

SPOTTED KNAPWEED MANAGEMENT TIPS FOR PASTURE AND RANGELAND

(RECOMMENDATIONS DO NOT APPLY TO TURF GRASS)

Noxious weeds are a serious environmental and economic threat in Gallatin County and Montana. Noxious weeds are non-native plants that compete with desirable plants for nutrients and room to grow. Most noxious weeds found in Montana, including Spotted knapweed, are native to Eurasia. Environmental, natural, and cultural controls such as plant competition, insects, diseases, and grazing have kept these plants from becoming problems in their native habitat. Since these competitive factors did not migrate with the plant, noxious weeds in Montana grow virtually unhindered.

Noxious weeds choke out native plant species, decreasing the productivity and value of the land. Noxious weeds do not limit themselves to agricultural areas; they can invade all lands in Montana. Noxious weeds have the potential to reduce bio-diversity, increase soil erosion, reduce wildlife habitat and numbers, decrease land/property values, as well as diminish water quality.

Spotted knapweed is a biennial to short-lived perennial with a large taproot. Reproduction is through seed development and dispersal. Each flower head contains approximately 20 seeds. Once dropped onto the ground the seeds can remain viable in the soil (seed bank) for up to 10 to 12 years prior to germination. These facts dictate that management efforts must be directed towards long-term planning.

The key for effective long-term control is to implement a management plan that consistently prevents the formation and dispersal of weed seed during each year's growing season.

A one-time treatment for Spotted knapweed will not be effective. Management and control efforts must be planned for several consecutive growing seasons in order to prevent new seed formation/dispersal and at the same time deplete the knapweed seed bank that has built up in the soil.

Control measures that have been found to be effective for the management of Spotted knapweed on small acreage properties are:

⇒ Hand Pulling

Spotted knapweed has a taproot that does not reproduce rhizomously. Consequently, hand pulling or shovel techniques that remove the taproot can prevent the plant from growing. The best time to apply this technique is in the spring of the year when the soil is moist and the knapweed plant has started to grow. The majority of the taproot has to be removed to prevent regrowth. As the soil starts to dry out it becomes progressively more difficult to remove the taproot. If the plant is broken off at the soil surface the plant will regrow and still produce a viable plant.

If there are more plants found on the property that can be reasonably removed by hand pulling there are several herbicides available that can be used for control.

⇒ Herbicide Treatment

There are several herbicides available locally that are very effective for controlling Spotted knapweed within pasture and rangeland grasses. Curtail, Redeem, Milestone, Forefront and WeedMaster are selective herbicides, with a short soil residual, that control many broadleaf plants including Spotted knapweed. Applied at labeled rates they will not damage grasses. Do not apply to trees, shrubs, flowers, or garden areas. The herbicides are concentrates that are mixed with water and then sprayed onto the target plant. Herbicide uptake is through the plant foliage. Read and follow all label directions. Wear the proper protective gear (rubber gloves, long pants, long sleeve shirt, rubber boots, and eye wear) when spraying. When mixing, fill the tank halfway with water, add the herbicide, and then fill the remainder of the tank with water. When filling the spray tank with water do not submerge the end of the hose in the water. For a longer shelf life prevent the herbicide from freezing. Read and follow all label directions.

Timing of application is dependent upon the stage of plant growth. The best time to treat Spotted knapweed is after the plant is fully emerged (meaning lots of foliage available for herbicide uptake), is actively growing, and prior to flowering. In Gallatin County this time frame is normally from the last week of May through the first week of July. Local herbicide suppliers include Ag Depot (Bozeman), Murdoch's (Bozeman) as well as UAP (Belgrade) and Rocky Mountain Supply (Belgrade).

Mixing rates in small backpack or hand sprayers are as follows:

Curtail:	2 oz herbicide to 1 gallon of water
Forefront:	1 oz herbicide to 1 gallon of water
Milestone:	½ oz herbicide to 4 gallons of water
Redeem:	1 oz herbicide to 1 gallon of water (surfactant required, such as Activator 90)
WeedMaster:	1 oz to 1 gal water

Broadcast application rates in large sprayers are as follows:

Curtail:	4 pints (2 quarts) per acre
Forefront:	2 pints (1 quart) per acre
Milestone:	6 oz per acre
Redeem	2 – 4 pints (1 – 2 quarts) per acre (surfactant required)
WeedMaster	4 pints (2 quarts) per acre

For the most effective control:

Apply herbicides in the spring of the year, after the plants have fully emerged, but still actively growing, and prior to flowering. The herbicides listed above are taken into the plant through the leaf foliage. Therefore, the plant foliage needs to be fully leafed-out in order for the plant to take in enough herbicide for effective control. Also, the target plants need to be actively growing in order for the herbicide to be translocated throughout the entire plant system and into the root system. Do not over apply the herbicide. Too much herbicide will only produce top growth suppression and will not be translocated into the root system.

Important:

Add a quality commercial surfactant, such as Activator 90, R-11, Syl-Tac or Preference, to increase the effectiveness and performance of the herbicide. The mixing rate in a small backpack or handsprayer is 1oz of surfactant to each gallon of water, the broadcast application rate in large sprayers is 1 quart per 100 gallons of water.

If the Spotted knapweed plants have already flowered then herbicide control is not as effective as if completed earlier. If the knapweed plants have already flowered, the preferred method of control is to remove the knapweed plant stems and flowers if possible and then in the fall, follow up with an herbicide application or hand pulling of the plant regrowth. If hand-pulling, place the stems and flowers in a plastic bag for disposal in the garbage.

Depending upon weather factors, Spotted knapweed has a fall regrowth period. In southwestern Montana we normally experience rain showers in September. The combination of fall rains and warm weather stimulates Spotted knapweed to experience a fall regrowth. During the fall regrowth, the plant is creating and storing carbohydrates in the root system in anticipation for the upcoming year. A fall herbicide application will be translocated into the root system to control the plant. However, the regrowth period will not occur during a dry fall with little or no rains.

Remember; use the proper herbicide for the targeted noxious weed(s). For example, non-selective herbicides (such as Roundup and similar glyphosate products) are marginally effective at controlling Spotted knapweed but are very effective at killing grasses.

⇒ **Cultural Control**

Another key to successful long-term management is to encourage the growth of grasses as competitive factors to help keep the Spotted knapweed in check. The healthier the condition of your pasture or rangeland the more difficult it is for invasion by Spotted knapweed to occur. Conversely, the more stress (such as grazing pressure) your pasture or rangeland is under the easier it is for invasion by Spotted knapweed to occur. Maintain and protect your grasses and manage your grazing pressure but understand that Spotted knapweed is such an aggressive plant that competition alone is not effective in controlling Spotted knapweed.

Mowing has not been found to be a particularly effective method of control for Spotted knapweed.

Upon mowing, Spotted knapweed will adapt, regrow to the height of the mower blade and then still continue to produce numerous viable flowers and seeds.