

# YELLOW STARThISTLE

*Centaurea solstitialis*



Photo by Harry Rose

## CONTROL

### Hand Pulling

Manual removal is most effective with small infestations after bolting until early flowering. Pulling them before they produce viable seeds is critical; repeated removal through the growing season will provide the best results.

### Mowing

Mowing may be used for moderate infestation levels with mixed levels of success. It is most effective on plants that grow upright when less than 2% of the population has developed flowers and must be repeated throughout the growing season. It is best used as a part of an integrated approach, though it may decrease the reproductive efforts of biocontrol agents.

### Biological control

Biological controls are recommended for large, widespread patches and are most effective when combined with other management strategies. Biological controls feed on the seeds in their larval stage: Starthistle bud weevil (*Bangasternus orientalis*) Yellow Starthistle hairy weevil (*Eustenopus villosus*), Starthistle flower weevil (*Larinus curtus*), Yellow Starthistle peacock fly (*Chaetorellia australis*), and Starthistle Gallfly (*Urophora sirunaseva*).

## Ideal Timing for Treatment Options

Spring	Summer	Fall
Hand Pulling		
Mowing		
	Biocontrol	
Grazing		
Foliar Spray*		Foliar Spray*

\*Foliar spray varies per chemical per season.

### Grazing

High-intensity, short-duration grazing with sheep, goats, or cattle is moderately effective. Graze sheep and cattle when plants begin to bolt until the development of seed heads, goats may graze it later into the season.

### Herbicide

The following list of herbicides are recommended to control Yellow Starthistle. Always consult product labels and read them carefully to ensure correct species/land management usage and chemical application.



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## Yellow Starthistle Life Cycle

Life Cycle	Root	Leaves	Stems	Flower	Seed/Fruit	Toxic
Annual	Taproot	Deeply lobed rosette with pointed tip, linear mature leaves. Stem leaves are vertical, flat extensions along the stem and covered with cottony hairs.	Rigid stems can be up to 5 feet tall, appear winged due to vertical leaves.	One yellow flower head per branch. Sharp, straw-colored spines up to ¾ in long radiate from the bracts. After seed dispersal, a cottony tuft remains on the stem.	Light to dark colored with or without bristles.	Horses

## Herbicides for Yellow Starthistle, *Centaurea solstitialis*

Active Ingredient	Rate	Timing	Comments
Clopyralid + 2,4-D	2 - 3 quarts/acre	After rosette stage, before bud formation	Do not apply to shallow groundwater areas. Use lower rate for light to moderate infestations under good growing conditions, higher rate for dense infestations or poor growing conditions (drought)
Aminopyralid	3 - 5 oz/acre	Rosette stage through bolting	Provides pre-emergent and post-emergent control, can be applied up to water's edge. Refer to label for hay restrictions. Do not exceed 7 fluid oz/acre per year, non-ionic surfactant is recommended to enhance herbicide activity.
Picloram	1 - 1 ½ pints/acre	Rosette stage through bud formation	Course ground required. Do not use near surface water, shallow ground water, landscaped areas, or vegetable gardens (current/future). Long soil residual activity, apply when there is adequate soil moisture.
Clopyralid	½ - 1 1/3 pint/acre	Provides preemergence and postemergence when plants are rapidly growing.	Do not apply to shallow groundwater areas. Safe on grasses, avoid desirable broadleaf plants. Use the lower rate for young, actively growing weeds. Use the higher rate under less favorable growing conditions or on dense weed stands and/or larger weeds.
Glyphosate	2 quarts/acre	Rosette, bolting and early flower stages.	Glyphosate is nonselective and will kill any vegetation it comes in contact with. Spray for uniform coverage, not for runoff. Use non-ionic surfactant.
Triclopyr + clopyralid	1.5 - 2 pints/acre	Seedling to rosette stage, or to fall regrowth.	Do not apply to shallow groundwater areas. Relatively safe on grasses, avoid desirable broadleaf plants. On rangeland, permanent grass pastures, and non-cropland areas, do not apply more than 4 pints/acre per year. Non-ionic surfactant required.
Chlorsulfuron	0.5 - 2.6 oz/acre	Apply pre-emergence.	Rainfall is needed following application to provide the preemergence control. To improve postemergence control, a spray adjuvant needs to be added at the manufacturer's specified use rate. Do not apply to areas with shallow groundwater of surface water present.
Dicamba	½ - 2 pints/acre	Rosette to early bolting stage.	Dicamba can move in soil and be absorbed by tree roots, avoid root zone. Do not apply to shallow groundwater area. Use a non-ionic surfactant.

Information on diagnostic identifying characteristics adapted from "Montana's Noxious Weeds" by Pokorny and Mangold, Montana State University Extension Bulletin EB0159.