



# Common Groundsel

*Senecio vulgaris* L.

S. Aldrich-Markham

Common groundsel, native to Europe, is now common throughout the temperate regions of the world. It is widespread in Oregon, Washington, and Idaho, but most common west of the Cascade Mountains. This weed is found in many crops, including forages, cereals, mint, berries, and row crops, as well as in ornamentals and vegetable gardens.

Groundsel is especially a problem in forage crops because it is toxic to livestock. The toxins are four pyrrolizidine alkaloids, which cause irreversible liver damage. Some of the same alkaloids are found in tansy ragwort (*Senecio jacobea* L.), but tansy ragwort also contains two additional alkaloids that are more toxic.

Poisoning occurs most commonly in situations where animals cannot separate out the toxic plants—when they are mixed with the forage in a pasture, or when they are fed in hay or silage. The liver disease is chronic and progressive, resulting in death months later in most animals, with few or no



Figure 1.—Common groundsel grows from 4 to 18 inches tall. Leaves are deeply lobed with toothed margins. The lower stems and undersides of basal leaves usually are purplish-colored.

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symptoms until 2 or 3 days before death.

A lethal amount for cattle or horses is 7 percent of their body weight of groundsel or 5 percent of their body weight of tansy ragwort (for example, 50 pounds fresh weight of groundsel or 35 pounds fresh weight of tansy ragwort consumed by a 700-pound cow).

With lesser amounts, the liver loses function, but no symptoms may be apparent until the animal is stressed (by pregnancy, a new feed, a different toxin, etc.). Then the damaged liver may not be able to purify the blood fast enough, and death is sudden.

Sheep and goats have rumen bacteria that detoxify the alkaloids, so they are able to consume twice their body weight of groundsel or tansy without liver damage. Grazing by sheep sometimes is used to control these weeds in pasture.

## Identification

Common groundsel is a member of the sunflower (*Asteraceae*) family. The flower heads are numerous, with yellow disk flowers, but no ray flowers. The heads are cylindrical,  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long, with black-tipped bracts around the base. The seeds are slender, ridged, about  $\frac{1}{2}$  inch long, and tipped with a tuft of silky white hairs.

The plant usually is a winter annual, sometimes biennial, though it may germinate in all seasons. It grows from 4 to 18 inches tall. The leaves are deeply lobed with toothed margins and may be smooth to

hairy or woolly. Leaves have little or no leaf stalk, and are arranged along the stem in a spiral. Basal leaves usually are purplish on the under surface, 1 to 4 inches long, and  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches wide. Stems are hollow and rather succulent.

A similar species is woodland groundsel (*Senecio sylvaticus* L.). This plant generally is larger, growing up to  $3\frac{1}{2}$  feet tall, with leaves more deeply lobed than those of common groundsel. Leaves are greenish gray and woolly. They are largest near

the base of the plant, becoming increasingly smaller toward the top. The plant has a nauseating odor when bruised.

When small, woodland groundsel may be confused with tansy ragwort, but it is an annual and does not form a rosette of basal leaves in the first year like the biennial tansy ragwort. Woodland groundsel more often is found along roads and in disturbed areas in the forest, while common groundsel is a weed of fields and gardens and the waste areas nearby.

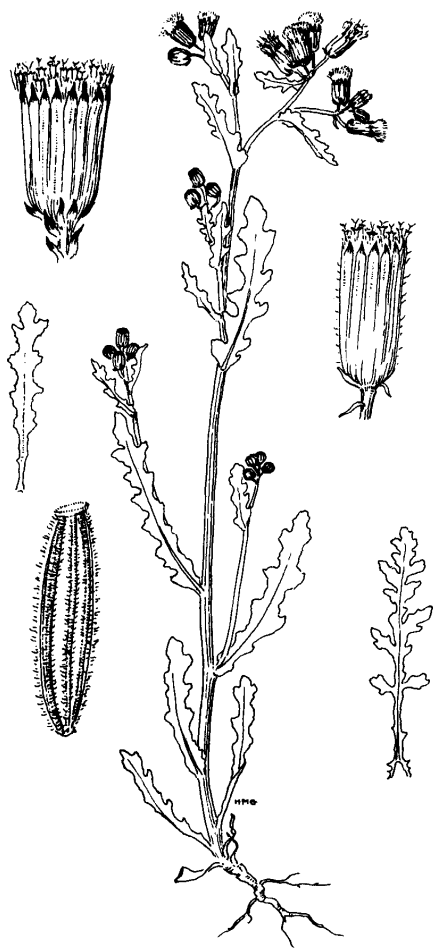
## Biology and Ecology

Groundsel produces abundant seeds, which spread by floating on the wind with their parachutes of hairs. One groundsel plant can produce as many as one million seeds in a season.

Groundsel is a hardy plant that germinates over a wide range of temperatures. Plants can survive cold temperatures during the winter, then flower and set seeds early in the growing season. March to April is the primary period of bloom, though plants flower throughout the growing season.

West of the Cascade Mountains where winters are mild and wet, groundsel can flower all year, producing two or more generations per year.

Plants growing under stress can produce seed when they are only a few inches tall. Seed survival in the soil is short, and with no dormancy period most seeds germinate within a year



Common groundsel plant, center. Flowerhead, leaf, and fruit on left are Common groundsel; leaf and flowerhead on right are Woodland groundsel.

or lose viability. Groundsel is self-fertile; the flowers do not require cross-pollination.

Common groundsel first was found to have developed resistance to the triazine herbicides (atrazine, simazine) in Washington in 1968. Triazines inhibit photosynthesis by binding onto membranes within the chloroplasts in green cells.

Resistant groundsel plants have an altered reactive site on the chloroplast membrane. This difference, while saving the plant from triazine damage, also results in chloroplasts that are less efficient at gathering energy from light and fixing carbon from carbon dioxide into sugars. In general, susceptible plants are larger, flower earlier, and produce more seeds than triazine-resistant plants.

If a triazine herbicide is not used, a groundsel population will be dominated by susceptible plants. However, continued application of the herbicide to a field removes competition from susceptible plants and allows resistant plants in the population to increase. Triazine-resistant groundsel populations have developed independently in many areas of the country, including Oregon, Washington, and Idaho.

## Prevention

Seed from groundsel plants growing along ditches, fence rows, roadsides, and adjoining land can be carried into fields by wind. These seed sources should be controlled. Weed seed also is carried into fields in irrigation water and with contaminated crop seed.

People may carry weed seed on clothing, vehicles, or equipment. Feeding livestock hay containing weed seed is another source of infestation. Spreading contaminated manure also spreads groundsel.

## Control

### Cultural Control

Cultivation kills groundsel plants, and if done prior to seed formation is an effective control method. New plants, however, coming either from the reservoir of seeds in the soil or from seeds blown in from adjacent areas, will establish readily in newly-cultivated soil.

With alfalfa and other perennial forage crops, a dense and vigorous stand competes strongly with weeds, so few new groundsel plants are able to survive the seedling stage. Management practices that promote vigorous crop growth can reduce groundsel in a field. A thin crop stand leaves open spaces for weeds to invade.

Alfalfa is particularly susceptible to invasion by groundsel when it is dormant in areas of mild winters, or during alfalfa seedling establishment. If a heavy weed population is expected, growers should pre-irrigate to germinate weed seeds, then cultivate before seeding.

Frequent cutting reduces established alfalfa's competitive advantage and enhances conditions for weed invasion. Cutting alfalfa at longer intervals and avoiding late fall cuttings helps keep alfalfa competitive.

### Biological Control

Larvae of the cinnabar moth, *Tyria jacobaeae*, an insect released extensively in western Oregon and western Washington for biological control of tansy ragwort, also eat groundsel. These caterpillars are not capable of significantly reducing a groundsel infestation, however, because they are present only from June through August.

Research is being done in England with a rust fungus, *Puccinia lagenophorae*, which provides a moderate level of groundsel control. Leaf growth is impaired in infected plants, and flower production is reduced. Rust delays flowering 1 to 2 weeks.

In order to be an effective control, the rust must be maintained in the weed-infested area. One year without the presence of rust allows the population level of groundsel to revert to that of previous years. The rust is unavailable commercially.

### Chemical Control

Several herbicides control groundsel. Removing groundsel from cereals and forage grasses is not difficult, but removing it selectively from actively-growing forage legumes is almost impossible. In alfalfa, herbicide applications can be made only during the winter dormant season. In mint, selective control with herbicides is possible when the groundsel is small.

In order to prevent or delay the appearance of herbicide-resistant weeds, it is important to avoid using herbicides that



Figure 2. — The flower heads are  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long, with yellow disk flowers and black-tipped bracts around the base. Seeds are carried on the wind by a tuft of silky white hairs.



Figure 3. — A seedling plant of common groundsel.

have the same mode of action in the same field year after year.

For information on which herbicides have the same mode of action, as well as further information on herbicide-resistant weeds, refer to Extension publication PNW 437, *Herbicide-Resistant Weeds and Their Management*.

For suggested herbicides in different cropping situations, refer to the *Pacific Northwest Weed Control Handbook*, an

annually revised Extension publication available from the Extension bulletin offices of Oregon State University, Washington State University, and the University of Idaho. Carefully read and follow label directions when using any herbicide.

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