Leucanthemum vulgare Lam.

Oxeye daisy

Family: Asteraceae
Range: Throughout the United States, including all western states.
Habitat: Disturbed places, roadsides, pastures, grassland, coastal scrub. Often grows on poor soil, but thrives on moist clay soils.
Origin: Native to Europe. It is widely cultivated as an ornamental but has escaped cultivation in all contiguous states.
Impacts: It forms spreading clumps which crowd out other plants, including native plants and ornamentals. Livestock generally avoid grazing the foliage, and milk from dairy cattle that have consumed the plant can have an unpleasant flavor. Oxeye daisy can host the yellow dwarf potato virus.
Western states listed as Noxious Weed: Colorado, Montana, Washington, Utah, Wyoming
California Invasive Plant Council (Cal-IPC) Inventory: Moderate Invasiveness

A clumping perennial to 3.5 ft tall, with white daisy flowerheads. Its main roots are creeping, shallow, and extensive on favorable sites, developing into dense colonies. Roots seasonally develop new shoots, and root fragments can regenerate into new plants. The foliage is more or less hairless. The lower stems have alternate oval-shaped leaves on stalks as long as the leaf blades. The stalks plus leaves are up to 6 inches long. The leaf blades have coarse, rounded teeth and are lobed near the stalk. Upper stem leaves are shorter and without stalks.

The flowerheads are daisy-like with white ray flowers and yellow centers, mostly 1 to 3 inches in diameter, solitary on a long stalk. The flowers produce abundant seed, especially when moisture is available. Seeds have no pappus but primarily disperse with water, soil, and human activities—including distribution in some commercial "wildflower" packets. Seeds can survive ingestion by animals and can remain viable for 38 years or more under field conditions. The plants also reproduce vegetatively from creeping roots or root fragments, which can be dispersed by machinery.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Small patches may be removed with hand tools or by repeated hand-pulling. Mowing before bloom can reduce seed set but will not control the plant. Mowing during or after flowering will disperse seeds. Because of its shallow root system, oxeye daisy can be controlled with cultivation. A single shallow cultivation may spread root fragments and enlarge the population. However, cultivation at a depth of about 6 inches in summer followed by repeated shallow cultivations can help control patches. Equipment should be cleaned after use, and the site should be monitored for resprouts.
Cultural	Oxeye daisy is palatable to most livestock, but grazing alone does not control it. Cattle tend to avoid it, and it can give an off-flavor to milk. Burning does not appear to control this species. Plants establish most readily on bare soil. Undisturbed vegetative cover discourages oxeye daisy establishment and reproduction. Fertilization to favor grasses can help to reduce daisy infestations.
Biological	No known biocontrol agents are available for control of oxeye daisy, primarily because the plant is still widely cultivated and also related to many other cultivated chrysanthemums.

CHEMICAL CONTROL

The following specific use information is based on published papers and reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions

for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
Aminocyclopyrachlor + chlorsulfuron *Perspective*	**Rate:** 3 to 4.5 oz product/acre **Timing:** In spring up to flowering, or in the fall rosette stage. **Remarks:** *Perspective* provides broad-spectrum control of many broadleaf species. Although generally safe to grasses, it may suppress or injure certain annual and perennial grass species. Do not treat in the root zone of desirable trees and shrubs. Do not apply more than 11 oz product/acre per year. At this high rate, cool-season grasses will be damaged, including bluebunch wheatgrass. Not yet labeled for grazing lands. Add an adjuvant to the spray solution. Recommended rates are based on those reported for similar species. This product is not approved for use in California and some counties of Colorado (San Luis Valley).
Aminopyralid *Milestone*	**Rate:** 4 to 7 oz product/acre (1 to 1.75 oz a.e./acre) **Timing:** In winter to early spring for preemergence and seedling treatments; in spring up to flower bud stage. Can be applied in fall in cold-winter areas. **Remarks:** A broadleaf herbicide like picloram, but more selective. Very safe on grasses. Longer residual and higher activity than clopyralid. Will kill most legumes.
Aminopyralid + 2,4-D, *Forefront HL*; Aminopyralid + metsulfuron, O*pensight*; Aminopyralid + triclopyr, *Capstone*	**Rate:** 1.2 to 1.5 pt *Forefront HL/*acre; 2.5 to 3.3 oz *Opensight/*acre; 5 to 8 pt *Capstone*/acre **Timing:** From rosette to bolting stages. *Opensight* may also be applied in fall to seedlings and rosettes. **Remarks:** *Opensight* is not registered for use in California.
Clopyralid *Transline*	**Rate:** 0.67 to 1.33 pt product/acre (4 to 8 oz ae/acre) **Timing:** In spring, up to the flower bud stage. **Remarks:** A broadleaf herbicide like picloram, but more selective. Very safe on grasses. Will kill most legumes.
Clopyralid + 2,4-D *Curtail*	**Rate:** 2 to 3 qt *Curtail*/acre (use higher rate if plants are drought-stressed) **Timing:** Apply to rapidly growing weeds from full rosette to early flower bud. **Remarks:** This mix is broadleaf-selective with a wide range of susceptible species. Recommended rates are based on those reported for similar species.
Dicamba *Banvel, Clarity*	**Rate:** 1 to 2 pt product/acre of (0.5 to 1 lb a.e./acre) **Timing:** Apply to rapidly growing plants in the rosette stage. Smaller plants are more effectively controlled. **Remarks:** Dicamba is a broadleaf-selective herbicide often combined with other active ingredients. It is effective earlier in the season than 2,4-D. It is also effective when tank-mixed with 2,4-D (0.75 lb a.e./acre dicamba + 0.25 lb a.e./acre 2,4-D). Dicamba has very limited soil residual. Avoid drift to sensitive crops. Do not apply when outside temperatures exceed 80°F. It will kill or injure legumes. Recommended rates are based on those reported for similar species. Dicamba is available mixed with diflufenzopyr in a formulation called *Overdrive*. This has been reported to be effective on oxeye daisy. Diflufenzopyr is an auxin transport inhibitor which causes dicamba to accumulate in shoot and root meristems, increasing its activity. *Overdrive* is applied postemergence at 4 to 8 oz product/acre to rapidly growing plants. Higher rates should be used on large annuals and biennials or when treating perennial weeds. Add a non-ionic surfactant to the treatment solution at 0.25% v/v or a methylated seed oil at 1% v/v solution.
Picloram *Tordon 22K*	**Rate:** 1.5 to 2 pt product/acre (6 to 8 oz a.e./acre) **Timing:** Apply at rosette to flower bud stage in spring, or to new rosettes in fall. **Remarks:** Most broadleaf plants are susceptible to picloram, but it is relatively safe on established grasses. Picloram is also effective mixed with dicamba or 2,4-D. It has long soil residual activity and some applicators note that it can injure young or germinating grasses. Picloram is a restricted use herbicide. Not registered for use in California.
Triclopyr	**Rate:** 2 pt product/acre (0.75 lb a.e./acre *Garlon 3A*, 1 lb a.e./acre *Garlon 4 Ultra*)

Garlon 3A, Garlon 4 Ultra	**Timing:** Postemergence to rapidly growing plants. **Remarks:** Broadleaf-selective and safe on most grasses. Most effective on smaller plants. *Garlon 4 Ultra* is formulated as a low volatile ester. However, in warm temperatures, spraying onto hard surfaces such as rocks or pavement can increase the risk of volatilization and off-target damage. Recommended rates are based on those reported for similar species.
Triclopyr + 2,4-D *Crossbow*	**Rate:** 2 to 4 qt product/acre **Timing:** Rosette stage. **Remarks:** Include non-ionic surfactant. Recommended rates are based on those reported for similar species.
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup, Accord XRT II*, and others	**Rate:** 1.33 to 2.67 qt product (*Roundup ProMax*)/acre (1.5 to 3 lb a.e./acre) **Timing:** Apply to rapidly growing plants from rosette to bud stage. **Remarks:** Glyphosate has no soil activity and is a nonselective herbicide. Repeat applications may be necessary. Effectiveness is increased by addition of ammonium sulfate.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Chlorsulfuron *Telar*	**Rate:** 1 to 2.6 oz product/acre (0.75 to 1.95 oz a.i./acre) **Timing:** In fall to new rosettes, or to rosettes in spring before bolting. **Remarks:** Mixed selectivity; generally safe on grasses, but fall application may injure bromes. Use a surfactant. It can be used in late season applications to reduce seed production and has fairly long soil residual activity. Recommended rates are based on those reported for similar species.
Imazapyr *Arsenal, Habitat, Stalker, Chopper, Polaris*	**Rate:** 2 to 3 pt product/acre (0.5 to 0.75 lb a.e./acre) **Timing:** Preemergence or postemergence. **Remarks:** Imazapyr is a nonselective herbicide.
Metsulfuron *Escort*	**Rate:** 0.5 to 1 oz product/acre (0.3 to 0.6 oz a.i./acre) **Timing:** Apply to young, rapidly growing weeds in spring before flowering, or in fall to new rosettes. The best control in Colorado studies with metsulfuron occurred when applied during flowering. **Remarks:** Mixed selectivity, generally safe on grasses. Metsulfuron has some soil residual activity. Use a surfactant. *Opensight* is a premix of aminopyralid + metsulfuron and can be applied at 2.5 to 3.3 oz product/acre. Metsulfuron can also be tank-mixed with 2,4-D and/or dicamba. Not registered for use in California.
Metsulfuron + chlorsulfuron *Cimarron X-tra*	**Rate:** 0.5 to 1 oz product/acre **Timing:** Most recommendations on timing indicate to treat before flowering. However, the best control in Colorado studies with metsulfuron occurred when applied during flowering. **Remarks:** Recommended rates are based on those reported for similar species. Not registered for use in California.
Sulfometuron *Oust* and others	**Rate:** 3 to 5 oz product/acre (2.25 to 3.75 oz a.i./acre) **Timing:** Preemergence or early postemergence, when weeds are germinating or rapidly growing. **Remarks:** Sulfometuron has mixed selectivity. It is fairly safe on native perennial grasses, especially wheatgrass. Other desirable grasses may be stunted, stressed, or injured. Good for revegetation use, but with a fairly long soil residual.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone *Velpar L*	**Rate:** 4 to 6 pt product/acre (1 to 1.5 lb a.e./acre) **Timing:** Apply before weeds emerge or to young plants. **Remarks:** Mixed selectivity, fairly long soil residual. It can be effective in both foliar and soil applications. In soil applications, rates will vary with soil texture and soil organic matter; best results if applied when soil is moist. Use rates will also vary depending on the weed species to be controlled. Hardwood trees near application site can absorb this chemical through the roots and may be injured or killed. Do not spray near the root zone of desirable hardwood trees or shrubs. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.