"C" designated weed- a weed of concern for Coos County. This list is for educational purposes only. This category is set up for weeds that need to be the focus for education and outreach. These may not be on the list for cost-share program but are important for understand identification and control methods available.

- **Biddy biddy (T)** ***Acaena novae-zelandiae***
- **False brome** ***Brachypodium sylvaticum***
- **Ivy**
  - **English ivy (T)** ***Hedera helix***
  - **Atlantic ivy (T)** ***H. Hibernica***
- **Knapweeds**
  - **Diffuse knapweed** ***Centaurea iberica Trevir, ex Spreng.***
  - **Meadow knapweed** ***Centaurea pratensis Thuill., non Salisb., nom. illeg***
  - ***Spotted knapweed (T)*** ***Centaurea stoebe***
- **Silver wattle** ***Acacia dealbata***
- **Thistle**
  - **Thistle, bull (T)** ***Cirsium vulgare***
  - **Thistle, Canada (T)** ***Cirsium arvense***
  - **Thistle, Italian (T)** ***Carduus tenuiflorus***
  - **Thistle, milk (T)** ***Silybum marianum***
- **Yellow nutsedge (T)** ***Cyperus esculentus***

Common name	Scientific name
Biddy biddy (T)	***Acaena novae-zelandiae***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link: BiddybiddyProfile.pdf (oregon.gov) and Pacific Northwest Weed Management Handbook – For full credits and information please click the following link: Biddy-biddy (Acaena novae-zelandiae) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Biddy biddy
Acaena novae-zelandieae

Other common names: bidibid, bidgee-widgee, piri-piri bur

USDA symbol: ACNO4
ODA rating: B

Introduction: Bibby-biddy is native to New Zealand. It is believed that the plant first spread to the U.S. and other countries in the wool of imported sheep.

Distribution in Oregon: The first official record of biddy-biddy in Oregon dates from 1951 in Curry County. Currently only Coos and Curry Counties contain infestations near the coastline.

Description: This low growing perennial forb stands only four to eight inches tall. Biddy-biddy spreads by stolons that root at the nodes creating dense vegetative mats in pastures and lawns. Leaves are alternate and finely dissected, with mature plants having 5 to 11 leaflets 1/4-2/3 inches long. Flower heads are spherical, and turn into a round bur that disperses as a unit when mature.

Impacts: The species prefers open, disturbed, well-drained sites, including stable dunes, open scrub, grassy areas, and high traffic locations in coastal habitats where some summer moisture is available and frosts are infrequent. Plants thrive on poor soils and compete with native plants on coastal bluffs and in lawns where it forms dense mats.

Biological controls: No biocontrol agents are available.

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Photos by Ken French, ODA and Joseph M. DiTomaso, UCDavis, Bugwood.org

Biddy-biddy (*Acaena novae-zelandiae*)

Remarks Control is unknown. No herbicides are currently recommended.

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Common name	Scientific name
False brome	***Brachypodium sylvaticum***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link: FalseBromeProfile.pdf (oregon.gov) and Pacific Northwest Weed Management Handbook – For full credits and information please click the following link: Brome, false (Brachypodium sylvaticum) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

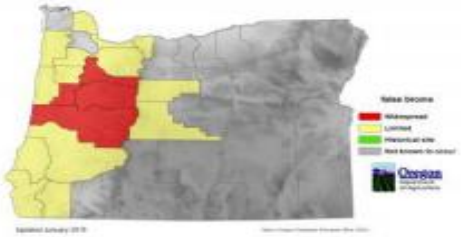
"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

False brome
Brachypodium sylvaticum

Other common names: Slender false brome

USDA symbol: BRSY
ODA rating: B



Introduction: False brome is native to Europe, Asia and North Africa, but is invading habitats in western Oregon, and elsewhere in our region at an alarming rate. The earliest record of the species in North America is a 1939 collection near Eugene in Lane County. By 1966, the species spread through intentional introductions in the Corvallis-Albany area of Benton County and on the Willamette National Forest where it has become naturalized. Logging equipment is the most active dispersal agent in forested regions.

Distribution in Oregon: Oregon is the epicenter of false brome in the U.S. with smaller outbreaks in California and Washington. Limited evidence suggests that false brome can also survive in the drier colder portions of Oregon. The Klamath, Ochoco, Blue Mountains and Siskiyou mountains may all be susceptible at specific locations.

Description: This attractive perennial grass forms bunches of lime-green leaf blades. Leaf color is bright green throughout the growing season turning bleached white during the winter, a strong indicator of false brome. Leaf margins and lower stems are hairy with no red streaking on the stems. Flowers and seeds are spiked and droopy with no stalks. False brome appears to be self-fertile producing few to a couple hundred seeds per plant. Isolated plants are observed to produce viable seeds becoming new weed epicenters complicating control efforts. Seed movement is by wildlife with both birds and small mammals transporting seeds. Long-distance dispersal is predominantly through logging activities, roadside maintenance equipment and recreational activities within infested areas.

Impacts: False brome can quickly become the dominant plant species in forest understories, demonstrating great shade and drought tolerance. It is able to grow in a wide variety of habitats and competes strongly for early season moisture. Its presence in commercial timberlands creates a perfect environment for rodents causing young tree damage. It can dominate oak savannah habitats and can be expected to severely restrict native oak regeneration. While herbicides control the grass on private timberlands, the same cannot be said of public lands where such use is restricted. A secondary economic concern may involve false brome toxicity to livestock. The endophyte fungus *Epichloe sylvatica* has been identified in North American false brome populations. Existence of endophyte fungi in forage grasses has been linked to negative health defects in sheep and other livestock. Currently, no false brome pastures have been identified in Oregon but the threat may surface in the future.

Biological controls: No approved biological control agents are available.

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Photos by Glenn Miller, ODA

Brome, false (*Brachypodium sylvaticum*)

fluazifop (Fusilade)

Rate 2 to 4 oz ai/a (8 to 16 fl oz/a)

Time Apply in spring to control seedlings, and treat established plants through summer until fall.

Remarks Two to three years of treatment will be necessary to achieve control. Fine leaf fescues are tolerant to fluazifop. Native broadleaves should not be injured by fluazifop.

Site of action Group 1: acetyl CoA carboxylase (ACCase) inhibitor

Chemical family Cyclohexanedione

glyphosate

Rate Broadcast: 2.25 to 3.7 lb ae/a; spot treatment: 1.5% solution

Time Apply to green leaves in midsummer to autumn.

Remarks Adequate foliar coverage of false-brome is necessary, and repeat applications may be required to achieve full control. Add nonionic surfactant if not included in the formulation. Late summer treatments after native plants are dormant are preferred to minimize injury.

Caution Glyphosate is nonselective and injures or kills other vegetation in the treated area.

Site of action Group 9: inhibits EPSP synthase

Chemical family None generally accepted

hexazinone (Velpar)

Rate Broadcast: 2 lb ai/a (1 gal/a)

Time Apply preemergence in the spring.

Remarks Hexazinone is normally used in sequence with glyphosate applied in late summer (see above). Early spring hexazinone application controls newly germinating seedlings.

Caution Hexazinone is a restricted-use herbicide. Do not contaminate water.

Site of action Group 5: photosystem II inhibitor

Chemical family Triazinone

sethoxydim (Poast)

Rate 3 to 4.5 oz ai/a (1 to 1.5 pints/a)

Time Apply in spring to control seedlings, and treat established plants through summer until fall.

Remarks Two to three years of treatment will be necessary to achieve control. Fine leaf fescues are tolerant to sethoxydim. Native broadleaves should not be injured by sethoxydim.

Site of action Group 1: acetyl CoA carboxylase (ACCase) inhibitor

Chemical family Aryloxyphenoxy propionate

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

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Common name	**Scientific name**
Ivy	
• **English ivy (T)**	***Hedera helix***
• **Atlantic ivy (all cultivars) (T)**	***H. Hibernica***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link: EnglishAtlanticIvyProfile.pdf (oregon.gov) and Pacific Northwest Weed Management Handbook – For full credits and information please click the following link: Ivy, common or English (Hedera helix) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

English ivy - *Hedera helix*
Atlantic ivy - *Hedera hibernica*

Other common names: Common ivy, branching ivy, glacier ivy, needlepoint ivy, sweetheart ivy, ivy

USDA symbol: HEHE, HEHI12
ODA rating: B

Introduction: English and Atlantic ivies were first introduced to the United States by European immigrants and have been widely sold as ornamental plants for landscaping. They originated from central Asia, not from Western Europe as the names suggest.

Distribution in Oregon: English and Atlantic ivy distribution is widespread on the western side of the Cascades where they are considered very invasive. English and Atlantic ivies can be found on the east side of Oregon as ornamentals, but have yet to show invasive tendencies in arid regions.

Description: Very robust perennials, English and Atlantic ivies produce thick, woody, evergreen vines on trees with smaller long, trailing stems on forest floors. The leaves are alternate and waxy. Juvenile leaves are lobed, mature leaves larger and pointed with no lobes. When light and nutrients are optimum as in forest canopies, green or white flowers are produced forming black berries that are relished by starlings and robins, their main dispersal agents.

Impacts: Rapid and massive vegetative growth of English and Atlantic ivy vines reaches the tops of trees and woody ornamentals. Ivies can also displace native vegetation on the forest floor. English and Atlantic ivies frequently become intertwined with forest shrubs creating difficulties for manual removal or herbicide use. Removal costs in some Oregon parks have reached $3000 per acre.

Biological controls: No approved biological control agents available.

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Photos by Tom Forney, ODA

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Ivy, common or English (*Hedera helix*)

triclopyr amine (Garlon 3A, Brush-B-Gone, or Brush Killer) or triclopyr ester (Garlon 4, Pathfinder, or Vinex) or glyphosate (Accord, Glypro, or Rodeo)

Rate at least 41% active ingredient (3 lb ae or 4 lb ai) glyphosate

Remarks Basal bark application: apply 33% dilution of triclopyr or glyphosate to exposed stems after stripping the leaves from stems near ground level.

Cut stem application (most effective method): cut each vine stem close to the ground and treat freshly cut surfaces (preferably within 5 minutes) with a 33% solution of triclopyr amine or glyphosate mixed in water. Do not dilute products such as Brush-B-Gone and Brush Killer. Roundup Pro Concentrate (50.2% formulation) may be diluted with water.

Foliar application From summer to fall, foliar-apply a 2 to 5% solution of triclopyr ester mixed in water with a nonionic surfactant. Fully coat foilage. Some control may be possible with glyphosate as a 2 to 4% dilution using at least a 41% (3 lb ae or 4 lb ai glyphosate), but repeat applications will probably be necessary. Broadcast applications of triclopyr will cause less damage to desirable grasses.

Manual and mechanical Pull vines on the ground by hand and discard. Cut vines will root easily. Cut climbing vines near the ground, then pry the vines from the tree or structure. Once the vines are cut they will eventually die and fall from the tree, usually after the first extended hot and dry period. Occasionally vines will be embedded in the trunk of the tree. This makes control by both hand and chemicals very difficult; continual removal of sprouts will be needed.

Site of action (triclopyr) Group 4: synthetic auxin; (glyphosate) Group 9: inhibits EPSP.

Chemical family (triclopyr) pyridine; (glyphosate) none generally accepted

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

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Common name	**Scientific name**
Knapweeds	
• Diffuse knapweed	*Centaurea iberica Trevir, ex Spreng.*
• Meadow knapweed	*Centaurea pratensis Thuill., non Salisb., nom. illeg*
• ***Spotted knapweed (T)***	***Centaurea stoebe***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link:

- DiffuseknapweedProfile.docx (oregon.gov) ,
- Meadow knapweed Profile (oregon.gov) , and
- Spotted knapweed Profile (oregon.gov) .

Pacific Northwest Weed Management Handbook – For full credits and information please click the following link: Knapweeds (Centaurea spp. and Acroptilon repens) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Diffuse knapweed
Centaurea diffusa

Other common names: White knapweed, spreading knapweed, tumble knapweed

USDA symbol: CEDI3
ODA rating: B



Distribution in Oregon: Although widely, diffuse knapweed has limited distribution in Oregon with the northeastern and central areas having the heaviest infestation.

Introduction: Diffuse is a member of a large genus of over 400 species, most originating in the Mediterranean region. Diffuse knapweed was first introduced to the Pacific Northwest at the turn of the century as a contaminant in alfalfa seed imported from Turkestan, Turkmenistan or hybrid alfalfa seed from Germany.

Description: Diffuse knapweed is a biennial that flowers from midsummer to fall. It grows to 3 feet tall. It is a single-stemmed plant with numerous lateral branches. Flowers are white to rose, sometimes purplish. Flower heads are slender with pointed, fringed bracts and grows out of urn-shaped heads carried as the tips of the many branches. It spreads by seed, aided by the tumbling of windblown mature plants. A single plant can produce approximately 18,000 seeds.

Impacts: Diffuse knapweed will form dense stands on any open ground, excluding more desirable forage species. Once established, the necessary extensive control measures are often more expensive than the income potential of the land. It grows under a wide range of conditions, such as riparian areas, sandy river shores, gravel banks, rock outcrops, rangelands and roadsides. There are possible health hazards from absorbing plant juice through bare hand pulling of plants. It is recommended that gloves be worn while handling plants. Diffuse knapweed also supports small mites that bite humans and cause skin irritation

Biological controls: Biocontrol agents include several seed feeding flies and weevils, and a root-boring beetle. One beetle species causes serious damage to the vegetative parts of the plants resulting in large reductions of knapweed.

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Photos by Dan Sharratt, ODA

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Meadow knapweed
Centaurea pratensis

Other common names: hybrid knapweed

USDA symbol: CEDE5
ODA rating: B

Introduction: Meadow knapweed is a hybrid species with its parentage in Europe. Initially introduced in the Northwest for livestock forage, it is now well established in Western Oregon counties where it is considered invasive. It does produce an abundance of nectar late in the season for honeybees.

Distribution in Oregon: Meadow knapweed is widely distributed in the western part of Oregon with limited but increasing distribution in the northeast and central areas.

Description: Meadow knapweed is a hybrid of black and brown knapweeds. It blooms in midsummer to fall growing from robust root crown. Plant height generally reaches 3'. The lower leaves are long-stalked, upper leaves having no stalk. Stems are many-branched and tipped by a solitary flower head up to one inch wide. Flower heads are pink to reddish purple, oval or almost globe-shaped. A key-identifying feature is the brown brushy-fringed bracts on the flower head.
Meadow knapweed's tough perennial root system makes manual control methods very difficult.

Impacts: Meadow knapweed out-competes grasses and other pasture species, reducing grass productivity for forage though sheep find it quite edible. It is susceptible to herbicide treatments, but control efforts must persist for the long-term to decrease soil-seed stocks. It will invade native prairie, oak savannah even clearcuts. Meadow knapweed favors roadsides, sand or gravel bars, riverbanks, irrigated pastures, moist meadows, and forest openings. It also invades industrial sites, tree farms, and grasslands.

Biological controls: Some approved biological control agents released for other knapweeds have become established on meadow knapweed including a seed-head fly, a seed-head moth, and two seed-head weevils. This plant is currently being tested as a host for other approved knapweed biocontrol agents.

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Photos by Eric Coombs and Tom Forney, ODA

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Spotted knapweed
Centaurea stoebe

Other common names:

USDA symbol: CEDI3
ODA rating: B and T



Introduction: A European import probably introduced into North America in contaminated seed, on livestock and even ships ballast. Considered endangered in parts of Eastern Europe, the plant now dominates millions of acres of prime grasslands and forestland in the western U.S. It is a major economic issue for agriculture.

Distribution in Oregon: Occurs in 30 of the 32 counties in Oregon primarily in Central Oregon, Hood River County and Wallowa County.

Description: Spotted knapweed is a short-lived perennial growing up to 3 feet tall. Bloom time occurs midsummer to fall. It is a multi-stemmed plant topped with purple or sometimes cream colored flowers. The tips of flower head bracts are usually black, thus the name "spotted." Seeds dispersed by wind, water, animals, and people. Spotted knapweed is also well documented to exude allelopathic compounds into the soil to restrict competition.

Impacts: Spotted knapweed is one of the most dominant weed species in the western United States. Millions of acres of prime range and native habitat are infested. Oregon infestations are broadly scattered though increasing, causing economic losses to right of way maintenance, grazing and range productivity. The species forms dense stands on any open ground, excluding more desirable forage species and native plants. On heavily infested range, control costs restoration programs often exceed the income potential derived from grazing. Seed longevity creates a challenge for land managers wishing to restore land to productive uses.

Biological controls: There are 13 approved biocontrol agents available for release, 12 of which are established in Oregon.

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Photos by Eric Coombs and Beth Myers-Shenai, ODA

Knapweeds (*Centaurea* spp. and *Acroptilon repens*)

The following herbicides usually control treated plants. Plants often regrow, so plan annual applications for several years. Control of regrowth and of new seedlings is much better if a competitive crop or sod is established. A perennial grass is the logical choice because, except for glyphosate, the herbicides listed here will not kill established grasses.

Diffuse knapweed

Diffuse knapweed

2,4-D

Rate 1 to 2 lb ae/a (4 to 8 lb ae/a for Russian knapweed)

Time Apply at the early stage of flower stem elongation (late April to early May).

Remarks Treatment will control only plants emerged at time of spraying.

Caution Avoid drift to sensitive crops.

Site of action Group 4: synthetic auxin

Chemical family Phenoxy acetic acid

aminocyclopyrachlor + chlorsulfuron (Perspective)

Rate 1.8 to 3.2 oz/a aminocyclopyrachlor + 0.7 to 1.3 oz/a chlorsulfuron (4.5 to 8 oz/a of product)

Time Apply to actively growing plants in spring.

Remarks Adjuvants can be used; these include methylated seed oils 0.5 to 1% v/v, nonionic surfactants at 0.25 to 1% v/v, and crop oil concentrates at 1%v/v. Can be applied using an invert emulsion rather than water.

Caution Even low rates can kill nontarget tree and shrub species, so avoid application within a distance equal to the tree height of the sensitive species. Do not allow spray to drift off target. Can injure several grass species including bromes, as well as basin wildrye.

Site of action (aminocyclopyrachlor) Group 4: Synthetic auxin; (chlorsulfuron) Group 2: ALS inhibitor

Chemical family (aminocyclopyrachlor) Pyrimidine carboxylic acid; (chlorsulfuron) Sulfonylurea

aminopyralid (Milestone)

Rate 1 to 1.75 oz ae/a (4 to 7 fl oz/a Milestone). Rate of application will depend on knapweed species to be controlled.

Time Consult label for opintsimum timing. Diffuse and spotted knapweed: apply to actively growing plants in fall or in spring from rosette to bolting growth stages. Russian knapweed: apply in spring and summer to plants from bud to flowering stage; in fall, to dormant plants.

Remarks A nonionic surfactant at 1 to 2 quarts per 100 gal of spray enhances control under adverse environmental conditions.

Caution Do not allow drift to desirable vegetation. Many forbs (desirable broadleaf plants) can be seriously injured or killed. Do not exceed 7 fl oz/a Milestone per year.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

clopyralid (Stinger or Transline)

Rate 0.25 to 0.5 lb ae/a (0.66 to 1.33 pints/a). Labeled rates vary with crops.

Time Up to the bud stage of knapweeds.

Remarks Results are best if applied to actively growing weeds. See labels for registered sites.

Caution Consult label for crop rotation restrictions before using Stinger. Several crops may be injured up to 4 years after application.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

clopyralid + 2,4-D amine (Curtail)

Rate 2 to 4 quarts/a Curtail

Time Apply after most rosettes emerge but before flower stem elongates.

Remarks Lower rate for in-crop cereal grain application; higher rates for fallow, postharvest, and Conservation Reserve Program (CRP) applications. Consult label for specific directions. CRP applications for established grass only. Apply in enough total spray volume to ensure good coverage for diffuse and spotted knapweed.

Caution Consult label for crop rotation restrictions before using product. Several crops may be injured up to 4 years after application.

Site of action Group 4: synthetic auxin

Chemical family (clopyralid) Pyridine; (2,4-D) Phenoxy acetic acid

diflufenzopyr + dicamba (Overdrive)

Rate 0.26 to 0.35 lb ae/a (6 to 8 oz/a)

Time Apply to rosettes.

Remarks Add a surfactant to the spray mix.

Caution Avoid drift to sensitive crops. Will kill legumes.

Site of action (diflufenzopyr) Group 19: inhibits indole acetic acid transport; (dicamba) Group 4: synthetic auxin

Chemical family (diflufenzopyr) Semicarbazone; (dicamba) Benzoic acid

glyphosate

Rate 3 lb ae/a

Time Apply to actively growing knapweed when most plants are at bud stage.

Site of action Group 9: inhibits EPSP synthase

Chemical family None generally accepted

imazapic (Plateau)

Rate 0.188 lb ai/a for Russian knapweed

Time Apply in fall or early winter after Russian knapweed has grown old.

Remarks Use 1 quart/a methylated seed oil as the adjuvant. Selective to most native grasses. Higher rates may suppress seed of some cool-season grasses.

Caution Before using, note crop rotation restrictions.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Imidazolinone

picloram (Tordon)

Rate 0.25 to 0.5 lb ae/a (1 lb ae/a for Russian knapweed)

Time Apply in late spring before or during flower stem elongation.

Remarks A selective treatment that, at the suggested rate, will not damage perennial grasses. Treatment made in bud stage may not prevent seed production in the year of application. However, seed germination is markedly reduced.

Caution Most formulations are restricted-use herbicides. Do not contaminate water or use in diversified crop areas. Potatoes, beans, and most other broadleaf crops are sensitive to picloram.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

triclopyr + clopyralid (Redeem R&P)

Rate 1.5 to 2 pints/a (2.5 to 4 pints/a for Russian knapweed)

Time Apply from rosette to early bolt stage when weeds are actively growing. Russian knapweed should be in early bud to early flower growth stage.

Remarks Add a nonionic surfactant at surfactant manufacturer's recommended rate. Apply in at least 10 gal/a water by ground.

Caution Do not exceed 4 pints/a per year. Do not allow drift to desirable vegetation. Note label restrictions on overseeding or reseeding.

Site of action (both) Group 4: synthetic auxin

Chemical family (both) Pyridine

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

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Common name	Scientific name
Silver wattle	*Acacia dealbata*

There was no Information provided by Oregon Department of Agriculture or Pacific Northwest Weed Management Handbook – This is a weed of concern for outreach purposes only. The seeds are available to purchase and grow well in coastal ranges. This plant is listed on USDA data base and appears that most of research and data provided is from California.

Acacia dealbata

Family
Fabaceae (pea)

www.weedbusters.org.nz

Also known as
Racosperma dealbatum

Photo: Carolyn Lewis

Where is it originally from?
Australia

What does it look like?
Shrub to large tree with suckering roots and ribbed, densely hairy twigs. Frond-like leaves (20-30 cm) are arranged alternately on stems, twice divided along the midribs, with 10-21 pairs of main subdivisions, and 25-40 pairs of bluish, narrow leaflets (2-4 x 1 mm). Clusters of numerous fluffy yellow flowers (Jul-Sep) are followed by straight, hairless seed pods (50-100 x 8-12 mm).

Are there any similar species?
Many *Acacia* species, and *Paraserianthes lophantha*, are similar.

Photo: Carolyn Lewis

Why is it weedy?
Produces many long-lived seed and suckers when roots are damaged. Grows rapidly, and tolerates hot to cold temperatures, poor soils (fixes own nitrogen), damp to dry conditions, and damage. Possibly allelopathic (able to produce toxins that poison the soil to discourage growth of other plants).

How does it spread?
Limited spread of seed and suckers through soil and water movement. Plantations, waste places and riverbeds are sources of infestations.

What damage does it do?
Forms large, dense, long-lived stands in disturbed habitats. Native forest species establish under wattle so long-term impacts are usually confined to open and low-growing vegetation types. Rotting matter affects water quality. Large stands increase water runoff in winter, less in summer, causing seasonal drought and flooding.

Which habitats is it likely to invade?
Disturbed forest and shrubland, short tussockland, bare land, river systems, and cliffs.

What can I do to get rid of it?
Only control where wattle is a recent threat, of low incidence or poses a high ecological threat.
1. Hand pull or dig seedlings (all year round). Ensure minimum soil disturbance.
2. Cut and squirt (all year round): Make 1 cut every 100 mm around the trunk, apply 5ml triclopyr 600 EC (undiluted) per cut.
3. Bore and fill (all year round): Make 1 hole every 200 mm around the trunk, apply 3g metsulfuron-methyl 600g/kg or 10ml triclopyr 600 EC (undiluted) per hole.
4. Cut down and paint stump (all year round): triclopyr 600 EC (100ml/L) or triclopyr 120g/L (500ml/L) or metsulfuron-methyl 600g/kg (5g/10L) or picloram gel.
5. Spray (spring-summer): triclopyr 600 EC (30ml/10L) or triclopyr 120g/L (15ml/L).

What can I do to stop it coming back?
Roots sucker and reseeds profusely in bared areas, resprouts from cut trunks and high light levels encourage seed germination . Light lover, dislikes growing amongst species of similar height such as pioneer species. Succeeded in tall canopy habitats by taller native species where their seedlings exist so these sites can be left to regenerate (20-40 years). Amongst well established, tall native vegetation, regeneration can be speeded by wattle control. Clear all roads, quarries and other sources. Maintain native groundcover at all times.

Common name	**Scientific name**

Thistle – Grouped by treatments solutions

- **Thistle, bull (T)** — ***Cirsium vulgare***
- **Thistle, milk (T)** — ***Silybum marianum***
- **Thistle, Canada (T)** — ***Cirsium arvense***
- **Thistle, Italian (T)** — ***Carduus tenuiflorus***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link:

- BullThistleProfile.pdf (oregon.gov),
- MilkThistleProfile.pdf (oregon.gov),
- CanadaThistleProfile.pdf (oregon.gov) and
- ItalianThistleProfile.pdf (oregon.gov).

Pacific Northwest Weed Management Handbook – For full credits and information please click the following link:

- Thistle, bull (Cirsium arvense), milk (Silybum marianum), musk (Carduus nutans), Scotch (Onopordum acanthium), woolly distaff (Carthamus lanatus), and smooth distaff (Carthamus baeticus) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org) ,
- Thistle, Canada (Cirsium arvense)-selective control in crops | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)
- Thistle, Italian (Carduus pycnocephalus), slenderflower (Carduus tenuiflorus) , and plumeless (Carduus acanthoides) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Bull thistle
Cirsium vulgare

Other common names: common thistle, spear thistle, Fuller's thistle

USDA symbol: CIVU
ODA rating: B



Introduction: Bull thistle is a Eurasian native, widely established throughout North America. Accidental introductions have occurred many times through imported seeds and grains. Historically, the plant found limited application for medicinal uses and some parts were deemed edible.

Distribution in Oregon: Bull thistle occurs in every county in Oregon.

Description: Bull thistle is a biennial, blooming July to September and growing 2 to 5 feet tall. The branches sport greenish-brown spines and hairs. Leaves are pinnately lobed, hairy, prickly on the upper side and cottony underneath. Flowers are dark purple, 1½ to 2 inches wide, a clustered at the ends of branches. A circle of plume-like white hairs called pappus tops bull thistle seeds.

Impacts: Considered a nuisance weed in pastures, rangeland and newly logged sites, in the short term it competes with desirable forbs and grasses but will eventually diminish in density and impact. It is easy to control in pastures and agricultural settings with herbicides or mixed species grazing. Homeowners and grub out the large rosette stage with a shovel.

Biological controls: Bull thistle is attacked by several biocontrol insects that were originally intended to target other thistles but the damage levels seldom control individual plants. Observations though indicate that population levels of bull thistle statewide seem to be reduced from historical levels. The most effective insect is the seed head gall fly which prevents seed dispersal.

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Photos by Eric Coombs, ODA

"B" Rated Weeds

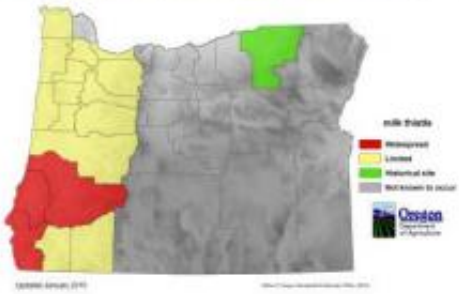
A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Milk thistle
Silybum marianum

Other common names: Blessed thistle, St Mary's thistle, lady's thistle

USDA symbol: SIMA3
ODA rating: B

Introduction: Milk thistle is native to the Mediterranean region of Europe. With it large variegated leaves and large flower head, it is a standout in garden settings or in pastures. This robust plant has been known since ancient times as a medicinal plant for the treatment of liver diseases, disorders of the bile duct and spleen. Even today the seed is sold extensively in the herbal medicine trade.



Distribution in Oregon: The first record of milk thistle in Oregon is 1886 in Multnomah County. Today it is primarily a pest of western Oregon especially in Douglas County. Scattered populations are found throughout the Willamette Valley and south coast, often associated to livestock operations.

Description: Milk thistle is a biennial or winter annual blooming from April through July. It grows two to six feet tall. Stems are stout, rigid and generally branching. Leaves are very broad and clasp the flower stem. The spiny margins and white marbling along veins are very distinctive. Flower heads are reddish-purple, spine-tipped and 3-4 inches across. The seed is capable of remaining dormant in the soil for many years.

Impacts: Once established, it forms dense clumps that exclude livestock and crowd out more desirable forage species. Individual plants are so large that forage displacement is high. It has invaded extensive pastureland acres in Douglas County though biocontrol agents have reduced their impact significantly. It is a nitrate accumulator, lethal when livestock ingest the plant though they avoid the sharp spines. It infests roadsides, waste and disturbed areas, grazing lands and often occurs in association with Italian and slender-flowered thistles.

Biological controls: One approved biocontrol agent, *Rhinocyllus conicus* a seed head weevil, is well established in Oregon.

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Photos by Eric Coombs, ODA, www.ipmimages.org

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Canada thistle
Cirsium arvense

Other common names: Californian thistle, Canadian thistle, creeping thistle, field thistle

USDA symbol: CIAR4
ODA rating: B

Introduction: Canada thistle is a native of southeastern Eurasia and Europe and was accidentally introduced to the US starting in the early 1600s. Multiple introductions over the centuries have been linked to imported grains. It is the most common weedy thistle found in the U.S.

Distribution in Oregon: Canada thistle occurs in every county in Oregon.

Description: Canada thistle is classified as a creeping perennial. Plants are either all male or all female. Its leaves are wavy, margined to lobed, up to 6 inches long and armed with yellowish spines. It has small purple to white flowers that are born in clusters. It sports an extensive horizontal-spreading root system enabling the plant to create dense patches. Fragmentation of the root system during tillage aids in dispersal throughout a field creating headaches for farmers. It has large seed production but a low percentage of viable seeds.

Impacts: Canada thistle can be found in cultivated fields, riparian areas, pastures, rangeland, forests, lawns, gardens, roadsides, and waste areas. Poor weed control can result in crop reductions up to 25% in heavily infested ground. It is the most common and impacting thistle species in the U.S.

Biological controls: Four approved biocontrol agents, a stem weevil, a seed head weevil, a crown weevil, and a stem gall fly are established in Oregon

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Photos by Eric Coombs, Glenn Miller, ODA archives

Thistle, bull (*Cirsium arvense*), milk (*Silybum marianum*), musk (*Carduus nutans*), Scotch (*Onopordum acanthium*), woolly distaff (*Carthamus lanatus*), and smooth distaff (*Carthamus baeticus*)

2,4-D

Rate 1.5 to 2 lb ae/a

Time Spring or fall.

Remarks Use fall treatments to control rosettes of these biennial weeds. Use spring treatments before flower stalk elongates. Annual treatments are needed to control seedlings. Pasture legumes are injured or eliminated at these rates.

Caution Avoid drift to sensitive crops.

Site of action Group 4: synthetic auxin

Chemical family Phenoxy acetic acid

Bull Thistle flower

Bull thistle seedling

aminocyclopyrachlor + chlorsulfuron (Perspective)

Rate 1.8 to 3.2 oz/a aminocyclopyrachlor + 0.7 to 1.3 oz/a chlorsulfuron (4.5 to 8 oz/a of product)

Time Apply to actively growing plants in spring.

Remarks Adjuvants can be used; these include methylated seed oils 0.5 to 1% v/v, nonionic surfactants at 0.25 to 1% v/v, and crop oil concentrates at 1% v/v. Can be applied using an invert emulsion rather than water.

Caution Even low rates can kill nontarget tree and shrub species, so avoid application within a distance equal to the tree height of the sensitive species. Do not allow spray to drift off target. Can injure several grass species including bromes, as well as basin wildrye.

Site of action (aminocyclopyrachlor) Group 4: Synthetic auxin; (chlorsulfuron) Group 2: ALS inhibitor

Chemical family (aminocyclopyrachlor) Pyrimidine carboxylic acid; (chlorsulfuron) Sulfonylurea

aminopyralid (Milestone)

Rate 0.75 to 1.25 oz ae/a (3 to 5 fl oz/a Milestone)

Time Apply in spring or early summer to rosettes or bolting plants or in fall to seedlings and rosettes.

Remarks A nonionic surfactant at 1 to 2 quarts per 100 gal of spray enhances control under adverse environmental conditions.

Caution Do not allow drift to desirable vegetation. Many forbs (desirable broadleaf plants) can be seriously injured or killed. Do not exceed 7 fl oz/a Milestone per year.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

chlorsulfuron (Telar)

Rate 0.75 oz ai/a (1 oz/a)

Time Apply to young, actively growing weeds.

Remarks Do not apply to frozen ground. Maintain constant agitation while mixing product with water. Add 0.25% by volume of nonionic surfactant to spray mixture.

Caution Avoid contact with sensitive crops. Do not treat powdery, dry soils and light, sandy soils if rain is not likely after treatment. Labeled for use on pasture, range, Conservation Reserve Program (CRP), and non-cropland only.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Sulfonylurea

clopyralid + 2,4-D amine (Curtail)

Rate 1 to 5 quarts/a Curtail

Time Apply to actively growing thistle after most basal leaves emerge but before bud stage.

Remarks Lower rate for in-crop cereal grain application, higher rates for fallow, postharvest, and Conservation Reserve Program (CRP) applications. Consult label for specific directions. With CRP applications, for established grass only. For best results, wait at least 20 days after application before disturbing treated areas (cultivation, mowing, fertilization with shank-type applicators) to allow thorough translocation. Apply in enough total spray volume to ensure good coverage.

Caution See label for crop rotation restrictions before use. Several crops may be injured up to 4 years after application.

Site of action (both) Group 4: synthetic auxin

Chemical family (clopyralid) Pyridine; (2,4-D) Phenoxy acetic acid

clopyralid (Stinger or Transline)

Rate 0.09 to 0.375 lb ae/a (0.25 to 1 pint/a). Labeled rates vary with crops.

Time Up to the bud stage of thistles.

Remarks Best if applied to actively growing weeds. See labels for registered sites.

Caution Consult label for crop rotation restrictions before using these products. Several crops may be injured up to 4 years after application.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

dicamba (Banvel, Rifle, or Clarity)

Rate 0.5 to 1 lb ae/a

Remarks Repeat applications for several years to control new seedlings.

Caution Dicamba residues may be in soil for 12 to 18 months after applying. Grass tolerates dicamba at these rates.

Site of action Group 4: synthetic auxin

Chemical family Benzoic acid

diflufenzopyr + dicamba (Overdrive)

Rate 0.175 to 0.35 lb ae/a (4 to 8 oz/a)

Time Apply to the rosettes.

Remarks Use higher rates on thistles that have bolted. Add a surfactant, either nonionic or methylated seed oil, to the spray mix.

Caution Avoid drift to sensitive crops. Will kill legumes.

Site of action (diflufenzopyr) Group 19: inhibits indole acetic acid transport; (dicamba) Group 4: synthetic auxin

Chemical family (diflufenzopyr) Semicarbazone; (dicamba) Benzoic acid

glyphosate + 2,4-D (Campaign)

Rate Broadcast: 16 to 32 fl oz/a. Spot treatment: 1 to 2% solution.

Time Apply to thistles in rosette stage of growth in spring or before freeze-up in fall.

Remarks This product is recommended for musk thistle control in rangeland, pasture, and non-croplands and for the control of those weeds listed on the product label.

Caution Do not graze lactating dairy animals on treated grass within 7 days after application. Animals being finished for slaughter and grazing in the treated area within 30 days of treatment must be removed from the treated area 3 days before slaughter. Do not cut forage for hay within 30 days of application. No grazing restriction if product is used for spot treatments in less than 10% of the total grazed area.

Site of action (glyphosate) Group 9: inhibits EPSP synthase; (2,4-D) Group 4: synthetic auxin

Chemical family (glyphosate) none generally accepted; (2,4-D) phenoxy acetic acid

metsulfuron (Escort and others)

Rate Escort: 0.6 oz ai/a (1 oz/a)

Time Apply postemergence to actively growing plants.

Remarks Using a nonionic or silicone surfactant increases effectiveness. Certain biotypes of musk and Scotch thistle are more sensitive than others to metsulfuron. Application sites differ between products; consult labels.

Caution Apply only to pasture, rangeland, and non-crop sites.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Sulfonylurea

picloram (Tordon)

Rate 0.25 lb ae/a

Time Apply in the fall before thistle bolts.

Remarks Do not use on diversified cropland. Follow-up applications will be necessary to control new seedlings and escaped plants.

Caution Most formulations are restricted-use herbicides. Soil residuals may last over 1 years after a 0.25 lb ai/a application. Do not contaminate water. Potatoes, beans, and many other broadleaf crops are sensitive to picloram. Do not use in diversified cropping areas.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

triclopyr + clopyralid (Quali-Pro 2,D Herbicide)

Rate 1.5 to 2 pints/a

Time Apply to actively growing thistle from rosette to early bolt stage.

Remarks Add a nonionic surfactant at surfactant manufacturer's recommended rate. Apply in at least 10 gal/a water by ground.

Caution Do not exceed 4 pints/a per year. Do not allow drift to desirable vegetation. Note label restrictions on overseeding or reseeding.

Site of action (both) Group 4: synthetic auxin

Chemical family (both) Pyridine

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Thistle, Canada (*Cirsium arvense*)-selective control in crops

Canada thistle

Canada thistle seedling

2,4-D

Selective treatment in grain and grass crops

Rate 1 to 1.5 lb ae/a

Time Apply at the early bud stage of thistle. May require repeated applications.

Remarks Do not apply to grass or grain crops before tiller stage or from early boot to dough stage. The 1.5 lb/a rate can injure wheat.

Caution Avoid drift to sensitive crops.

Site of action Group 4: synthetic auxin

Chemical family Phenoxy acetic acid

2,4-D or MCPA + dicamba (Banvel, Rifle, or Clarity)

Rate 1 lb ae/a 2,4-D or MCPA and 0.125 lb ae/a dicamba

Time In wheat or barley, apply after crop begins tillering and before boot stage. May also be applied in stubble or fallow.

Remarks MCPA is usually more effective on Canada thistle. Results are best if applied to actively growing thistles.

Site of action (all) Group 4: synthetic auxin

Chemical family (2,4-D and MCPA) Phenoxy acetic acid; (dicamba) Benzoic acid

bentazon (Basagran)

Selective in corn, dry beans, peas, and mint

Rate 0.75 to 1 lb ai/a

Time When thistle is 6 to 8 inches tall. If needed, apply again in 10 to 14 days.

Remarks Light leaf speckling may occur, but crop plants generally outgrow this within 10 days. Canada thistle must be thoroughly covered. Use at least 20 gal/a of water and at least 40 psi by ground. For aerial application, use at least 5 gal/a of water and a maximum of 40 psi.

Caution Do not use near water. Avoid applying during drought or unseasonably cold weather. Expect unsatisfactory results if daytime temperatures do not reach at least 70°F during the week after applying.

Site of action Group 6: photosystem II inhibitor

Chemical family Benzothiadiazole

chlorsulfuron (Glean)

Barley, oats, wheat

Remarks To suppress Canada thistle only. See sections in this handbook on barley, oats, and wheat for use instructions.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Sulfonylurea

chlorsulfuron + metsulfuron (Finesse)

Barley and wheat

Remarks To suppress Canada thistle only. See sections in this handbook on barley and wheat for use instructions.

Site of action (both) Group 2: acetolactate synthase (ALS) inhibitor

Chemical family (both) sulfonylurea

clopyralid (Stinger)

Rate 0.09 to 0.5 lb ae/a (0.25 to 1.33 pints/a). Labeled rates vary by crop.

Time Apply to actively growing weeds. For Canada thistle, apply after most basal leaves emerge but before bud stage.

Remarks For most effective control, apply as a broadcast treatment to the entire infested area.

Caution Consult label for crop rotation restrictions before using these products. Several crops may be injured up to 4 years after application. Consult labels for registered use sites. Stinger is registered for use on field corn, sugar beets, Conservation Reserve Program (CRP), grass seed, rangeland, pasture, Christmas tree, small grains, and non-crop areas.

Site of action Group 4: synthetic auxin

Chemical family Pyridine

clopyralid + 2,4-D amine (Curtail)

Rate 1 to 2 quarts/a Curtail. Maximum rate depends on crop.

Time Apply 2.66 pints/a formulated product to wheat or barley after crop begins tillering and before boot stage. The 2-quart rate can be used in fallow and in grass seed crops. Canada thistle should be in the rosette to prebud growth stage.

Remarks Apply in warm weather when weeds are actively growing and soil moisture is adequate for active plant growth.

Caution Consult label for crop rotation restrictions before using product. Several crops may be injured up to 4 years after application. Do not permit dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 1 weeks after treatment. Do not harvest hay from treated grain fields.

Site of action (both) Group 4: synthetic auxin

Chemical family Pyridine

clopyralid + 2,4-D amine (Curtail)

Rate 1 to 2 quarts/a Curtail. Maximum rate depends on crop.

Time Apply 2.66 pints/a formulated product to wheat or barley after crop begins tillering and before boot stage. The 2-quart rate can be used in fallow and in grass seed crops. Canada thistle should be in the rosette to prebud growth stage.

Remarks Apply in warm weather when weeds are actively growing and soil moisture is adequate for active plant growth.

Caution Consult label for crop rotation restrictions before using product. Several crops may be injured up to 4 years after application. Do not permit dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 1 weeks after treatment. Do not harvest hay from treated grain fields.

Site of action (both) Group 4: synthetic auxin

Chemical family (clopyralid) pyridine; (2,4-D) phenoxy acetic acid

dichlobenil (Casoron)

Selective in trailing berries, fruit trees, grapes, and ornamentals

Rate 4 lb ai/a in berries; 4 to 6 lb ai/a in fruit trees and grapes

Time Apply in winter or spring before active growth of crops or thistle before a rainy period to allow for activation and to avoid volatilization.

Remarks Apply midwinter immediately before a cold rain to reduce volatility and enhance weed suppression. Weigh and distribute uniformly exact quantities over precisely measured areas. Oregon results over 9 years suggest that perennial weeds can be suppressed with 4-, 3-, and 2-lb ai/a rates applied during 3 consecutive years. Grazing livestock is prohibited. (Inhibits cellulose and cell wall formation.)

Site of action Group 20: inhibits cell wall synthesis Site A

Chemical family Nitrile

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Thistle, Italian (*Carduus pycnocephalus*), slenderflower (*Carduus tenuiflorus*) , and plumeless (*Carduus acanthoides*)

clopyralid (Transline or Stinger)

Rate 0.125 to 0.25 lb ae/a (0.33 to 0.66 pint/a)

Time Apply to rosettes

Remarks Consult labels for specific site registrations.

Caution Product will injure or kill sensitive broadleaf forages. Consult label for crop rotation restrictions before using. Several crops may be injured several years after application.

Italian thistle

Site of action Group 4: synthetic auxin

Chemical family Pyridine

MCPA amine

Rate 1.5 lb ae/a

Time When thistle is actively growing but before bolting. Thistle rosettes wider than 6 inches may be difficult to control.

Remarks Subclover smaller than two trifoliate leaves may be severely injured by this treatment. Other formulations may injure clover more severely. Aerial applications often produce erratic results. Results are good from applications in October through early April, but thistles may be too dormant in midwinter in some years.

Italian thistle

Caution Avoid drift to sensitive crops.

Site of action Group 4: synthetic auxin

Chemical family Phenoxy acetic acid

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

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- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
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Common name	Scientific name
Yellow nutsedge (T)	***Cyperus esculentus***

Information provided by Oregon Department of Agriculture – For full credits and information please click the following link: Yellow nutsedge profile (oregon.gov)

Pacific Northwest Weed Management Handbook – For full credits and information please click the following link: Nutsedge, yellow (Cyperus esculentus) and purple (Cyperus rotundus) | Pacific Northwest Pest Management Handbooks (pnwhandbooks.org)

"B" Rated Weeds

A weed of economic importance which is regionally abundant, but may have limited distribution in some counties

Yellow nutsedge
Cyperus esculentus

Other common names: nut grass

USDA symbol: CYES
ODA rating: B

Introduction: Yellow nutsedge is native to North America and Eurasia, but is found throughout the world. Although it is of subtropical origin, this species has spread north into temperate regions. Prior to 1950, it was found mostly in native habitats, but today it is considered one of the world's worst weeds. Yellow nutsedge is especially troublesome in the northcentral and northeastern U.S. (courtesy Ohio State Extension). It is common throughout Western Oregon, where it occurs naturally in marshes and along riverbanks, and as a weed in cultivated fields, turf and gardens.

Distribution: This species can be found in almost every state in the union. In Oregon it is most commonly found in Western Oregon Counties.

Description: Yellow nutsedge is an erect, grass-like perennial, characterized by its shiny yellowish green leaves, triangular stem, golden-brown flower head and shallow rhizomes (horizontal underground stems) that produce many nut-like tubers. Stems (1/3 to 3 feet tall) are erect, hairless, unbranched and triangular in cross-section. The leaves are light yellowish-green (4 to 12 inches long or longer, 1/8 to 1/2 inch wide) with a prominent mid-vein, a waxy surface and a gradually tapering, pointed tip. Young seedlings are often confused with grasses. This species reproduces primarily by tubers and less often by seeds. Rhizomes help to enlarge patches (courtesy Ohio State Extension).

Impacts: Yellow nutsedge can be a significant problem in vegetable crop production and other irrigated crops. It thrives in seasonally flooded sandy loam bottomlands where is can be introduced by floods. Often, loams sold in garden centers are contaminated with nutsedge turions that quickly establish and create persistent weed problems for homeowners. It can also be a problem in potted nursery stock.

Biological controls: None are available.

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Photos (left) Jack Kelly Clark. (right) Joseph M. DiTomaso.

Nutsedge, yellow (*Cyperus esculentus*) and purple (*Cyperus rotundus*)

Yellow nutsedge

Yellow nutsedge

alachlor (Lasso or Micro-Tech)

Rate 1.5 to 4 lb ai/a

Time Use a preplant incorporation application.

Remarks Selective in corn and dry beans. Controls most annual grasses and certain annual broadleaf weeds. Absorbed mainly by germinating plant shoots; seems to inhibit protein synthesis.

Caution A restricted-use herbicide. Avoid contact with the eyes and skin.

Site of action Group 15: inhibits very long chain fatty acid synthesis

Chemical family Chloroacetamide

dichlobenil (Casoron)

Rate 150 lb/a of 4% granules

Time Apply in winter just before a period of rain, or in spring just before applying bark mulch in landscape plantings.

Remarks Incorporate by rototilling or rain. Selective in some fruits and ornamentals (see label). Apply midwinter immediately before a cold rain to reduce volatility and enhance weed suppression. Weigh and distribute uniformly exact quantities over precisely measured areas. Oregon results from over 9 years suggest perennial weeds can be suppressed with 4-, 3- and 2-lb ai/a rates applied in 3 consecutive years. Grazing livestock is prohibited. In non-crop-land areas only, up to 250 to 500 lb of 4% granules can be used for nutsedge control. Inhibits cellulose and cell wall formation.

Caution Do not breathe dust or allow contact with eyes or skin.

Site of action Group 20: inhibits cell wall synthesis Site A

Chemical family Nitrile

EPTC (Eptam)

Rate 3 to 6 lb ai/a

Time Apply before final seedbed preparation in the spring.

Remarks Incorporate immediately by disking in two directions, or rototill to distribute 2 to 3 inches deep. Apply only to soil dry on the surface, then disk immediately. Use before planting beans and potatoes. Treatment suppresses nutsedge for one season only.

Caution Incorporate 2 to 3 inches into soil immediately after application.

Site of action Group 8: lipid synthesis inhibitor but not an ACCase inhibitor

Chemical family Thiocarbamate

EPTC with safener (Eradicane or Genate) or butylate with safener (Sutan)

Rate 4 to 6.14 lb ai/a, depending on soil type and infestation; see label.

Time Apply preplant and incorporate immediately and thoroughly.

Remarks These herbicides are selective in corn. Perennial weeds must be turned under and chopped up thoroughly before treatment. See label for additional application and incorporation instructions. Suppresses emergence of new shoots from yellow nutsedge tubers but does not necessarily kill them.

Caution Do not use EPTC without safener on "Golden Jubilee" sweet corn west of the Cascades. Do not exceed 4 lb ai/a EPTC with safener on sweet corn.

Site of action (both) Group 8: lipid synthesis inhibitor but not an ACCase inhibitor

Chemical family Thiocarbamate

EPTC with safener (Eradicane or Genate) or butylate with safener (Sutan)

Rate 4 to 6.14 lb ai/a, depending on soil type and infestation; see label.

Time Apply preplant and incorporate immediately and thoroughly.

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Site of action (both) Group 8: lipid synthesis inhibitor but not an ACCase inhibitor

Chemical family (both) Thiocarbamate

glyphosate

Rate 2.25 lb ae/a as a broadcast spray, or a 1% solution using hand-held equipment

Time When nutsedge is actively growing in midseason but before new tubers begin to form, usually by June 15 to July 1.

Remarks Nutsedge can be reduced by encouraging active growth and applying glyphosate once or more often when several nutsedge leaves are present but before new tubers begin to form.

Caution Re-treatment is important. Glyphosate controls grasses as well as other vegetation in the treated area.

Site of action Group 9: inhibits EPSP synthase

Chemical family None generally accepted

halosulfuron (Permit, Sandea, or SedgeHammer)

Rate 0.5 to 1 oz ai/a (0.67 to 1.33 oz/a)

Time Labels differ. For example, apply SedgeHammer to yellow nutsedge in the three- to five-leaf stage. Apply SedgeHammer in turf to yellow nutsedge in the three- to eight-leaf stage of growth.

Remarks Halosulfuron is labeled on several crops. Consult labels for stage of crop or turf growth. Add 1 to 2 quarts nonionic surfactant or crop oil concentrate per 100 gal spray solution for broadcast applications. A second halosulfuron application may be required 6 to 10 weeks after the first.

Caution Do not exceed 1.5 oz ai/a (2 oz/a) of Permit or Sandea or two applications per season. Do not exceed 0.4 oz ai/a (5.33 oz/a) of SedgeHammer or four applications per season. Note labels for information on recropping, reseeding, and site of application.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Sulfonylurea

imazapic (Plateau)

Rate 0.125 to 0.188 lb ai/a

Time Apply postemergence when plants have bolted.

Remarks Add 1 quart/a methylated seed oil; do not exceed 25 gal/a spray volume.

Caution Before using, note crop rotation restrictions.

Site of action Group 2: acetolactate synthase (ALS) inhibitor

Chemical family Imidazolinone

***S*-metolachlor (Dual II Magnum or Dual Magnum)**

Rate Refer to label

Time Use preplant incorporated.

Remarks Incorporate uniformly to 2 inches before planting. Use lower rates on coarse soils.

Caution May cause skin sensitization reactions in some people. Do not breathe spray mist.

Site of action Group 15: inhibits very long chain fatty acid synthesis

Chemical family Chloroacetamide

Peachey, E., editor. 2021 Pacific Northwest Weed Management Handbook.

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.