

## Recommended Chemical Controls in Pastures and Fields

Herbicides <sup>1</sup>	Per Acre	Per Gallon	Comments
2,4-D (Amine) <sup>2</sup>	1-2 quarts	3-6 tablespoons	
2,4-D (Ester) <sup>2</sup>	2 quarts	6 tablespoons	Highly-volatile; avoid use near sensitive crops.
2,4-D + Banvel (dicamba)	1-2 quarts	3-6 tablespoons	
Cimarron	0.3 ounce		May reduce yields in fescue pastures
Cimarron Max	Rate 1		May reduce yields in fescue pastures
Crossbow	1 quart	6 tablespoons	
Forefront	1.5 pints		
Grazon P+D RU <sup>3</sup>	1 quart	3 tablespoons	
Milestone	4 ounces	1 1/2 tablespoons	
Roundup (or other glyphosate- based products)		Use a 1% solution (3 tablespoons)	Apply as spot treatment, or through wick applicator in a mix of 1/3 glyphosate + 2/3 water.
Surmount RU <sup>3</sup>	1.5 pints	1 1/2 tablespoons	3-5 tablespoons
Tordon 22K RU <sup>3</sup>	6-8 ounces	2 tablespoons	

<sup>1</sup> When applying any herbicide, be sure to carefully read and follow all label directions and precautions.

<sup>2</sup> Calculated on the basis of 4 pounds per gallon acid equivalent.

<sup>3</sup> RU (restricted use) following any herbicide means that some or all uses of this product have been restricted by the U.S. Environmental Protection Agency. The applicator must be certified and licensed before purchasing or using restricted-use products.

# Musk Thistle Control



*Courtesy of*

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## Characteristics

Musk thistle is classified as a biennial. This means that two growing seasons are required for a plant to mature and flower.

The plant dies after seed has matured. Musk thistles produce an average of 10,000 seeds per plant, but under favorable conditions can produce considerably more.

The musk thistle plant is covered with sharp spines that grow along the leaf margins and extend down the branches and stems. Plant height varies from two to six or more feet. The delicate flowers are a deep, reddish pink, and are large and solitary. Blooming starts and the first flowers appear in early May, but buds continue to develop and bloom until mid-July and early August.

## Missouri Noxious Weed Law

The following excerpt is from Section 263.190—Revised Statutes of Missouri.

“The plants “**Musk Thistle**”, “**Scotch Thistle**” and “**Canada Thistle**”, are hereby designated as noxious weeds. All owners of land shall control all such plants growing upon their land...sufficient to prevent said thistles from going to seed.”

“Failure of the owner to control such plants within the fifteen-day period [following notification] shall be prima facie evidence of the owner's knowledge that he is in violation of this law...court costs may be recovered by civil action instituted by the prosecuting attorney in the name of the county commission.”

## Control Methods

The **KEY** to thistle control is to prevent plants from going to seed. The following control methods have proven successful; however, none of these methods will provide complete control with only one application.

1. Musk thistle is readily controlled by timely tillage.
2. The most common method of control is spraying with herbicides; the stage of growth is very critical.
  - a. **Spring** application before stem elongation and daytime temperatures are at least 60-65° F. (Late March - late April)
  - b. **Fall** application (Sept.-Nov.) to seedlings and first-year rosettes, as long as they are actively growing.
3. During the summer months, after the plant has flowered, removing the seed-head and pulling or hoeing the entire plant is the only option left. The seed-heads should be placed in a sack, soaked with diesel fuel and burned.



**APPLY ALL CHEMICALS DURING THE ROSETTE STAGE FOR BEST RESULTS.**

**Note:** Mowing, by itself, does not provide effective control. Buds and flowers will soon redevelop and the infestation will become greater. Mowing to remove seed-heads also reduces the populations of the beneficial musk thistle weevil.

## Biological Control of Musk Thistle With An Introduced Weevil

The musk thistle weevil, which feeds on the thistle, was first introduced to Missouri in 1975. It soon demonstrated its effectiveness as a useful biological control agent. Thistle infestations are reduced by over 90% within five to seven years after the release of the weevil in a new area. From the original release site in Webster County, the weevil is now established at sites in nearly every county throughout Missouri.



Additional information on the musk thistle weevil is available in MU Guide IPM1010, “Biological and Integrated Control of Musk Thistle in Missouri”. Ask for the guide at your local University of Missouri Extension Center.

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