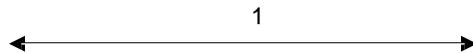




Jan Feb March April May June July Aug Sept Oct Nov Dec



Management Techniques

1. (Late Spring-Summer) Mow or cut second year plants twice per growing season just before flowering. Mowing after flowers have bloomed may spread viable seeds. Plants may also be cut with a shovel 2 inches below the ground before flowering.
2. (Fall) Apply herbicides, such as 2,4-D, to first year rosettes once native vegetation has gone dormant. Herbicides, such as glyphosate, may also be applied to the stems of second year plants, after flower heads have been cut and bagged. (**Important Note: Glyphosate is non-selective, avoid contacting non-target plants).

For More Information Visit:

<http://www.HawkeyeCWMA.org>

ALWAYS READ AND FOLLOW PESTICIDE LABELS.

Proper training for prescribed fires is highly recommended.

Basic training can be found online at <http://training.nwcg.gov/courses/s130.html> and <http://training.nwcg.gov/courses/s190.html>

Related Websites:

<http://www.iowadnr.com/forestry/invasive.html>
<http://plants.usda.gov>
www.invasivespecies.gov
www.nps.gov/plants/alien

Credits:

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The **Hawkeye Cooperative Weed Management Area (HCWMA)** is a collective group of county, state, and federal agencies, nonprofit organizations and community associations who have come together to **combat the invasive species problem in Eastern Iowa**. The HCWMA serves Benton, Cedar, Iowa, Johnson, Jones, Linn, and Louisa Counties and is open to all interested parties. The Term CWMA, or Cooperative Weed Management Area, refers to a local organization that integrates invasive species management resources across jurisdictional boundaries in order to benefit entire regions.

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All Hawkeye CWMA members (agencies, organizations, and individuals) are equal opportunity providers and employers.

Plumeless and Musk Thistle

Cardus acanthoides
Cardus nutans



A SERIOUS THREAT
 To
 Iowa's Prairies/Grasslands

What are Plumeless and Musk Thistles?

- Biennial flowering plants.
- Not native to the United State.
- Classified as noxious weeds in Iowa.
- Found mostly in disturbed areas, old fields, and roadsides.



An infestation of Musk Thistle

What is the threat to Iowa?

- Each plant can produce up to 10,000 seeds which have a 95% germination success rate.
- Spreads rapidly into new areas.
- Out competes native vegetation for food, water, and nutrients.
- Threatens plant biodiversity.

What do Plumeless and Musk Thistles Look Like?

Identifying traits: The first year plant emerges as a rosette in the early spring. In the second year it grows up to 7 feet tall, with thorny and branching stems. Reddish purple flowers bloom from May through August.

Rosette:

Rosettes emerge from early spring through late fall.



Native Alternatives:

Pale Purple Coneflower (*Echinacea pallida*)

This native perennial plant can grow up to 3 feet tall. Pale pink, drooping petal-like ray florets surround the domed, reddish-brown center of disk florets that are rough and prickly to the touch. The pale purple coneflower blooms in late spring to mid-summer.



Leaves:

Plumeless Thistle– Simple, alternate, deeply divided alternate lobes, yellow-white spines, more hairy on the underside than top.

Musk Thistle–

Simple, alternate, very spiny, smooth on both sides, wavy.



Stems:

Plumeless Thistle– Emerges in May of second year as an erect stem with branches.

Musk Thistle– also emerges in May of second year but appears winged and has hairs and thorns.

Flowers:

Red or purple flowers bloom from May to August. Contain spines at the base of each flower.



Stiff Gentian (*Cirsium undulatum*)

This native wildflower is an annual or biennial that can grow from 6" to 2' tall. The flowers of Stiff Gentian provide attractive blue-violet color during the fall and are one of the last species to remain in bloom. Its flowers are shorter than 1" and narrower than 1/4".



Know Your Thistles...



Tall Thistle



Bull Thistle



Field Thistle

When controlling for thistles, it is important to know which thistle you are dealing with. Most thistles look nearly identical, especially when comparing the flowerheads. However, each thistle has a few small defining characteristics. For instance, the undersides of most native *Cirsium* leaves have a white or silver hue. Knowing your thistles is important because the control techniques may vary greatly for different species. It is also important because there are many thistle species that are native to Iowa. These native thistles play an important role in Iowa's ecosystems. So before you spray or cut down a thistle, make sure you have the proper identification.

Native:

- Field Thistle (*Cirsium discolor*)
- Tall Thistle (*Cirsium altissimum*)
- Flodmans Thistle (*Cirsium flodmani*)
- Wavyleaf Thistle (*Cirsium undulatum*)
- American Star Thistle (*Centraurea americana*)
- Prairie Thistle (*Cirsium canescens*)
- Hill's Thistle (*Cirsium hillii*)
- Swamp Thistle (*Cirsium muticum*)

Non-Native:

- Plumeless Thistle (*Carduus acanthoides*)
- Musk Thistle (*Carduus nutans*)
- Bull Thistle (*Cirsium vulgare*)
- Canada Thistle (*Cirsium arvense*)
- Yellow Star Thistle (*Centraurea solstitialis*)
- Red Star Thistle (*Centraurea calcitrapa*)
- Field Sowthistle (*Sonchus arvensis*)