

# Preventing Noxious Weed Invasions

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## MontGuide

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This publication discusses the extent of noxious weed problems in Montana and outlines ways to prevent further invasion.

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### THIRTY TWO ALIEN NOXIOUS WEED SPECIES

infest over 7.6 million acres across Montana and they are advancing at an alarming rate (Figure 1).

The most widespread weed in this state is spotted knapweed. This species infests about 4.5 million acres. It has been estimated that spotted knapweed has increased at a rate of 27 percent per year since 1920 and has the potential to invade another 34 million acres in Montana (Figure 2).

Noxious weeds introduced into Montana during the 1950s, such as leafy spurge, whitetop, and diffuse knapweed, are also spreading onto rangelands rapidly. Newly introduced noxious weeds, such as rush skeletonweed and 'Dyer's woad are encroaching into Montana from neighboring states. Yellow starthistle is spreading at a rate of about 25,000 acres per year in Washington and Idaho and is quickly advancing toward Montana. These noxious weeds have the ecological potential to invade nearly all of Montana's rangelands.

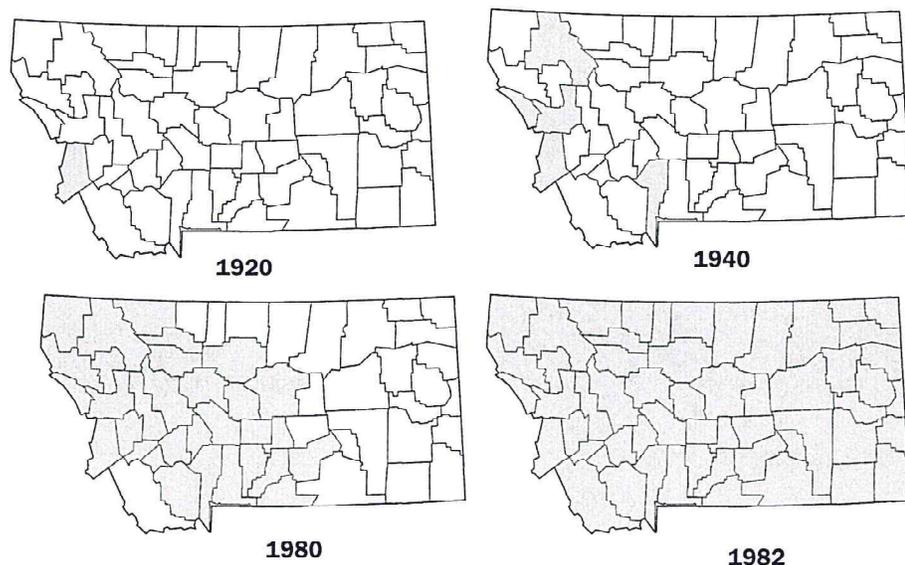
The most effective method for managing noxious weeds is to prevent their invasion. Developing a noxious weed prevention program requires a combination of methods aimed at limiting weed encroachment.

There are several methods of preventing noxious weeds from spreading. They include:

- Limiting weed seed dispersal
- Containing neighboring weed infestations
- Minimizing soil disturbances
- Detecting and eradicating weed introductions early
- Establishing competitive grasses
- Properly managing grasses

### Limiting weed seed dispersal

Noxious weed seeds are often carried along roadways in the undercarriage of vehicles. A Montana State University study showed that a vehicle driven several feet through a spotted knapweed infestation could pick up about 2,000 seeds. Only 10 percent of the weed seeds remained on the vehicle 10 miles from the infestation. Similarly, weed seeds are dispersed by machinery. It is important to remember to limit noxious weed seed dispersal by



**FIGURE 1.** Spotted knapweed was first reported in the western part of Montana in the 1920s. Since then it has spread to every county.

refraining from driving vehicles and machinery through weed infested areas during the seeding period. It is also important to wash the undercarriage of vehicles after driving through an area infested with a seed-producing noxious weed. Be sure to control emerging weeds in the wash-up area.

Wildlife and livestock disperse seeds two ways. First, animals ingest noxious weed seeds. These ingested seeds can pass through the stomach unaffected, introducing seeds into new areas. Second, many weed seeds can become tangled in the hair coat of animals. When animals are moved to weed free areas these seeds fall to the ground. Little can be done to limit weed seed dispersal by wildlife. However, livestock should not graze weed infested areas during flowering and seeding, or should be transported to a holding area for about 14 days after grazing weed-infested areas and before being moved to weed-free ranges. Sheep and goat grazing must be properly timed and managed to prevent seed transport. If animals graze noxious weeds after seed set, they will spread seeds on their coats and through their feces.

Noxious weeds can be dispersed in feed. This is especially true on lands where recreational horseback riding and hunting is permitted, but can be a problem for ranchers as well. Using feed that is certified as free of noxious weed seeds is one method of preventing the introduction of noxious weeds. Grinding and pelleting forage or grain will also reduce the chances of introducing noxious weeds.

Hikers, campers and other recreationists spread noxious weed seeds on their clothing or as they pick the flowers and discard the wilted parts along trails and recreational access sites. Even though discarded, these plants continue seed development. Clothing and camping equipment should be brushed and discards should be burned in a hot fire before leaving an area. Prudence in limiting weed seed dispersal is critical for all recreationists.

## Containing neighboring weed infestations

An integral part of any weed prevention program is to contain neighboring weed infestations. Containment practices are designed to restrict the encroachment of noxious weeds onto adjacent rangelands. The most effective method of containment is to spray borders of the infested areas with a herbicide. This approach is designed to concentrate efforts on the advancing edge of the weed infestation. Containment programs typically require a long-term commitment to herbicide application because these programs are not designed to eliminate or reduce the infestation level, only to limit its spread.

(See the MSU Extension publication, *Weed Management Handbook* [EB0023], for more information.) Roadways, railways, and waterways where weed infestations often begin should be under a constant prevention and containment program.

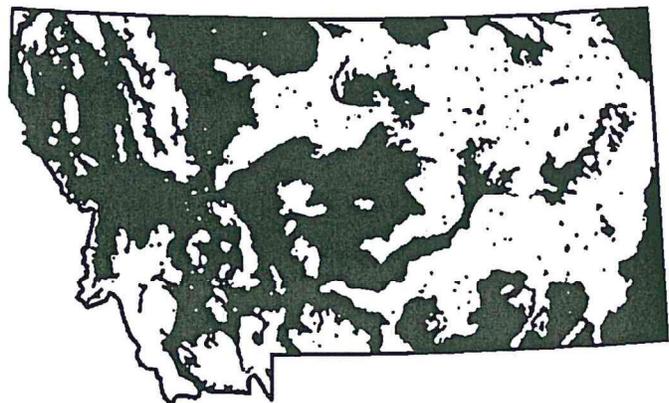
## Minimizing soil disturbances

Areas of disturbed soil provide an optimal location for noxious weed establishment and subsequent invasion. All noxious weeds are alien to North America and have evolved under intense grazing which causes soil disturbance and erosion. Noxious weeds have developed many characteristics which provide them an advantage over native North American plants in occupying disturbed soil. Minimizing disturbance of soil by vehicles, machinery, wildlife, and livestock is central to preventing noxious weed establishment.

## Detecting and eradicating weed introductions early

Preventing and controlling noxious weed encroachment depends on early detection. One successful method for preventing the invasion of weeds is to survey the area and identify and remove any individual weed plants before they become well established. A survey plan should be developed for each management unit which includes inventory techniques (vehicle, horseback, motorcycle, foot), area surveyed and survey time periods.

At least three surveys should be conducted on the management area each year. A spring survey should be conducted to detect weeds early enough to allow effective chemical control. The second survey should be conducted in early summer and the last survey in early fall. At each survey, both new and old noxious weed introductions should be removed by hand (individual plants) or sprayed



**FIGURE 2.** Black areas are parts of Montana where there is a high probability that spotted knapweed will grow, if it hasn't already, based upon the conditions found in 116 infestations.

with the appropriate herbicide. It is critical to prevent weed seed production. Once weeds have produced a flower, chemical applications generally do not prevent seed production, and hand removal is usually necessary. Hand-pulled plants should be burned. The weed infestation should be identified on a map, marked or flagged in the field, continually monitored and controlled during subsequent surveys.

### **Establishing competitive grasses**

Another useful method for preventing the encroachment of noxious weeds is to establish competitive desirable grasses in areas susceptible to invasion. Competitive grasses can limit the establishment and growth of weed populations by using resources needed by weeds. Well established grass stands are central to limiting weed encroachment along roadways. Specific establishment techniques depend upon the weed/grass complex and environmental characteristics of the site. In areas with a good residual (suppressed) perennial grass stand, chemical weed control (2,4-D, Banvel, Tordon 22K) may stimulate grass growth enough to allow site re-occupation. Severe weed infestations may require revegetation.

### **Properly managing grasses**

On areas with a competitive grass stand, proper management insures that grasses remain strong and vigorous, thereby minimizing noxious weed encroachment. In most cases, grasses require defoliation every two to four years to remove old stems which shade plants and hinder growth. Mowing, burning, and grazing are the primary methods for defoliating grasses. Grasses are generally mowed in the summer or fall. Burning is conducted in the fall or early spring before the grasses resume growth. Defoliation stimulates grass growth and enhances competitive ability.

Proper livestock grazing is essential to maintain competitive grass plants. A grazing management plan should be developed for any management unit involved in a noxious weed prevention program. This plan should include proper stocking rates to maintain a grass stand. Furthermore, the plan should include a grazing system which outlines the movement of livestock throughout the year. Grazing systems should include altering the season of use, rotating livestock to allow plants to recover before being regrazed and promoting plant litter accumulation. Grazing in this manner enhances the vigor and strength of the grasses which limits weed germination and promotes early mortality of weed seedlings and rosettes. Any grazing management plan should include a monitoring program to determine the efficacy of the grazing system in protecting grasses and limiting weed invasion.

### **Summary**

Montana is being invaded by noxious weeds. The most economical and ecologically sound method for managing noxious weeds is to prevent their invasion using these guidelines:

- Noxious weed dispersal must be limited, and neighboring weed infestations contained.
- Soil disturbances must be minimized.
- New weed introductions must be detected early and eradicated.
- Proper grass establishment and management must be implemented.



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