

SCOTCH THISTLE

(*Onopordum acanthium*)

Description: Scotch thistle, also referred to as cotton thistle or woolly thistle, is a member of the Asteraceae or sunflower family. Scotch thistle is a biennial herb that can grow up to 12 feet tall. Stems of the plant are hairy or cottony, and have broad, spiny wings. Leaves are large, spiny, and covered with fine dense hairs that give Scotch thistle a grayish-green, cottony appearance. Upper leaves are alternate and have prominent triangular lobes that occur on the margins. Lobes of the leaf end with a prominent, sharp, green to white spine. Flower heads are terminal, numerous, and 1 to 2 inches in diameter. Flowers are flat on top, pale purple to red in color, subtended with a series of overlapping bracts tipped with a spine. Seeds are oblong to obovate, four-angled, deep brown to black, about 3/16 of an inch long, and distinctly wrinkled. Seeds are tipped with a pappus that is bristle-like.

Plant Images:



Scotch thistle



Rosette



Stem



Flower heads

Distribution and Habitat: Scotch thistle is native to Eurasia. The plant is found in most western states and is generally associated with sites that have high soil moisture, especially in dry climates. Scotch thistle can thrive in well-drained, sandy, and stony soils. The plant is common to waterways as well as abandoned or degraded land. Scotch thistle also occurs in pastures, croplands, rangelands, roadsides, and construction sites but prefers disturbed areas and sites near ditch banks and rivers.

Life History/Ecology: Scotch thistle typically grows as a biennial, but can grow as a summer annual, winter annual, or short-lived perennial. The life cycle of the plant is not bound by strict photoperiods or temperature requirements for growth and flowering. Scotch thistle reproduces solely through seed production. Seeds generally germinate in late fall but germination can occur anytime throughout the year. During the first growing season, Scotch thistle produces a rosette of leaves and fleshy taproot. The plant bolts early in the second growing season and flowers from June to August. Plants can produce from 70 to over 300 flower heads which can produce 100 to 200 seeds per head. Therefore, a single plant can produce 8,400 to 40,000 seeds. Seed viability can range from 1 to over 16 years, depending on seed burial depth within the soil.

History of Introduction: Scotch thistle is native to southern Europe and central Asia. The plant was likely introduced into the eastern United States during the late 1800s as an ornamental. Scotch thistle has since escaped cultivation and is now widespread at mid-latitudes across North America. The plant is sparsely naturalized over much of North America. In North Dakota, Scotch thistle is not being closely tracked but has been reported in Bowman and McKenzie counties.

Effects of Invasion: Scotch thistle is an aggressive species that can out-compete and decrease desirable forage. The plant can also affect wildlife habitats and recreational areas. Scotch thistle infestations can become very dense, thus becoming an impenetrable thorny barrier that limits circulation and biodiversity of infested areas.

Control:

The main management objective for successful Scotch thistle control should be to prevent seed production. Seeds of Scotch thistle can remain viable in the soil for one to sixteen years, therefore infestations should be monitored to prevent re-establishment. Preventing or reducing seed production and dispersal can decrease the spread of the plant. Control methods should be combined into an integrated management system for the best long-term control of the plant. Management techniques selected are dependent upon a specific site and will be determined by land use objectives, extent of Scotch thistle infestations, desired plant community, and effectiveness and limitations of available control measures. The seedling and rosette growth stages of the plant are the best times to implement control measures.

Mechanical - Hand pulling small infestations of Scotch thistle can be an effective control method. This method should be conducted before the reproductive growth stages of the plant to prevent seed production. Mowing prior to seed dispersal may limit the amount of seed available for germination. However, if the plant is cut too late, viable seed may still be dispersed and successfully develop. A single mowing also will not control Scotch thistle infestations because infestations generally consist of plants of variable ages in natural populations. As a result, mowing may need to be repeated several times throughout the growing season to effectively reduce seed production. Further research is needed to determine the effectiveness of prescribed burns for Scotch thistle control.

Chemical - A number of herbicides are available for Scotch thistle control. Clopyralid, clopyralid plus triclopyr, picloram, dicamba, glyphosate, metsulfuron, and 2,4-D will control the plant. Herbicides

should be applied in late fall or early spring when thistles are in the seedling to rosette stage. Scotch thistle reproduces solely by seed production; therefore, herbicides applied prior to flowering will eventually eradicate infestations.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - Research on biological control agents for Scotch thistle is currently underway. However, host-specificity testing needs to be further researched to ensure that native thistles are not negatively affected by the release of biological control agents.

Cattle and sheep will not graze Scotch thistle, while goats will only graze the plant in the early rosette growth stage.

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- Scotch thistle photograph courtesy of J. C. Schou, Biopix.dk.
- Rosette photograph courtesy of Weeds of the West, Tom Whitson.
- Stem and flower heads photographs courtesy of Washington State Noxious Weed Control Board.