



# Current State of Noxious Weed Management in South Dakota

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## Introduction

Noxious weeds are a serious concern in South Dakota. Noxious weeds can reduce crop yield, pasture production, displace native plants/wildlife, and interfere with recreational activities. If not effectively managed, noxious weeds can rapidly reproduce (vegetatively or by seed) and colonize new land areas. Noxious weeds inhabit a relatively large percentage of land area in South Dakota (Table 1). Statewide losses due to noxious weeds are approximately \$100 million annually. Noxious weeds will continue to inhabit more land area and increase control costs and complexity if no effective management tactics are implemented. In addition, false assumptions about noxious weed management in South Dakota could result in the development of ineffective management programs, further increasing costs. South Dakota is a diverse state, with different climates, ecosystems, species, and management tactics throughout that can influence weed control. Due to this diversity, an online survey was developed and distributed to determine how South Dakota stakeholders are currently managing noxious weeds.

**Table 1.** Current estimate of noxious weed infestation in South Dakota.

Species	2020 Acres
Canada thistle	1,416,886
Leafy spurge	421,340
Perennial sowthistle	104,322
Hoarycross	21,334
Purple loosestrife	7,344
Absinth wormwood	189,482
Biennial thistle	264,066
Salt cedar	1,095

## Methods

An online survey (Figure 1) was distributed via the SDSU Extension Pest and Crop newsletter and other e-mail list serves in 2023. The survey consisted of nine questions regarding noxious weed control (Table 2). The responses were prepopulated so the respondent could select the desired response(s). Select questions allowed for the respondent to select “other” and type in a response to encompass responses not listed. The online format of the survey allowed the respondents to complete the survey at their own convenience. The survey is recurrently redistributed via the SDSU Extension Pest and Crop newsletter and by word of mouth. The survey is still “live” and we encourage more stakeholders to complete the survey for more information.



**Figure 1.** Scannable QR Code leading to the South Dakota Noxious Weed Survey.

**Table 2.** The questions asked on the South Dakota noxious weed survey.

Questions
1. How would you classify yourself?
2. Where is your home county?
3. How many acres are you managing?
4. Are noxious weeds a problem on your property/managed area?
5. What noxious weeds are most common in your area?
6. What noxious weeds are most difficult to control?
7. How do you currently control noxious weeds?
8. How satisfied are you with the control of your noxious weeds with the previously answered control methods?
9. What would you consider a barrier for adoption for implementing new noxious weed control strategies?

## Results

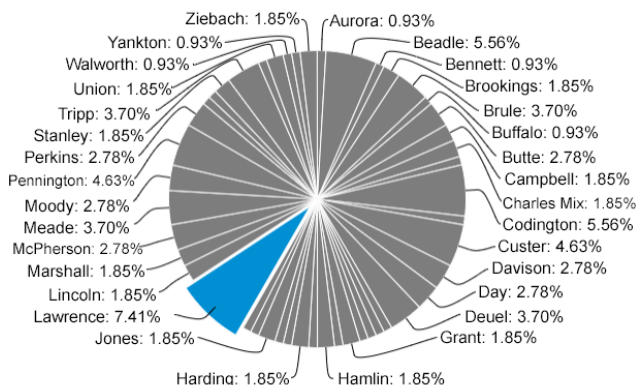
Currently, 472 stakeholders have opened the survey but only 110 stakeholders completed the survey: a 23% completion rate.

### How would you classify yourself?

Most respondents classified themselves as a “farmer/rancher” (48%) or “landowner” (36%). Twenty-two percent of the respondents classified themselves as “other”; where most respondents classified themselves as a government employee (i.e., Natural Resource Conservation Service, South Dakota Game, Fish, and Parks, Forest service, South Dakota Department of Agriculture and Natural Resources). Homeowner (14%), industry representative (6%), and county weed supervisor (5%) were the next common classifications. Total percentages do not equal 100% as respondents classified themselves with more than one response.

### Where is your home county?

Currently, 33 out of the 67 counties in South Dakota are represented in the survey responses (Figure 2). East River and West River counties are represented but more responses came from counties West River (Figure 2).



**Figure 2.** Breakdown of respondent's home county for the 2023 noxious weed control survey.

### How many acres are you managing?

Responses ranged from 0 to one million acres managed. The average land area managed was 45,770 acres. The number of acres managed is high, likely attributable to the fact that respondents from the government sector manage large land areas (i.e., national forests, waterfowl production areas, game production areas). The median land area managed was 2,00 acres which is likely more a realistic land area for non-government stakeholders in South Dakota.

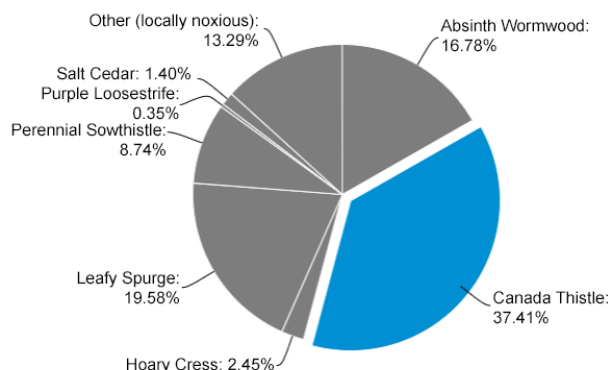
### Are noxious weeds a problem on your property/managed area?

Eighty percent of the respondents said “yes” to noxious weeds being a problem on their property. This response was not unexpected as noxious weeds are a problem in South Dakota. However, the 20% of respondents who said “no” to noxious weeds being a problem was unexpected. However, this result shows that the survey captured non bias responses rather than responses of only stakeholders who faced challenges with noxious weeds.

### What noxious weeds are most common in your area?

Canada thistle (37.4%), leafy spurge (19.6%), and Absinth wormwood (16.8%) were the most common noxious weeds (Figure 3). The “Other (locally noxious weeds)” (13.3%) response was more frequent than the remaining statewide noxious weeds (Figure 3). The

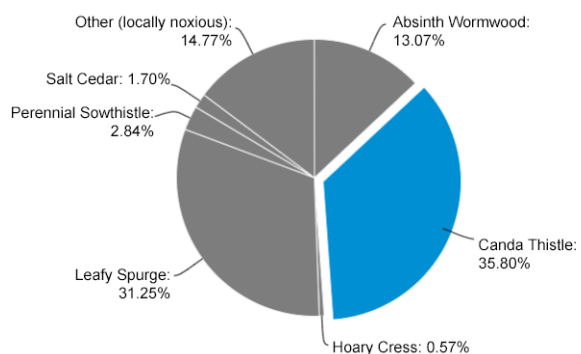
“Other (locally noxious weeds)” captured responses of biennial thistles, common mullein, spotted knapweed, St. Johnswort, and yellow/dalmatian toadflax. Other responses included non-noxious weeds such as pigweed species and smooth brome grass. On average, respondents reported three noxious weeds that were common in the managed areas.



**Figure 3.** Distribution of common noxious weeds that inhabit areas managed by the respondents of the 2023 noxious weed control survey.

#### What noxious weeds are most difficult to control?

The responses for this question followed a similar pattern as the responses for the question “What noxious weeds are most common in your area?” (Figure 4). On average, respondents reported three noxious weeds that were difficult to control.

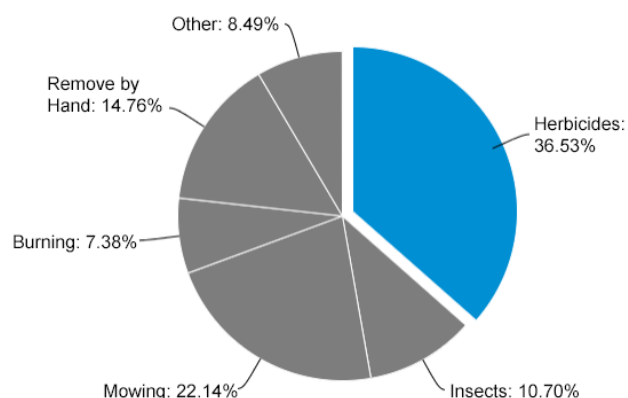


**Figure 4.** Distribution of difficult-to-control noxious weeds that inhabit areas managed by the respondents of the 2023 noxious weed control survey.

#### How do you currently control noxious weeds?

Herbicides (36.5%) was the most common response followed by mowing (22.1%) then hand removal (14.8%) (Figure 5). The response “Other” consisted mostly of the write-in answer of “grazing” (Figure 5). While the other control tactics of “burning” and “insects” were not used as frequently, these responses suggest that the respondents are utilizing integrated approaches for

noxious weed control. On average, respondents use three methods to control noxious weeds.



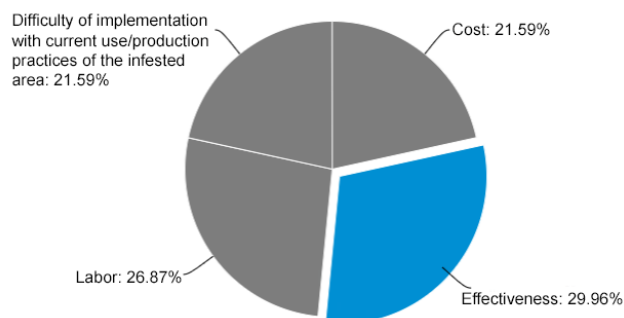
**Figure 5.** Tactics utilized to control noxious weeds by the respondents of the 2023 noxious weed control survey.

#### How satisfied are you with the control of your noxious weeds with the previously answered control methods?

Forty-seven percent of the respondents said “somewhat satisfied” with previously answered control methods. Only 9% of the respondents were completely satisfied with the noxious weed control using previously answered control methods. Interestingly, 15% of respondents were “very unsatisfied” with previously answered control methods.

#### What do you consider to be a barrier of adoption for implementing new noxious weed control strategies?

Cost, effectiveness, labor, and difficulty of implementation with current use/production practices of the infested area were similarly selected by the respondents (Figure 6). On average, respondents said there are 2.5 barriers of adoption.



**Figure 6.** The barriers of adoption for new control tactics by the respondents of the 2023 noxious weed control survey.

## Conclusion

The results of the survey suggest that noxious weeds are still a widespread problem in South Dakota. While herbicides are still the primary tool for control, the utilization of other tactics suggest that noxious weeds are controlled with an integrated approach. Utilizing an integrated approach for weed management usually results in more effective control, which is exemplified with approximately 50% of the respondents “very satisfied” or “somewhat satisfied” with current control tactics. While only 15% of the respondents were “very unsatisfied” with their noxious weed control, extension efforts need to be made to address why control is not effective. Efforts will be made to provide pertinent information on how to control the common noxious weed species. Future surveys should ask questions on the specific management tactic (i.e., herbicide active ingredient or mowing type) for the specific weed species.

## Acknowledgments

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