

## PLUMELESS THISTLE

(*Carduus acanthoides*)

**Description:** Plumeless thistle is a member of the Asteraceae or sunflower family. Plumeless thistle can grow from 1 to over 4 feet tall. Stems of the plant are covered with spiny wings that extend up to the flowering heads. The freely branched stems give the plant a candelabrum appearance. Stem leaves are alternate, sessile, pubescent underneath, and more deeply lobed and narrower than musk thistle. Each lobe has one to three short pointed marginal spines. Occurring singularly or in clusters, flower heads of the plant are small and generally pink to purple in color or rarely white. Bracts that resemble spines are located beneath the flower. Seeds are small, slightly curved, grey to light brown in color with a light apical collar.

### Plant Images:



Plumeless thistle



Rosette



Leaf



Flower

**Distribution and Habitat:** Plumeless thistle is native to Eurasia and has become established in the northeastern and midwestern United States. In North Dakota, the plant is generally found in the eastern part of the state. Plumeless thistle can establish and tolerate a soil pH range from 3 to 9. The plant prefers temperate regions and is frequently found on grasslands. Typically, plumeless thistle inhabits pastures, stream valleys, fields, roadsides, and disturbed areas.

**Life History/Ecology:** Plumeless thistle is a winter annual or biennial herb that has a stout fleshy taproot. Plumeless thistle reproduces solely through seed production. Seedlings generally germinate in the spring but can continue emerging into the late fall. During the first growing season, plumeless thistle produces a rosette of leaves and a fleshy taproot. The plant bolts early in the second growing season and flowers from May to August. Seeds are dispersed one to three weeks after flowering, with each flower capable of producing approximately 50 to 80 seeds. Seeds can remain viable for a period of ten years or more.

**History of Introduction:** Plumeless thistle is native to Europe and Asia. The plant was first introduced to North America on the east coast in the late 1800s as an ornamental. The earliest collection in the United States was from Camden, New Jersey, in 1879. Plumeless thistle has now become a problem in the eastern states, the Great Plains, and mesic pastures of the inter-mountain west of the United States. In North Dakota, plumeless thistle invasions are thought to be extensive throughout the state but observations and reports are not currently being tracked.

**Effects of Invasion:** Plumeless thistle infestations may reduce productivity of pastures and rangeland by suppressing desirable species and preventing livestock from grazing plants in the surrounding area. Therefore, the thistle reduces native plant bio-diversity and reduces available forage for livestock.

**Control:**

Management objectives for plumeless thistle control should involve limiting seed production. Seeds of plumeless thistle can remain viable in the soil for ten years or more, therefore infestations should be monitored for an extended period of time to prevent re-establishment. Control methods should be combined into an integrated management system for the best long-term control of the plant. Management techniques selected are dependant upon a specific site and will be determined by land use objectives, extent of plumeless 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 plumeless 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 plumeless 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 effects of prescribed burns for plumeless thistle control.

*Chemical* - A number of herbicides are available for plumeless 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. Plumeless thistle only reproduces by seed, therefore herbicides applied prior to flowering will eventually eradicate infestations.

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

*Biological* - A few biological control agents have been released on plumeless thistle. *Rhinocyllus conicus*, a weevil, and *Trichosiromus horridus*, a rosette weevil, have had some success in reducing

plumeless thistle infestations, but have been found feeding on native thistles as well. Therefore, biological control agents are not recommended for plumeless thistle control at this time.

### References:

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- Plumeless thistle photograph courtesy of Gary L. Piper, Washington State University ([www.invasive.org](http://www.invasive.org)).
- Rosette photograph courtesy of Stevens County Noxious Weed Control Board, Washington.
- Leaf and flower photographs courtesy of North Dakota State University, NDSU Extension Service.