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Ranch Operators' Perceptions of Leafy Spurge

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Introduction

Leafy spurge (*Euphorbia esula* L.) is an exotic, noxious perennial weed that has become widely distributed in the northern Great Plains. Considerable research has been conducted to develop effective controls for leafy spurge; however, current control techniques have proven ineffective in eradicating the plant. Despite advancements in the efficacy of leafy spurge controls and an increased awareness of the destructive capabilities of the weed, much of the Upper Midwest remains infested and continues to combat expanding infestations.

In 1997, The Ecological Areawide Management of Leafy Spurge project (more commonly called **TEAM Leafy Spurge**) was initiated to pull together state, federal, and local agencies and private landowners to develop and integrate sustainable leafy spurge management methods, and to transfer economically and ecologically proven technologies to manage leafy spurge to land managers. This study highlights a survey of ranchers, which was initiated to evaluate managerial, institutional, and social factors that may affect the rate and extent of implementation of various control strategies in the **TEAM Leafy Spurge** demonstration counties.

Methods

Ranchers in a five-county region in Montana, North Dakota, South Dakota, and Wyoming were surveyed to obtain their opinions and views regarding weed management and problems associated with leafy spurge (Figure 1). A total of 187 questionnaires were returned from a mailing list of 459 ranchers.

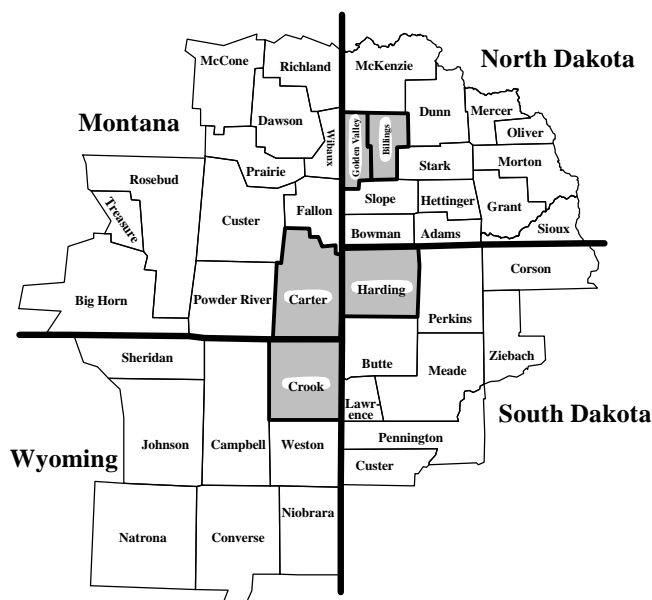


Figure 1. Counties Included in TEAM Leafy Spurge

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Results

The survey was designed to (1) assess how weed problems rank among rancher concerns, (2) identify which weeds generate the most problems, with particular emphasis on leafy spurge, (3) identify what measures ranchers take to prevent the spread of leafy spurge, (4) determine which leafy spurge control strategies ranchers consider effective and economical, (5) determine the reasons for not using various leafy spurge controls, (6) determine where ranchers get weed management information, what information they desire, and in what form they wish to receive it, and (7) assess ranchers' opinions and perceptions on general weed management and leafy spurge control.

General Characteristics

There were 34, 53, 46, and 54 completed surveys from Montana, North Dakota, South Dakota, and Wyoming, respectively. Survey response rate ranged from 49% in Montana to 35% in South Dakota. Average ranch size (acres and animals) was smallest in North Dakota and largest in Wyoming. The characteristics of ranchers responding, averaged across all states included:

- ! Average operator age was 53
- ! Average ranch size--6,900 acres operated
- ! 91% of those surveyed had cattle, with an average of 444 head
- ! 28% of those surveyed had sheep, with an average of 1,175 head
- ! 80% of gross rancher income came from grazing livestock
- ! 72% of those surveyed used public rangeland
- ! 56% of those surveyed had leafy spurge on their ranch

! Of ranchers who had leafy spurge, the average infestation was 2.5% of operated acres

! 46% of ranchers regularly use computers on their ranch

General Ranching Issues

Ranchers were asked to indicate which ranching issues were a *major*, *minor*, or *not a* problem. The overall responses were:

! The worst problem was livestock prices (79% of ranchers said it was a *major* problem).

! Adverse weather and cost of inputs also ranked high as *major* problems (63% and 53% of ranchers said these were *major* problems, respectively).

! About one-third of all ranchers said the following were *major* problems: predators, regulations affecting public rangeland, and noxious weeds.

! Availability of grazing land and use of CRP were less important problems (27% and 14% of ranchers indicated these were *major* problems, respectively).

Ranchers were also asked if those same issues had *become worse*, *stayed the same*, or *improved* over the last 5 years. The overall responses were:

! Over 67% of ranchers indicated that livestock prices had become worse over the last 5 years.

! Between 50 and 60% of ranchers said that the cost of inputs and adverse weather had become worse over the last 5 years.

! Problems with predators and noxious weeds followed with 47% and 42% of ranchers indicating that these problems had become worse, respectively.

! About one-third of all ranchers said that availability of grazing land had become worse in the last 5 years.

When the views of ranchers with leafy spurge were compared to the views of ranchers without leafy spurge, the following perceptions were noted:

! Ranchers with leafy spurge considered regulations affecting public rangeland, noxious weeds, and availability of grazing land to be greater problems than those without leafy spurge.

! Similarly, a greater percentage ranchers with leafy spurge felt that regulations affecting public grazing land, availability of grazing land, and noxious weeds had become worse over the last 5 years than ranchers without leafy spurge.

! Conversely, a greater percentage of ranchers without leafy spurge felt that predators had become a worse problem over the last 5 years than those with leafy spurge.

! When compared as separate groups, nearly equal percentages of both ranchers with leafy spurge (68%) and those without leafy spurge (66%) felt that livestock prices and the cost of inputs had become worse in the last 5 years.

Ranking of Problem Weeds

Ranchers were asked to indicate which weeds were a *major*, *minor*, or *not a* problem in their area. The overall responses were:

! Leafy spurge received the most consideration as a *major* weed problem among all ranchers (49% of ranchers considered it a *major* problem--the next weeds [field bindweed and thistles] only had 25% of the ranchers who felt they were a *major* problem).

! After leafy spurge, the weeds that were considered *major* problems, in order of rank, included field bindweed, thistles, annual brome grass, sagebrush, knapweeds, and prickly pear.

! However, the rank of problem weeds was even more pronounced when ranchers were asked which weed was the *single most important weed*. About 57% of all ranchers considered leafy spurge the *most* serious problem weed, compared to 12% who ranked thistles as the *most* important weed. Other weeds (such as hounds tongue, field pennycress, cheatgrass) were considered the *most* important problem weeds by 9% of ranchers.

When the views of ranchers with leafy spurge were compared to the views of ranchers without leafy spurge, the following perceptions were noted:

! Among ranchers without leafy spurge, more ranchers indicated that field bindweed was a *major* problem than leafy spurge.

! Leafy spurge was still considered the *single most important weed* to both ranchers with leafy spurge and to those without leafy spurge. However, ranchers without leafy spurge ranked other weeds, such as hounds tongue, field pennycress, cheatgrass, annual brome grass, and sagebrush as the *most* important weed more often than ranchers with leafy spurge.

Other notes regarding weed problems included:

! Over 65% of ranchers in the survey classified the weed problem on their ranch as *minor*, compared to 17% who indicated it was either *not a* problem or indicated it was a *major* problem.

Preventing Spread of Leafy Spurge

Ranchers were asked to identify all the measures or practices taken to prevent the spread of leafy spurge. Nearly all ranchers surveyed were actively involved in preventing weeds from spreading.

! Over 95% of ranchers routinely check range for invading plants.

! Over 90% of ranchers aggressively destroy weed plants when they are discovered.

! Nearly 80% of ranchers keep trucks/machinery free of weeds.

! About 80% spot spray near fringe or boundary areas.

! About 70% of ranchers purchase only weed-free hay.

! According to ranchers, the leading causes of leafy spurge expansion, by rank, included “spread from adjoining land,” “not recognized as threat until too late,” “lack of cost-effective controls,” and “spread by man’s actions.”

Views on the Most Effective and Economical Leafy Spurge Controls

Ranchers were asked to rate the effectiveness of various control methods for leafy spurge. Opinions were solicited regardless of whether the rancher had leafy spurge. Herbicides, biological control, grazing, and tillage were assigned a rank of *not effective*, *partially effective*, or *very effective*.

! Over 50% of ranchers indicated that tillage was *not effective* in controlling leafy spurge.

! A greater percentage (29%) of ranchers with leafy spurge felt that sheep and goat grazing was *not effective* in controlling leafy spurge than ranchers without leafy spurge (11%).

! Only 5% of ranchers with leafy spurge considered herbicides *not effective* in controlling leafy spurge. However, only

one-third of ranchers with leafy spurge rated herbicides as *very effective*.

! Less than 20% of ranchers rated biological controls as *very effective*.

! About 31% of ranchers without leafy spurge thought grazing controls were *very effective*; however, only 20% of those with leafy spurge considered grazing to be *very effective*.

Ranchers were also asked if “it pays” to use the same controls.

! Over 77 percent of ranchers with leafy spurge indicated that it pays to use herbicides to control leafy spurge; however, only 60% of ranchers without leafy spurge felt similarly.

! About two-thirds of all ranchers felt that it pays to use biological controls, and 56% of ranchers felt it pays to use grazing controls.

Ranchers with leafy spurge were asked to identify the controls they have used in the past and indicate if they were planning to use those controls in the future.

! Over 97% of ranchers with leafy spurge have used herbicides on leafy spurge.

! About 54% of ranchers have used biological controls on leafy spurge.

! Less than one-third of ranchers have used grazing or tillage to control leafy spurge.

! All (100%) ranchers with leafy spurge are planning to use herbicides in the future.

! Over 50% of ranchers indicate they are planning to use biological controls in the future.

! Only 25% of ranchers are planning to try grazing or tillage on leafy spurge in the future.

Reasons for not Using Leafy Spurge Controls

In an effort to better understand why ranchers may not use various controls on leafy spurge, a list of likely reasons were presented for each control. Ranchers were asked to indicate all of the reasons that apply. The top four reasons for not using each control method are listed with the percentage of ranchers indicating that reason.

! Reasons for not using **herbicides**:

Environmental restrictions (water, trees, sensitive crops) (62% of ranchers).

Acreage of infestations too large--prohibitively expensive (52% of ranchers).

Herbicides are not economical (46% of ranchers).

Infestations are inaccessible to sprayers (42% of ranchers).

! Reasons for not using **biological controls**:

Biological control takes too long (48% of ranchers).

Limited access to collect biological agents (45% of ranchers).

Do not know where or how to collect agents (36% of ranchers).

Lack knowledge to properly use the agents (30% of ranchers).

! Reasons for not using **sheep and goats**:

Lack the proper equipment (fences, water, shelter) (72% of ranchers).

Sheep/goats compete for the same forage as cattle (44% of ranchers).

Lack the expertise/knowledge to work with sheep/goats (41% of ranchers).

Sheep and goats are too time consuming to use (40% of ranchers).

! Reasons for not using **tillage, reseeding, mowing, burning**, etc.:

Land is not suitable for tillage (85% of ranchers).

These methods are ineffective (36% of ranchers).

Do not have time to work with these controls (27% of ranchers).

Lack the proper equipment (22% of ranchers).

Where do Ranchers Get Their Information

Given a list of possible *information sources*, ranchers were asked to indicate how frequently they used that source with regard to weed management. Ranchers were also asked *what information* they would like to receive pertaining to leafy spurge control and in *what form* they would like the information.

! Nearly 50% of ranchers use the Extension Service/county agent frequently.

! County weed boards/officers were used frequently by 46% of ranchers.

! About 43% of ranchers used other ranchers/neighbors frequently as sources of information.

! About 25% of ranchers indicated they used weed control seminars, herbicide dealers, and farm/ranch magazines frequently for information on weed control.

! Over 46% of ranchers indicated they would like information on the effectiveness of various herbicide treatments.

! Nearly 44% of ranchers wanted information on the economics of herbicide treatments.

! About 40% of ranchers would like information on the economics of biological control.

! Nearly 39% of ranchers requested information on how to use biological control.

! The most popular form of information was a pamphlet or bulletin available through their extension service or county agent (49% of ranchers).

! About 41% of ranchers would like

testimonials from other ranchers.

! Demonstration plots showing the effectiveness of various treatments was indicated as a source by 38% of ranchers.

! About one-third of ranchers would like video cassettes, personal requests and visits, and books about leafy spurge control.

Opinions and Perceptions About Weed Management

Ranchers were asked to indicate if they agreed or disagreed with several statements regarding weed management, land management, and leafy spurge. The statements were ranked based on a score of 1 to 5, where 1 was strongly disagree and 5 was strongly agree. The top five statements that ranchers agreed and disagreed with are presented.

<u>Ranchers Agree</u>	<u>Score</u>	<u>Ranchers Disagree</u>	<u>Score</u>
I am concerned about controlling weeds in rangeland	4.8	Public land managers are doing a good job of controlling weeds on public land	1.7
Leafy spurge is a long-term management problem	4.6	Weed infestations have no effect on the market (sale) value of rangeland	1.7
State and Federal government agencies are not doing enough to control problem weeds on public grazing land	4.5	It seldom makes economic sense to control weeds on rangeland	1.9
Rangeland weeds represent a problem to all ranchers	4.4	Leafy spurge is virtually impossible to control with current control methods and techniques	2.7
Biological agents released to control leafy spurge are safe for crops and native plants	4.2	It does not pay to control weeds on my land when my neighbor does not control his weeds	2.7

Conclusions

Among a list of general ranching problems, dealing with weeds ranked in the middle. Weeds were considered a greater problem for ranchers who have leafy spurge than for those who do not have leafy spurge; however, even among ranchers with leafy spurge, there was strong agreement that other ranching issues were of greater concern. Ranchers felt weeds are an important problem, but are not the most serious problem ranchers face.

Leafy spurge was ranked as the most important weed regardless of whether or not a rancher had leafy spurge. To ranchers with leafy spurge, leafy spurge clearly out ranked all other weeds in importance. However, to ranchers without leafy spurge, concerns over the most important problem weeds were more evenly distributed among a variety of weeds. For those ranchers who do not have leafy spurge, all the other weeds are probably nearly equal in the difficulty of control or pose similar production problems.

Most ranchers, regardless of whether they had leafy spurge, felt that tillage, in combination with reseeding, was not effective in controlling leafy spurge, compared to only 7 percent of all ranchers who thought herbicides were not effective in controlling leafy spurge. Only a minor percentage of ranchers with leafy spurge rated any control measure as very effective, reinforcing the difficulty in controlling the weed. Little difference exists between ranchers with leafy spurge and those without leafy spurge when rating the economics of leafy spurge controls. Nearly 60 percent of all ranchers felt that "it pays" to use all three types of controls--herbicides, biological control, and grazing controls. The majority of ranchers with leafy spurge are planning on combating the weed with herbicides and biological agents in the future.

The reasons for not using the various leafy spurge controls generally fell into environmental, educational, and financial categories. In many cases, little can be done to remove the environmental constraints (especially those presented by topography, water, trees, and other circumstances). However, the financial constraints can be addressed through cost-share programs either offered locally or through state agencies. Other considerations for not using some controls included lacking sufficient knowledge to work with the various controls (e.g., grazing and biological controls). Those obstacles can be addressed by workshops, demonstrations, and other educational opportunities provided by universities and government agencies.

Ranchers depend heavily on their Extension Service or county extension agents and local weed control officers for information on weed control. The effectiveness and economics of herbicide and biological controls were the *types of information* most requested by ranchers. The most requested *forms of information* would be pamphlets/bulletins available locally, testimonials by other ranchers, and demonstration plots showing the effectiveness of various controls. Results indicate that existing information systems, already available to ranchers, would be the best way to route information on leafy spurge control.

The responses of ranchers to various statements on weed and range management indicated that ranchers, as a group, are generally very concerned about weeds in rangeland. They generally feel it makes economic sense to control weeds in rangeland, and feel very strongly that public land agencies are not doing enough to control weeds on public land. Many ranchers realize the difficulty in controlling leafy spurge, but are still planning on fighting the weed in the future.

How to Obtain Additional Information

This document is a summary of a more comprehensive report on the survey of ranchers in the **TEAM Leafy Spurge** counties. The main report contains additional information, including comparisons of attitudes and perceptions of ranchers by state. Additional copies of this summary and single copies of the main report, Ranch Operators' Perceptions of Leafy Spurge, are available free of charge. Please address your inquiry to Carol Jensen, Department of Agricultural Economics, P.O. Box 5636, North Dakota State University, Fargo, ND 58105-5636, (Phone 701-231-7441, Fax 701-231-7400), E-mail: cjensen@ndsuext.nodak.edu or these documents are available on the world wide web at <http://agecon.lib.umn.edu/ndsu.html>

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