



JEFFERSON COUNTY NOXIOUS WEED CONTROL BOARD

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BEST MANAGEMENT PRACTICE **Canada thistle (*Cirsium arvense*)** (Family—*Asteraceae*—Sunflower Family)

Legal Status in Jefferson County: Legal Status in Jefferson County: Class C--there is no legal requirement for controlling Canada thistle. The County Weed Board provides education and strongly recommends control and containment of existing populations.

BACKGROUND INFORMATION

Impacts and History

- A common weed of roadsides, pastures, vacant fields, burned areas, and logged areas.
- Native to southeastern Eurasia, it was introduced to Canada as a contaminant of crop seed as early as the 1600s. The rapid spread of Canada thistle led to control legislation as early as 1795 in Vermont and 1831 in New York. It was not reported west of the Allegheny Mountains until after 1835.
- It is probably the most widespread of all thistle species..
- Common in overgrazed pastures where it may form dense stands that reduce productivity and stocking levels.
- May dominate forest clear cuts and reduce growth of tree seedlings.



Description



Canada thistle seedling

- Canada thistle has a perennial (multi-year) life cycle. It forms colonies with deep horizontal roots.
- It grows 2-5 feet tall with slender, grooved stems that branch only at the top.
- The flowers are purple to pink or occasionally white, 1½ to 3¼ inch in diameter.
- The flowers cluster at the ends of the stems and bloom from June to October.
- The flower head bases are covered with spine-tipped bracts.

- The seeds are around 0.16 inches long with a tuft of hairs (pappus) to help them disperse.
- The lance-shaped leaves are arranged alternately on the stem and are usually toothed or spiny, especially at the tip.
- Canada thistle differs from other thistles in that there are separate male and female plants. Large stands of Canada thistle are often genetically-identical clones, either all male or all female.

Habitat

- Can grow in a wide variety of soil types but does poorly on wet soils without much aeration.
- Common in recently or repeatedly disturbed areas, especially pastures, overgrazed rangelands, roadsides and logged areas. Can become a dominant species following disturbance.
- Grows poorly in shaded conditions and produces few flowers.

Reproduction and Spread

- Some reproduction is by seed--seeds can remain viable for up to 20 years.
- Plants are male or female (dioecious) and grow in circular patches that often are one clone and sex. Female flowers produce a sweet odor and insects readily pollinate different sexed patches up to 200 feet apart.
- Canada thistle may produce 1,000 to 1,500 seeds per flowering shoot. Seed may be transported long distances by water, or attached to animals, clothing, farm equipment and other vehicles, and in contaminated crop seed. Also, wind may help disperse seed, but most often, the feathery pappus breaks off, leaving the seed attached to the parent plant to be dispersed by other means.
- Seedlings grow slowly and are sensitive to competition, particularly if shaded. Canada thistle seedlings develop a perennial habit (the ability to reproduce from their root systems) about seven to eight weeks after germination.
- Canada thistle reproduces mainly by vegetative propagation. New shoots and roots can form almost anywhere along the root system of established plants. Roots can extend 15 feet horizontally and grow 6 to 15 feet deep
- Plowing or roto-tilling cuts roots into segments and stimulates new plants to develop. Shoots emerge from root and shoot pieces about 15 days after disturbance by tillage. Small root pieces, 0.25 inch long, have enough stored energy to develop new plants. Also, these small roots can survive at least 100 days without nutrient replenishment from photosynthesis.

Local Distribution

Canada thistle is widespread in Jefferson County. While primarily found in rural pastures and fields, it is also found in vacant urban lots and throughout the county along city, county and state roads and highways.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods that reflect the available time, funding, and labor of the participants, the land use goals, and the values of the community and landowners. Management will require dedication over a number of years, and should allow for flexibility in method as appropriate.

Planning Considerations

- Survey area for weeds, set priorities and select best control method(s) for the site conditions.
- Canada thistle is difficult to control due to its extensive root system and stored nutrients which allow the plant to recover from any one control method. The key to controlling Canada thistle is to combine control methods in order to stress the plant and force it to use nutrients stored in its root system.
- For large infestations, the strategy will depend on the land use of the site. In pastures, for example, good grazing practices and management of grass and forage species will reduce Canada thistle infestations. Specific suggestions are given in a later section.
- Generally work first in least infested areas, moving towards more heavily infested areas.
- Control practices in critical areas should be selected to minimize soil disturbance and reduce the potential for erosion. Minimizing disturbance also avoids creating more opportunities for germination of weed seeds.
- If the control site requires extensive clearing or grading, or is located near a shoreline, steep slope, stream, or wetland, contact the Jefferson County Department of Community Development to find out whether or not a permit may be necessary.
- Because Canada thistle is a state-listed noxious weed, control (both manual and chemical) in critical areas is allowed as long as the landowner consults with the Jefferson County Noxious Weed Control Board and follows their guidelines.

Early Detection and Prevention

- Dig up isolated or small populations before the infestation spreads.
- Canada thistle does not compete well in areas with thick, tall grasses and forbs. Preserving the health of a natural area and preventing disturbance or overuse are good preventative measures against Canada thistle.
- Manage grazing areas to promote grass and clover vigor. Graze uniformly and move animals from area to area in a planned sequence. Avoid grazing when soil is very wet to minimize soil disturbance.
- Prevent seeds from spreading to other un-infested areas by washing vehicles, equipment, boots and animals that have been in infested areas.
- If animals are being moved from an infested pasture to an un-infested pasture, first isolate them for at least five days so that the seeds pass out of the animals' digestive system.

Manual

- Hand pulling is generally ineffective because root fragments will almost always be left behind and will regrow.
- For small, newly established infestations, digging may be effective but care should be taken to dig out the entire root system.
- The site should be monitored for several years and new plants removed.

Mechanical

- Mowing can be effective if plants are mowed each month during the growing season over a period of several years. The goal is to minimize photosynthesis and eventually “starve out” the roots. This method takes time and persistence.
- If mowing is not done regularly, it can increase the spread of Canada thistle by stimulating new growth from the rhizomatous root systems and reducing grass competition.

Biological

Biological control is the deliberate introduction of insects, mammals or other organisms that adversely affect the target weed species. Biological control is generally most effective when used in conjunction with other control techniques.

- *Urophora cardui* is currently the only biocontrol insect approved for use in Washington State. Females lay eggs on developing shoots. Larvae burrow into shoots. Their feeding triggers formation of huge galls (abnormal swellings) that stress the plant, sometimes killing it. Growth and flowering can be retarded, but this agent alone does not kill plants or prevent spread.
- Mowing is not recommended in conjunction with biocontrols, as it would likely destroy *U. cardui* developing in the stems.

Chemical

- To kill a perennial plant such as Canada thistle it is essential to use a translocated herbicide—one that moves through the plant’s system and kills the roots.
- If desirable grasses or other monocots (sedges, rushes or cattails) are present, use a selective herbicide (one that affects only broadleaved plants), or carefully spot-spray only the Canada thistle.
- Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label. **Follow all label directions.**
- **Timing** of application is important. Apply herbicide to **actively growing** plants just prior to flowering (bud stage), or early to mid-flowering, depending on the chemical (check your label). Applications to regrowth in the fall, (before freezing occurs) are very effective because the chemical is readily moved with sugars being sent to the roots for winter storage.

- **Cutting** back the plant three to five weeks before applying herbicide will encourage active growth. Applications to active growth increase effectiveness because the herbicide moves around the plant more quickly. Also, herbicide is more easily absorbed by clean, new leaves which have not developed the thickened cuticle (waxy coating) present on mature leaves, which resists herbicide penetration.
- Treated areas should not be mowed or cut until after the herbicide has had a chance to work. This can be as long as 2-3 weeks.
- It is important to establish new vegetation after treating an area. Follow the label for the timing because some herbicides stay active longer than others.
- **If using herbicide on plants that are about to flower, the flower heads need to be removed and bagged before applying herbicide.**

For questions about herbicide use, and specific herbicide recommendations, contact the Jefferson County Noxious Weed Control Program at 360-379-0470 ext 205, or noxiousweeds@co.jefferson.wa.us.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Desirable Vegetation

- Handpulling the plants and digging out the roots can be successful on newer infestations, but care must be taken to remove and dispose of all root fragments. Fragments as small as 0.25 inch, left in or on the ground, can grow into a new plant.
- If plants are in bloom, cut off the flowerheads, bag them and dispose of them in the trash, because flowers can continue developing and produce seeds.
- OR apply appropriate herbicide.
- A layer of mulch on the soil surface may inhibit the germination of new seedlings.
- Monitor site throughout growing season and remove any new plants.

Large Infestations\Monocultures

- Mowing can prevent flowering and seed production but will not usually eliminate plants. Do not mow Canada thistle that is in full flower or that has gone to seed because this will spread seed and exacerbate the problem.
- However, repeated mowing (every two weeks during the growing season) may control Canada thistle by preventing photosynthesis and “starving” out the roots.
- Large infestations can be controlled with the appropriate herbicides.
- Application of a selective herbicide followed by good pasture management will greatly increase grass production. Thick grass will suppress Canada thistle re-growth. Promote healthy grass areas by seeding and fertilizing according to the soil needs. For more information on pasture management, contact the Jefferson Conservation District (<http://www.jeffersoncd.org/links.html>) .

Riparian and Aquatic Area Control

- Manual control may be possible for small infestations, following guidelines given above.
- Or, use an appropriate herbicide, and spot spray to minimize damage to other plants.
- When large areas of weeds are removed, the cleared area should be replanted with native or non-invasive vegetation and stabilized against soil erosion.
- **Any herbicide application over or near water can be done only by a specially-licensed applicator using an approved aquatic formulation, and may require a permit from the Washington State Department of Ecology.**

Road Right-of-Way Control

- Repeated mowing will prevent flowering and seed production of Canada thistle.
- Or, use an appropriate herbicide, and spot spray to minimize damage to other plants.
- If bare patches are left, re-vegetate with low-growing native plants.

REFERENCES

- Washington State Noxious Weed Control Board—Canada Thistle. Accessed on November 26th 2012 at <http://www.nwcb.wa.gov/detail.asp?weed=35>
- Written Findings of the Washington State Noxious Weed Control Board. Accessed on November 28th 2012 at http://www.nwcb.wa.gov/siteFiles/Cirsium_arvense.pdf
- Colorado State University Extension—Managing Canada Thistle. Accessed on November 26th 2012 at http://www.colostate.edu/Dept/CoopExt/Adams/weed/canada_thistle_mgt.html
- Colorado State University Extension—Canada Thistle. Accessed on November 28th 2012 at <http://www.ext.colostate.edu/pubs/natres/03108.html>
- King County Extension—Integrated Weed Control Project. Accessed on November 28th 2012 at <http://invasives.wsu.edu/biological/weed.htm>

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