

CANADA THISTLE

Cirsium arvense (L.) Scop.
var. horridum Wimm. & Grab.

Family: Asteraceae (Sunflower).

Other Scientific Names: None.

Other Common Names: Field thistle, Californian thistle.

Legal Status: Provincial Noxious.



Identification

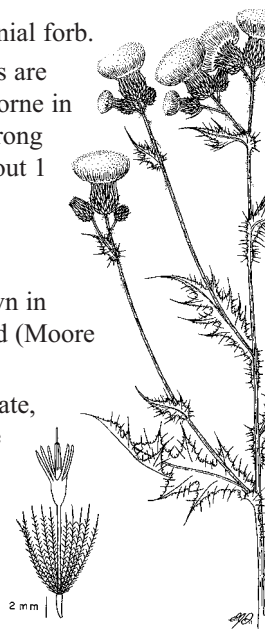
Growth form: Perennial forb.

Flower: Flower heads are white to purple and borne in clusters of 1–5/branch, with a strong vanilla scent. Heads are only about 1 cm in diameter. Floral bracts are spineless.

Seeds/Fruit: One-seeded fruits (achenes) are straw or light brown in colour, straight or slightly curved (Moore 1975).

Leaves: Leaves are spiny, alternate, oblong or lance-shaped, with the base leaves stalkless and clasping, or extended down along the stem.

Stems: Mature plants range from 0.3 to 2.0 m in height.



DISTRIBUTION

Roots: Canada thistle has both horizontal and vertical roots. The horizontal roots produce numerous shoots, while vertical roots store water and nutrients in small branches.

Seedling: Early spring growth appears as rosettes with spiny-tipped, wavy leaves.

Similar Species

Exotics: Numerous introduced thistles are present in BC. Plumeless thistle (*Carduus acanthoides*) has floral bracts that are covered with sharp spines. Flowers tend to be solitary (Powell et al. 1994).

Natives: Wavyleaf thistle (*Cirsium undulatum*) is most common on grassland and dry forests (Douglas et al. 1998). Flower heads are usually large and the plant looks more like bull thistle than Canada thistle.

Impacts

Agricultural: Canada thistle infests crops, pastures, rangelands, roadsides, and riparian areas (Beck 1996).

Ecological: The plant spreads rapidly through horizontal roots (rhizomes) that give rise to shoots (Moore 1975). Its root system can be extensive,

growing up to 5.5 m in one season, but most often patches spread about 1–2 m/year (Nuzzo 1998). The plant can form dense patches and virtual monocultures.

Human: Thickets can restrict recreational access to infested areas.

Habitat and Ecology

General requirements: Canada thistle is adapted to a wide range of soil types and environmental conditions (FEIS 1996). This weed occurs throughout the agricultural areas of all Canadian provinces (Frankton and Mulligan 1970) and over a wide range of elevations and habitats in BC. Although it mainly occurs in disturbed areas, it invades native plant communities, meadows, wetlands, and forested habitats. It is best adapted to rich, heavy loam, clay

loam, and sandy loam, with an optimum soil depth of 50 cm (FEIS 1996). Canada thistle can tolerate saline soils (up to 2% salt) and a wide range of soil moisture conditions. The plant usually occurs in areas with 45–90 cm annual precipitation or where supplemental soil moisture is available (Beck 1996). It is also somewhat shade intolerant and can grow along the edge of forested areas, but is rarely found within forests except in openings.

Distribution: Canada thistle is widespread in all areas of BC (Powell et al. 1994) on roadsides, cultivated fields and pastures, and logged forests and other disturbed areas. It is present in all of the province's agricultural reporting regions but is considered a major concern only in the Omineca and Peace River regions.

Historical: Introduced from Eurasia likely as a contaminant of crop seed as early as the late 18th century.

Life cycle: Canada thistle is the only thistle with male and female flowers on separate plants (Frankton and Mulligan 1970). Female flowers can be distinguished from male ones by the absence of pollen (abundant in male flowers) and the presence of a distinct vanilla-like fragrance. Flowering occurs from June to October, depending on elevation and latitude, and seeds mature

from July to October. Large patches may contain only male plants and have no seed production. Roots and shoots develop during the winter and stems begin to elongate in early spring when temperatures reach about 5° C and when daylight exceeds 14 hours (Nuzzo 1998; Haderlie et al. 1991; FEIS 1996).

Mode of reproduction: By seed and vegetatively from roots.

Seed production: Plants can produce up to 5,200 seeds annually but average about 1,500 seeds/plant (Rutledge and McLendon. Undated).

Seed bank: Seeds usually germinate in mid-spring. Most seeds do not remain viable after 3 years.

Dispersal: Primarily by wind.

Hybridization: No information available.

Management

Biocontrol: A number of agents have been released in BC with no success. The seed weevil *Larinus planus* and the stem gall fly *Urophora cardui* are being redistributed. Localized attack by a non-specific rust fungus and aphid species is occasionally reported.

Mechanical: Repeated mowing can be effective in reducing seed-set. Intensive cultivation aimed at depleting food reserves in the roots, followed by competitive cropping, is effective in the long term.

Fire: No information available.

Herbicides: Numerous herbicides are registered for control or suppression of Canada thistle. On pastures and idle areas, spring and autumn applications of clopyralid or a dicamba/2,4-D mix have been effective when roots are actively growing. Clopyralid alone can be applied in spring or autumn. Spring applications should coincide with the rosette to bud stages. Spring applications of picloram have also been effective when Canada thistle is in the pre-bud to early bud growth stages. Consult the most recent edition of BC Ministry

of Agriculture, Food and Fisheries Crop Production Guides for specific recommendations. **Before applying herbicides, read the label for full use and precautionary instructions.**

Cultural/Preventive: Reduce the spread of Canada thistle seeds by always purchasing certified crop seed. Eliminate new seedlings before they form a well-developed root system.

Integrated Management Summary

The tendency of this species to grow in wet areas may restrict the use of herbicides. Integrated management must involve combinations of mowing, cultivation, herbicides, and competitive seeding to deplete the aggressive creeping root system.

References

Beck, K. G. 1996. *Canada thistle*. Colorado State University Cooperative Extension Natural Resources Series, No. 3. 108.

<http://www.ext.colostate.edu/pubs/natres/03108.html> [24 Jan 00].

Beck, K. G., and J. R. Sebastian. 2000. Combining mowing and fall-applied herbicides to control Canada thistle (*Cirsium arvense*). *Weed Technology*. In press.

Douglas, G. W., G. B. Straley, D. Meidinger, and J. Pojar, eds. 1998. *Illustrated Flora of British Columbia*. Vol. 1: *Gymnosperms and Dicotyledons (Aceraceae through Asteraceae)*. Province of British Columbia.

FEIS—Fire Effects Information System. 1996. Prescribed Fire and Fire Effects Research Work Unit, Rocky Mountain Research Station (producer), US Forest Service. <http://www.fs.fed.us/database/feis/> [12 Mar 98].

Frankton, C., and G. A. Mulligan. 1970. *Weeds of Canada*. Publication 948. Ottawa: Canada Department of Agriculture.

Haderlie, L. C., R. S. McAllister, R. H. Hoefer, P. W. Leino. 1991. Canada thistle control. In L. F. James, J. O. Evans, M. H. Ralphs, and R. D. Child, eds. *Noxious Range Weeds*. Boulder, CO: Westview Press.

