



# SPOTTED KNAPWEED

Centaurea stoebe

## CONTROL

### Hand Pulling

Hand pulling is an effective method on small scale infestations of spotted knapweed. Pulling is easiest when soil is moist; allowing you to remove most of the taproot and kill the plant. Hand pulling can be done at any point of the year. Any stage from flowering on should be bagged and removed from the site in order to minimize seeds at the site.

### Mowing

Mowing will help reduce seed production of spotted knapweed; however, repeated mowing will re-sult in knapweed plants flowering and setting seed below the blades of the mower. Mowing should occur during the bud stage but only before flowering to prevent cut plants from producing viable seed.

### Biological control

There are thirteen biological control agents that have been released in Montana to control spotted and diffuse knapweed. Of those species, eight have been shown to affect knapweed populations. The majority of these species are wide spread in Western Montana. Contact the Missoula County Weed District for assistance with monitoring and additional releases.

### Grazing

Repeated grazing by cattle, sheep and goats can be effective at reducing levels of spotted knapweed if managed to reduce damage to desirable species such as native forbs and grasses. Grazing should occur when native species are dormant (either in the spring before native species begin growing or in the fall after they have dropped

Ideal Timing for Treatment Options			
Winter	Spring	Summer	Fall
Hand pull rosettes during the growing season and flowering plants in summer			
	Biological Control	Biological Control	
	Foliar Spray		Foliar Spray

their seed). Managers should also be careful not to graze so much as to produce excessive bare ground, which can result in increased weed invasions. Grazing by sheep has been found to be the most effective of other grazing species.

### Herbicide

There are a number of herbicides that provide effective control of spotted knapweed. The herbicide chart on the back lists approved controls for spotted knapweed. Always consult product labels and read them carefully to ensure correct species/land management usage and chemical application.

### Competition

Spotted Knapweed can be successfully outcompeted by healthy grasses at moist sites. Planting competitive plants is most effective when used as part of an integrated weed management program involving the use of grazers, biocontrol, hand-pulling and herbicide application.



## Spotted Knapweed Life Cycle

Life Cycle	Root	Leaves	Stems	Flower	Seed/Fruit
Biennial or short-lived perennial	Taproot	Rosette leaves are deeply lobed, grayish-green, and up to 6 inches long. Stem leaves finely divided into linear segments.	Up to 4 feet tall and highly branched.	One pinkish-purple flower head on each branch. Bracts have dark spot on tip and fringed, comb-like edges.	Black seeds, 1/8 inch long with bristly tips.

## Herbicides for Spotted Knapweed, *Centaurea stoebe*

Active Ingredient	Rate	Efficacy	Comments
Picloram	1 pint/acre	Spring/ fall, actively growing	Coarse ground required. Do not use near surface water, shallow ground water, landscaped areas, or vegetable gardens (current/future).
Aminopyralid	5-7 oz/acre	Spring/ fall, actively growing	Can be applied to water's edge. Do not use in landscaped areas or vege-table gardens (current/future).
Aminopyralid + 2, 4-D	2 pint/ acre	Spring/fall, actively growing	Can be applied to water's edge. Do not use in landscaped areas or vege-table gardens (current/future).
Clopyralid	2 pint/ acre	Rosette – Bud	More effective than when combined with 2-4,D.
2-4,D amine	2 quarts/acre	Rosette – Bud	Least effective herbicide listed. More effective when combined with Dicamba.

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