuron (sprayer must have agitation)	3 oz. / acre	Apply in spring or fall in the rosette stage. Avoid leguminous trees and aspens. Safe to waters edge.
Metsulfuron (Escort XP) (sprayer must have agitation)	2 oz. product / acre + 0.25-0.5% v/v non-ionic surfactant	Apply rosette to early bolt stages of growth in spring. Safe to waters edge and near trees.
Cimarron - Metsulfuron (Escort XP) + Chlorsulfuron (sprayer must have agitation)	1.25 oz. product / acre + 0.25% v/v non-ionic surfactant	Apply rosette to early bolt stages of growth in spring. Safe to waters edge and near trees.
Picloram (Tordon 22K-restricted use) (Generics are available)	1 pint / acre + 0.25-0.5% v/v non-ionic surfactant	Apply spring or fall in the rosette stage. Stay > 2x drip line from trees. Water table must be > 10' below surface.

Photos © Kelly Uhing, Colorado Department of Agriculture.

# Scotch thistle

## COMMERCIAL WEED CONTROL RESOURCES:

The following information is provided as a public service and constitutes no endorsement by the USDA, CSU Cooperative Extension, the Douglas County Weed Division, or Natural Resource Conservation Service of any service, supply, or equipment listed. While an effort has been made to provide a complete and accurate listing of weed control services, supplies and equipment, omissions or other errors may occur and, therefore, other available sources of information should be consulted.

Bio-Control Companies	Location	Phone #	Website
Bio Control of Weeds (LS,MT,DK,CT)	Bozeman, MT	406-586-5111	<a href="http://www.bio-control.com">www.bio-control.com</a>
Colorado Dept. of Ag. Insectary	Palisade, CO	866-324-2963	<a href="http://www.colorado.gov/ag">www.colorado.gov/ag</a>
Integrated Weed Control (LS,DK,etal)	Bozeman, MT	888-319-1632	<a href="http://www.integratedweedcontrol.com">www.integratedweedcontrol.com</a>
Weedbusters BioControl (LS,DT,DK)	Missoula, MT	406-251-4261	<a href="http://www.weedbustersbiocontrol.com">www.weedbustersbiocontrol.com</a>
Identification & Control Planning	Location	Phone #	Website
Weed Wranglers, Inc.	Littleton, CO	303-798-4090	<a href="http://www.weedwranglers.com">www.weedwranglers.com</a>
Open Range Weed Control	Colorado Springs, CO	719-531-0463	
Ark Ecological Services	Lakewood, CO	303-985-4849	
Komex Environment & Water Resources	Golden, CO	303-271-0795	
Revegetation Contractors	Location	Phone #	Website
Marick Services, Inc	Franktown, CO	720-733-9003	
AerWay - Crystal Blue Ranch	Castle Rock, CO	303-688-2374	<a href="http://www.crystalblueranch.com">www.crystalblueranch.com</a>
Bill Baine	Sedalia, CO	303-688-1182	
Aquatic and Wetland Company	Fort Lupton	303-442-4766	<a href="http://www.aquaticandwetland.com">www.aquaticandwetland.com</a>
Land Rehab	Colorado Springs, CO	719-475-1754	
VR Contracting	Elizabeth, CO	303-887-5413	<a href="http://www.vrcontracting.com">www.vrcontracting.com</a>
Weed Wranglers, Inc.	Littleton, CO	303-798-4090	<a href="http://www.weedwranglers.com">www.weedwranglers.com</a>
Grass Seed Outlets	Location	Phone #	Website
Bennington Mercantile	Castle Rock, CO	303-688-3016	
Parker Feed	Parker, CO	303-841-3955	
DC & Kiowa Conservation District	Franktown, CO	303-688-3042	<a href="http://www.dconconservation.com">www.dconconservation.com</a>
Granite Seed	Denver, CO	888-577-5650	<a href="http://www.graniteseed.com">www.graniteseed.com</a>
Murdochs	Parker, CO	720-956-6868	<a href="http://www.murdochs.com">www.murdochs.com</a>
Murdochs	Littleton, CO	303-791-7800	<a href="http://www.murdochs.com">www.murdochs.com</a>
Applewood Seed Co.	Arvada, CO	303-320-7500	<a href="http://www.applewoodseed.com">www.applewoodseed.com</a>
Arkansas Valley Seed Co.	Longmont, CO	303-320-7500	<a href="http://www.avseeds.com">www.avseeds.com</a>
Sharp Bro. Seed Co.	Greeley, CO	800-421-4234	<a href="http://www.sharpseed.com">www.sharpseed.com</a>
Pawnee Buttes Seed, Inc.	Greeley, CO	800-782-5974	<a href="http://www.pawneebuttesseed.com">www.pawneebuttesseed.com</a>
Mowing Contractors	Location	Phone #	Website
AerWay - Crystal Blue Ranch	Castle Rock, CO	303-688-2374	<a href="http://www.crystalblueranch.com">www.crystalblueranch.com</a>
Marick Services, Inc	Franktown, CO	720-733-9003	
Falcon Mowing	Monument, CO	719-495-3356	
DDL LLC - Don Wagner	Franktown, CO	303-887-2297	
Premier Field & Weed Mowing	Castle Rock, CO	303-369-5300	<a href="http://www.premierlandscapemgt.com">www.premierlandscapemgt.com</a>

Mowing Contractors (continued)	Location	Phone #	Website
Mike Perez	Castle Rock, CO	303-810-0382	
Ground Service Co.	Denver, CO	303-455-5566	
Keesen Enterprises, Inc.	Englewood, CO	303-761-0444	<a href="http://www.keesenent.com">www.keesenent.com</a>
Greenscape Custom Mowing	Parker, CO	303-841-1875	
Complete Landscape Care, Inc.	Littleton, CO	303-791-6959	
Equipment Sales	Location	Phone #	Website
Potestio Brothers Equipment	Parker, CO	303-841-2299	<a href="http://www.pbequip.com">www.pbequip.com</a>
Murdochs	Parker, CO	720-956-6868	<a href="http://www.murdochs.com">www.murdochs.com</a>
Murdochs	Littleton, CO	303-791-7800	<a href="http://www.murdochs.com">www.murdochs.com</a>
Big R	Elizabeth, CO	303-646-6936	<a href="http://www.bigronline.com">www.bigronline.com</a>
Tractor Supply Co	Castle Rock	303-688-3397	<a href="http://www.TractorSupply.com">www.TractorSupply.com</a>
Schaben Industries	Columbus, NE	800-274-1025	<a href="http://www.schabenindustries.com">www.schabenindustries.com</a>
Warne Chemical	Rapid City, SD	800-658-5457	<a href="http://www.warnechemical.com">www.warnechemical.com</a>
Northern Tool + Equipment	Burnsville, MN	800-556-7885	<a href="http://www.NorthernTool.com">www.NorthernTool.com</a>
Dultmeier Sales, Inc	Davenport, IA	800-553-6975	<a href="http://www.dultmeiersales.com">www.dultmeiersales.com</a>
Equipment Rentals	Location	Phone #	Website
United Rentals	Parker, CO	303-841-3661	<a href="http://www.unitedrentals.com">www.unitedrentals.com</a>
Sunbelt Rentals	Centennial, CO	303-209-2100	<a href="http://sunbeltrentals.com">sunbeltrentals.com</a>
Arapahoe Rental	Littleton, CO	303-798-1328	<a href="http://www.arapahoerental.com">www.arapahoerental.com</a>
DC & Kiowa Conservation District	Franktown, CO	303-688-3042	<a href="http://www.dcconservation.com">www.dcconservation.com</a>
Commercial Sprayers	Location	Phone #	Email
Antelope Canyon Enterprises	Parker, CO	720-207-8438	
Falcon Weed Control	Elbert, CO	303-435-3715	
Weed Wranglers, Inc.	Littleton, CO	303-798-4090	<a href="mailto:ww@weedwranglers.com">ww@weedwranglers.com</a>
Marick Services, Inc.	Franktown, CO	720-733-9003	<a href="mailto:RickGretz@FranchiseCoach.biz">RickGretz@FranchiseCoach.biz</a>
Midwest Vegetation Management	Highlands Ranch, CO	720-883-7305	<a href="mailto:jdrust@live.com">jdrust@live.com</a>
Wiens Lawncare	Parker, CO	303-358-0041	
Ark Ecological Services	Lakewood, CO	303-985-4849	
Horizon Vegetation Management	Aurora, CO	303-341-6796	
Open Range Weed Control	Colorado Springs	719-531-0463	
F4 Enterprises, Inc.	Franktown, CO	303-472-3106	<a href="mailto:lfischer@f4enterprisesinc.com">lfischer@f4enterprisesinc.com</a>
Foothills Vegetation Management	Conifer, CO	303-697-5424	
Rocky Mountain Weed Management	Colorado Springs	719-492-8515	<a href="mailto:mfinlay.rmwm@comcast.net">mfinlay.rmwm@comcast.net</a>
Spray Tech LLC	Castle Rock, CO	720-248-0000	<a href="http://www.treesandweeds.com">www.treesandweeds.com</a>
Swingle Lawn, Tree & Landscape Care	Denver, CO	303-337-6200	
Vegetation Management, Inc.	Evergreen, CO	303-674-1215	<a href="http://www.vmiweedsandtrees.com">www.vmiweedsandtrees.com</a>
Herbicide Sales	Location	Phone #	Website
Potestio Brothers Equipment	Parker, CO	303-841-2299	<a href="http://www.pbequip.com">www.pbequip.com</a>
Murdochs	Parker, CO	720-956-6868	<a href="http://www.murdochs.com">www.murdochs.com</a>
Murdochs	Littleton, CO	303-791-7800	<a href="http://www.murdochs.com">www.murdochs.com</a>
Big R	Elizabeth, CO	303-646-6936	<a href="http://www.bigronline.com">www.bigronline.com</a>
Agfinity, Inc.	Eaton, CO	800-433-4688	<a href="http://www.agfinityinc.com">www.agfinityinc.com</a>
Helena Chemical Co.	Aurora, CO	720-374-1994	<a href="http://www.helenachemical.com">www.helenachemical.com</a>
Winfield Solutions, LLC	Aurora, CO	303-801-7258	<a href="http://www.WinfieldSolutionsLLC.com">www.WinfieldSolutionsLLC.com</a>