

# CANADA THISTLE: Options for control

**Canada thistle** (*Cirsium arvense*), a member of the Asteraceae family, is a class-C noxious weed in Franklin County, Washington. Originating from Europe.

Canada thistle is a perennial reproducing by creeping, freely sprouting horizontal roots and by seed. It grows in patches because of its root system and perennial nature. The extensive roots are fleshy and send up frequent new shoots. The stems are erect, hollow, smooth, or slightly hairy, up to 4 feet high and branched at the top. The plants are leafy but no wings or spiny appendages occur on the stems. The waxy leaves are oblong to lance-shaped and vary from very irregular and deeply cut to spiny-toothed on the margins to almost smooth with few or no spines. The color is usually bright green but the upper surface varies from dark to light, and the leaves are sometimes very light green and slightly hairy on the underside. The flower heads are numerous, small, compact, and vary from light pink to lavender to purple. The bracts on the heads are not spiny. The plant is dioecious, so male and female flowers are produced on separate plants. The seeds are oblong, flattened, curved, smooth, dark brown, and approximately 1/8 inch long.

Canada thistle is declared a noxious weed throughout the United States and has long been recognized as a major agricultural pest, costing tens of

millions of dollars in direct crop losses annually and additional millions in cost for control. Canada thistle is found in cultivated fields, meadows, pastures, waste places, roadsides, and prairies.

This weed spreads by the extensive root system, and by producing enormous quantities of seed that is carried by wind, machines, and animals. However, most often, the cotton breaks off, leaving the seed attached to the parent plant.

Canada thistle grows best in disturbed upland areas but also invades wet areas with fluctuating water levels such as stream banks, sedge meadows and wet prairies. Since Canada thistle is dioecious, it is mainly insect pollinated. Many insect visitors have been reported. The average seed production is about 1,530 seeds per plant, but exceptional plants may produce up to 5,300 seeds. Seeds remain viable in the soil for up to 20 years.

There are two biological control agents found to be helpful in some cases at controlling Canada thistle. Both are seed-head eaters, that will destroy most seeds in a flower head, but have little impact on eradicating or reducing an established root system.



Rosettes form in late April through May.



Stems are grooved and smooth to slightly hairy.



The pinkish purple blossom contains several hundred seeds, in a head similar to that of a Dandelion.

## Key identifying traits

- Leaves vary from light to dark green, oblong or lance shaped, deeply cut, spiny toothed margins.
- Flowers are 1/2 to 3/4 in. in diameter, purple or rarely white.



Some good news: If the plant is male, the seed in the fluff you see blowing in the wind is sterile.

## Biology and ecology

- **Perennial** with a deep-seated complex system of roots spreading horizontally which gives rise to aerial shoots.
- **All heads** of a plant are either male or female.
- **Flowering** occurs during July and August.
- **Serves** as an alternate host for insects and pathogenic microorganisms that **attack various crops**.
- Possible for a colony of male plants to produce **no seed**, but still maintain itself.
- Average seed production is about 1,530, but exceptional plants produce up to 5,300.
- **Root** fragments as small as 1/2 in. produce shoots 100% of the time.
- Wind may help disseminate seed, but most often the feathery pappus breaks off, **leaving the seed attached** to the parent plant.



The flowers are pinkish purple and arranged in clusters.



One plant can colonize an area 3 to 6 feet in diameter in one or two years.

# CONTROL MEASURES:

## Prevention:

- Minimizing soil disturbances from vehicles, machinery and over grazing will reduce areas where the weed might become established. **Early detection** is vital to prevent invasion.

## Biological:

- There is a stem gall forming fly and 2 seed head weevils (**show-cased below**).

## Cultural:

- Planting competitive crops, such as alfalfa and forage grasses can be very effective in controlling an infestation of Canada thistle.

## Mechanical:

- Repeated tillage at 21-day intervals for about four

months can be effective on minor infestations of Canada thistle. All root fragments should be cleaned from equipment before changing fields.

- Repeated mowing to weaken stems and prevent seeding is also effective in low level infestations.

## Chemical:

- Weedmaster (dicamba + 2,4-d), Tordon (Picloram), and Redeem (clopyralid + triclopyr) all show good control. Milestone (aminopyralid) and Chaparral (aminopyralid and metsulfuron) have shown exceptional results for controlling Canada thistle.
- No matter what herbicide is used, Canada thistle cannot be controlled with one herbicide application.
- For best results, use a surfactant.
- Chose a herbicide compatible with your goals.
- **Always Read** the **label** instructions before applying.



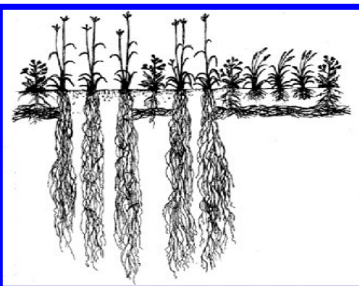
**Rhinocyllus conicus:** These weevils must complete their life cycle in the thistles in order for the insects to damage the plants and reproduce. These weevils typically leave areas where cattle are present, thus they may not be a useful management strategy for controlled grazing situations. They also prefer Musk thistle when present, but will then move on to Canada thistle.



**Larinus planus:** Attacks Canada thistle and reduces seed production. These larvae feed on the flowers, and the adults consume foliage. Therefore, infested buds often become distorted and fail to open. These bio control insects seem most appropriate in remote inaccessible pastures and on range land where mowing or treating with herbicides is not practical.



Canada thistle can often be found near irrigated fields.



The root system can extend 6 ft. deep or more and horizontally 10 to 12 ft. in one season.

Canada thistle is difficult to control because its extensive root system allows it to recover from control attempts. Persistence is imperative so the weed is continually stressed, forcing it to exhaust root nutrients stores and eventually die. The survival and spread of this species is largely due to the highly successful vegetative propagation carried on by the creeping horizontal roots which survive winters and continue to give rise to numerous aerial shoots year after year. The plants can survive indefinitely through the root system.

The average seed production is about 1,530 seeds per plant, but exceptional plants may produce up to 5,300 seeds. Seeds can remain viable in the soil for up to 20 years. However no seeds will be produced without the presence of both male and female plant's. There is no viable seed in the male plants.



Canada thistle seeds are slightly tapered and have a tuft of tan hair loosely attached to the tip to enable wind dispersal.



Photos and references courtesy of: WSNWCB technical bulletin, Colorado State University Extension; Natural Resources, Invasive Plant Species.

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