

INTRODUCTION

Common groundsel, *Senecio vulgaris*, is a prevalent winter annual weed (although also considered a summer annual since it can germinate in spring, summer, or fall). It is found in nurseries, landscape beds, and roadsides. It adapts to both moist and dry sites and reproduces rapidly from vast windblown seed production and has multiple generations per year. Groundsel is toxic if ingested (alkaloids can cause chronic liver damage) by cattle and horses.^{2,18} Several races of this weed have developed resistance to triazine herbicides groups, [atrazine and simazine (Princep)], as well as nitriles (bromoxynil) and uracils (terbacil (Sinbar)).^{5,14,17}

IDENTIFICATION

Groundsel is an upright weed typically growing 5 -18" tall. The first true leaves are slightly lobed, purplish on the underside, and attached to a short, purple stem. Young plants remain rosettes until reaching maturity. Older leaves are 2-4" long with deep, irregular lobes, coarsely toothed margins, and no petioles.² Leaves are arranged alternately on the stem in a spiral pattern.



The first true leaves of common groundsel are slightly lobed
Bruce Ackley, The Ohio State University,
Bugwood.org



Older leaves have deep, irregular, coarsely
toothed margins and no petioles

Seedlings can flower when less than 2" tall.¹⁴ Flower heads are small (1/4" diameter), yellow, cone-shaped flower heads produced in terminal clusters. When mature, the flower clusters open to a white 1/2 inch puff ball seedhead (similar to dandelion)⁷ that is wind disseminated. An individual plant remains in bloom for about 3-4 weeks.¹¹

LIFE CYCLE

Overwintering seeds germinate from late fall through early spring. New plants mature throughout spring and early summer (April – June), usually fading in the summer heat. Flowers develop within 6 weeks after seedling emergence.¹ Groundsel flowers throughout the year⁵, and a plant may continue to flower and set seed for several months.

Seeds are spread primarily by wind.^{2,5,18} Each plant produces up to one million² (avg. 1700) viable seeds⁴, depending upon growing conditions. Plants growing under stress can produce seed when they are only a few inches tall.² Seed survival in the soil is short. There is no dormancy period, and most seeds germinate within a year or lose viability.² Seeds buried for 6 months in soil germinate when exposed to light.⁵ There can be 2 to 3 generations per year allowing populations to build fairly quickly.^{2, 18}

MANAGEMENT ISSUES

Groundsel can be found all year long, but are more active during the cooler growing seasons of spring and fall.⁷ Seeds germinate over a wide range of temperatures. Seedlings are frost tolerant and germinate very early in the spring (March) and even earlier under row covers/greenhouses. Monitor for new seedlings beginning in early spring particularly after the first warm rain and through early summer.¹⁵ Seedlings will continue to grow after a few hard frosts, allowing for significant growth through the month of November. Groundsel is capable of 2-4 generations per year in Maryland. It grows best in moist, fertile soil. The weed cannot survive on shaded, trampled or mowed sites.⁵

This weed is a prolific seed producer. One plant produces 20,000 to 1,000,000 wind-dispersed seeds.² Plants under stress can set seed when only a few inches tall.² Seeds germinate quickly upon soil contact, light, and moisture, with no dormancy period from spring/summer seed. Fall germinating groundsel produces dormant seed which can maintain dormancy for up to 3 years.¹³ Seed is easily spread with wind, irrigation water, mulch, and on clothing and vehicles. Flowering weeds that are pulled and not removed from the site can still set seed.¹⁸ Even if groundsel is managed on your site, it may still blow in from nearby areas.

CONTROL

The key to common groundsel control is sanitation and preventing seed from germinating. Because seeds are readily dispersed by wind, just a few plants surrounding the site can infest the entire location.³ Cultural practices used in nursery production can greatly affect weed vigor and herbicide efficacy.

CULTURAL/MECHANICAL CONTROL: Monitor roadsides, fencerows, and ditches to prevent groundsel from flowering and setting seed that can be carried with wind from adjoining land. Groundsel is ideally controlled by eliminating the plant before it flowers and sets seed.

Cultivation. Remove groundsel plants when small by hand removal, hoeing, or shallow tilling^{2,18}. Fall management of groundsel is important to prevent dormant seed production¹⁸.

Mowing: Keep site borders and hedgerows mowed to prevent seed production. Wash or air-spray mowers to remove seeds and clippings before moving to a weed-free turf.

Mulch: A 3" medium/coarse (not fine) mulch layer can effectively prevent groundsel seedlings from pushing through as long as the mulch surface can dry out. Wind-blown seeds do not establish well in mulch that dries out between rains.¹⁸



Photos: Flower heads occur in clusters which open to a white 1/2 inch puff ball seedhead.

Fertilizer Placement: Research in container nurseries in Oregon demonstrated that common groundsel control was greatly improved by dibbling (placing fertilizer directly under the plant rootball when transplanting) instead of broadcasting fertilizer on top of container stock.³

Outcompete: A dense stand of turfgrass or a thick cover crop between nursery rows can outcompete groundsel. The weed cannot live on trampled or mowed sites.⁵ Crop rotation minimizes the opportunities for one weed species to dominate a field or greenhouse.⁹

Soil Steaming: Steam heating of soil or potting mix can kill dormant and non-dormant weed seed (180 °F for 30 minutes).⁹ UK field studies indicate that seeds of groundsel were also controlled by soil steaming.⁵

Flame Weeding: Seedlings with 2-6 leaves are tolerant of flame weeding.⁵

Fallow Fields: Seed numbers in soil were reduced by 70% following one year of allowing fields to go fallow and by >90% if this method was extended for a second year.

BIOCONTROL: The ragwort flea beetle and ragwort seed fly have been released for groundsel control in California.⁶ The cinnabar moth larvae (*Tyria jacobaeae*) feeds on groundsel during the summer, although even if plants are consumed seeds continue to germinate.¹⁰ The rust fungus *Puccinia lagenophorae* has provided about 30% control in greenhouse tests.¹⁸

CHEMICAL CONTROL: Monitor for seedlings beginning in early spring particularly after the first warm rain.¹⁶ and through early summer. Monitor for new seedlings again in late summer/early fall and control as soon as possible. Do not wait until spring to control fall germinating weeds, since overwintering weeds are large, and control results are poor. Control is best achieved when applied to foliage of young and actively growing plants. Rotating herbicide mode of action is important to reduce herbicide resistance.

For field grown nurseries, 2-4 herbicide treatments are needed per year. Treatments should be timed as one season is ending and another is beginning. Weeds should never be allowed to go to seed. Timely applications of non-selective herbicide treatments can manage weeds in field grown culture. In nursery container production, however, only selective, pre-emergent herbicides can be used safely.¹²

Pre-emergent herbicides should be applied in the late fall while the weeds are relatively small and actively growing.

- In a container nursery production cycle, herbicide application timing is important: 1) during liner propagation, 2) site preparation before setting containers on ground, 3) at potting, and 4) approximately one month after potting. In general, herbicides tend to last about half as long in nursery culture as they do in landscapes, due to microbial breakdown aggravated by constant irrigation, fertilization and the use of high organic soil mixes that adsorb herbicides (e.g. “a product label that promises 6 months control in landscapes may deliver only three months under nursery culture”).¹²
- Pre-emergent herbicide research: OSU research in container nurseries has shown that Broadstar and Rout provided the most effective control, reducing common groundsel growth by about 97%. OH2, Ronstar O-O, and Snapshot only reduced large groundsel growth by about 55-70%. Gallery (isoxaben) provides excellent control in container crops while Surflan (oryzalin) alone provides poor control. Research in Florida also reported excellent control with Gallery. Among granular herbicides, Snapshot and Rout provided excellent common groundsel control in both Florida and Oregon. Broadstar also provided excellent control. Devrinol applied together with Snapshot may have had a synergetic impact in preventing groundsel germination. Princep (simazine) offers poor control due to resistance issues.

Labeled herbicides include¹: dichlobenil (Casoran), flumioxazin (Broadstar), napropamide (Devrinol), oryzalin (Surflan), oxadiazon (Ronstar), oxyfluorfen+pendimethalin (OH2), oxyfluorfen+oryzalin (Rout), [Barrier® 50W Dichlobenil Herbicide, Barrier® Ornamental Landscaping Herbicide, GlyphoMate® 41 Weed & Grass Killer Plus Aquatic Herbicide, Pronto® Vegetation Killer}

Pre-emergent Herbicide Effectiveness:

Ratings Key: P= poor control; F=fair; G=good

Ratings are from the Container Nursery Weed Research Group⁴.

Barricade/Regalkade - P-F;

Broadstar –G; Gallery-F;

OH2- G;

Pennant Magnum- P-F;

Pendulum- P; Regal OO- G;

Ronstar- P-F; Rout- G;

Showcase- F-G;

Snapshot TG- F-G;

Surflan- F;

Treflan- P

Labeled Post Emergent Herbicides include¹: clopyralid (Lontrel), diquat dibromide (Reward), flumioxazin (SureGuard), glyphosate formulations, oxyfluorfen (Goal 2XL) or glyphosate formulations can be used in landscape areas

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