
THE COSTS OF NOXIOUS WEEDS: WHAT YOU CAN DO ABOUT THEM

Invasive species in the United States are estimated to cause damages of \$137 billion annually.

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Successful management of invasive plants is critical to maintaining Montana's agricultural economy and the health of our native vegetation. Just how critical, you ask? Invasive species in the United States are estimated to cause damages of \$137 billion annually, with non-native invasive weeds making up \$34 billion of that amount.

Our research results suggest that noxious weeds in Montana impose large economic costs, too. With a grant received through the Montana Noxious Weed Trust Fund, we administered a survey in winter 2015-2016 for Montana livestock producers who were grazing their animals on privately owned land. We received survey responses from 129 people in 45 of Montana's 56 counties. Most people who responded grazed cattle, but some grazed sheep, horses, and goats. Respondents answered questions about their largest block of grazing land, and the average size of that block was 5,055 acres.

The most common noxious weeds reported were Canada thistle, leafy spurge, and houndstongue. However, leafy spurge, Canada thistle, and knapweed (both spotted and diffuse) were reported as causing the largest decreases in livestock production. Only 6% reported not having any noxious weeds, suggesting noxious weeds are a very common problem across Montana grazing lands. Combining our information about weed presence and prevalence with information from other studies, we estimate the corresponding average value of the reduction in stocking rate (i.e., number of animals that can utilize the feed available on a unit of land for a specified time period) is \$0.40 per acre per year, or \$2,022 for the average-sized block of grazing land.

The top three strategies used to control established noxious weeds were chemical control, grazing, and biological control. Nearly half of respondents utilized integrated weed management, which is management that uses more than one control strategy.

Respondents' average total cost of noxious weed control, including labor and materials, was estimated to be \$0.89 per acre per year, or \$4,499 per year for the average block. However, the cost of noxious weed control ranged a great deal – from \$0 to over \$40 per acre, depending on which control strategies were used and the severity of infestation. We estimate the average economic loss, including both the costs of control and the costs of foregone forage production, to be \$1.29 per acre per year, or \$6,521 per year for the average block of grazing land. These costs are large, but may be a lower estimate than the true costs because our data were limited.

Our data emphasize that noxious weeds are a common problem in Montana, and they can cost landowners and land managers a significant amount of money. Nearly two-thirds of people who responded agreed that noxious weeds are a problem, despite efforts to manage them. So, what can be done and how can you protect your property from noxious weeds?

First, to protect your property, limit activities that disturb vegetation and soil, such as overgrazing and off-road vehicle use. If feeding livestock, purchase weed seed free forage. If constructing any new buildings, fences, or landscaping, use weed seed free materials and monitor construction areas for at least two to three years afterwards for noxious weeds that may have traveled onto your property inadvertently.

Second, learn to identify noxious weeds. There are many weed identification resources available, including publications from MSU Extension (<https://store.msuextension.org/>), and expert personnel at Extension offices and county weed district offices. The Montana Noxious Weed Education Campaign (www.weedawareness.org) and Montana Weed Control Association (www.mtweed.org) also provide excellent weed identification information.

Once you feel comfortable with weed identification, walk your property and map vegetation at least once or twice during the growing season, making note of any weeds found. Mapping doesn't have to be complicated. Sketch a simple map of the property or download a map from an online mapping system (e.g., Google Earth). Mapping allows you to track changes in vegetation over time and decrease the chance of weed invasion.

Finally, if noxious weeds establish on the property in spite of efforts to prevent invasion, detect them early and quickly manage them (referred to as early detection and rapid response, or EDRR) with appropriate measures to limit their economic and ecological impacts. The best control measure varies from one situation to another. For example, pulling or digging houndstongue is appropriate because it has a main taproot and only spreads through seed production. In contrast, pulling is not as appropriate for Canada thistle or leafy spurge because of their creeping roots, which cannot be completely removed through pulling or digging. Herbicides and hand-pulling might be appropriate for small patches of noxious weeds which have recently shown, while biological

control is better for large, well-established infestations. Similar to noxious weed identification, there are resources and expertise available to help choose the best control measure or combination of measures. Consult with a local MSU county or reservation Extension agent or county weed district office.

As a landowner, vegetation management, including noxious weed management, is an ongoing investment of time and money. Keeping vegetation healthy through limited disturbance and proper management will prevent or slow weed invasion. If and when noxious weeds are found, returning to the locations after control measures have been implemented will allow you to evaluate if they worked or if follow-up management is required. If you find a weed infestation on your property, multiple years of control are usually required. ■

- 1. Spotted knapweed**
- 2. Canada thistle**
- 3. Houndstongue**
- 4. Leafy spurge**

