



Needs Assessment for Noxious Weeds in Churchill County

Part 2 of 5: Problems of and Obstacles to Weed Management

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Introduction

This fact sheet is the second in a series of five publications designed to examine noxious weed issues that affect Churchill County. This publication discusses the results from a needs assessment conducted by the University of Nevada Cooperative Extension (UNCE) and looks at the problems and obstacles associated with weed management. The first publication in this series identified problem weeds, approaches and methods for control. Subsequent publications in the series will look at 1) the spread, detection and prevention of weeds, 2) herbicides and the criteria used for their selection and timing of use; and 3) priority research and outreach programs.

Churchill County encompasses 5,023 square miles in western Nevada and lies approximately 60 miles east of Reno. Over 89 percent of the land in Churchill County is owned by the federal government. The only

incorporated city in Churchill County is Fallon. Churchill County has a total population of 26,859 residents (2009), with 9,113 people residing within the Fallon city limits.

The Lahontan Valley, located in Churchill County, is the primary agricultural production area with 210,752 acres defined by the county as "agricultural" lands. These lands are classified into four use types, including cultivated (30,568 acres), pasture (8,776 acres), grazing (160,308), and meadow (~11,100), with water rights assigned to 39,877 acres. Most of the county lands are classified as rangelands or are covered with water.

In 2009, the U.S. Department of Agriculture reported that there were 529 farms in Churchill County, averaging 248 acres in size. The average farm in Nevada is nearly eight times as large as the average farm in Churchill County. Direct output value from the agricultural sectors in Churchill County

in 2007 was \$122.6 million dollars, of which \$54.8 million was related to crop sales and \$67.8 million to livestock or livestock product sales. The average economic multiplier value for the agricultural sector was 1.43, meaning that the agriculture sector generated an additional \$52.8 million in economic activity for a total economic impact of \$175.4 million dollars. In addition, during 2007 the agricultural sectors generated a total of 531 jobs directly tied to agriculture and an additional 446 jobs generated by the economic activity that the agricultural sector provides.

The county includes transportation corridors I-80, Highway 50, Highway 93 and two transcontinental rail lines. Churchill County receives irrigation water from the Carson and Truckee rivers. All of these corridors act as agents for the introduction and spread of noxious weeds. Several noxious weeds have established on lands adjacent to these rivers. These weeds, if not controlled, can dramatically reduce the yield and quality of the crops produced in Churchill County. Because a majority of the crops produced in Churchill County are used as livestock feed, reductions in livestock and livestock product sales are another possible result. Both will negatively impact the economic contributions that the agricultural sectors make to Churchill County.

Survey Methods

In 2008, University of Nevada Cooperative Extension (UNCE) faculty mailed a survey to all agricultural producers who reported at least \$1,000 of annual income from agriculture. An electronic version of the survey was developed and offered to individuals with weed management responsibilities in all appropriate federal and state agencies within Nevada.

The 88-question survey targeted nine specific weed management issues and is being used to prioritize the most important

educational and research programs for UNCE faculty. The results can also be used by other entities charged with weed management to prioritize their activities.

The specific methodologies used for the original survey and analysis are available in UNCE Special Publication SP-10-03. Additional statistical analysis was completed to determine if the responses from Churchill County's agricultural producers differed significantly from Nevada's agricultural producers and the public lands weed managers' responses.

Results and Discussion

Problems Caused by Weeds

Churchill County and Nevada agricultural producers were in agreement concerning the most important problems caused by weed populations (Table 1) with no significant differences noted between these groups. In fact, the top five problems identified by each group were identical. The "cost of weed control" ranked highest, followed in order by "reduced growth of crops or desirable plants," "increased risk of fire," "loss of productive grazing" and "loss of income or revenue." Churchill County producer's ranked "injury to humans" as the sixth-ranked problem associated with weeds, while Nevada producers ranked the same indicator eighth. These differences can probably be explained by the fact that Churchill County agricultural producers had ranked puncturevine and sandbur as the first and second most problematic weeds in Churchill County (Fact Sheet 11-72). Both of these weeds produce burs that can cause significant injury to animals and humans.

Nevada and Churchill County agricultural producers were in general agreement when ranking weed problems related to environmental values such as "loss of biodiversity," "increased soil erosion," "loss of wildlife habitat" and "reduced recreational

use.” These issues ranked lowest by both agricultural respondents. This is not surprising, as most agricultural producers are primarily concerned with factors that directly impact profitability. A somewhat surprising result, however, was the ranking of “reduced water availability” and “decreased property values.” Neither indicator ranked higher than sixth or eighth respectively by the agricultural respondents. While both are major problems caused by weeds throughout the west, the authors speculate that the widespread use of irrigation water in Nevada has reduced the importance of groundwater use by weeds in the minds of the respondents. In regards to the low ranking of “decreased property values caused by weeds,” Nevada agricultural producers have not generally experienced the complete domination of ranch and farm lands by noxious weeds that has been experienced by other producers in the West.

The ranking of weed problems by public land weed managers in Nevada were significantly different than both agricultural groups. The exceptions were “reduced growth of crops or desirable plants” and “increased risk of fire.” These were ranked as the first and third most important priorities by the managers (Table 1) and received second and third place rankings by producers. This is understandable as the public land managers ranked noxious weed species capable of displacing native species very high on their list of problem weeds (Creech ET. AL. 2008) and many of these species increase the risk of fire.

The primary differences between the agricultural producers’ rankings and those of the public land managers were related to environmental issues caused by weed populations. Public land managers rated these issues very high with the exception of “reduced recreational use” and “decreased resource values” which was ranked near the bottom of the list by both groups.

Apparently both groups do not feel that weeds reduce recreational use or decrease resource values, which appear unusual in that recreation is a major use of public lands and weeds are almost always acknowledged to reduce resource values. Public land managers ranked “cost of weed control” near the middle of the rankings even though “lack of money” was ranked as a major obstacle by this group.

Obstacles to Weed Management

Churchill County and Nevada agricultural producers’ rankings of the most important obstacles to weed management were not significantly different. However, both producer groups’ rankings differed significantly from the public land managers. “Neighbors with uncontrolled weeds” was the highest ranked obstacle identified by the agricultural producers (table 2) while it was the fourth-highest obstacle listed by the managers. All three groups ranked “lack of time or labor” in the top two. Yet agricultural producers in Nevada and Churchill County ranked “lack of money” as the fourth and fifth most important obstacle, respectively. This may indicate that most agricultural operations are staffed at relatively low levels and other jobs are perceived as more critical than weed control. Public land managers ranked “lack of money” as the second most important obstacle to weed management but had ranked “cost of weed control” no higher than fifth as a problem.

Another interesting finding was that “restrictions, policies, or regulations imposed by government agencies” ranked near the bottom by all three respondent groups. “Lack of knowledge” and “absence of a weed management plan” were also ranked lower by all respondents, perhaps indicating that educational organizations are functioning effectively and that private and public organizations may have weed management plans in place. The agricultural respondents ranked a “lack of effective controls as the third most

important obstacle while public land managers only ranked it sixth. The authors believe that the complexity of agricultural operations (various crops, growing seasons, herbicide label restrictions, etc.) may create more challenges to effective weed control on agricultural operations as compared to weed control activities on public lands. While all face challenges, public lands managers also have a limited number of herbicides to choose from when implementing a weed management program.

Public land managers ranked “lack of public awareness of weeds” as a major problem (third) while Nevada agricultural producers ranked it fifth and Churchill County producers had it no higher than seventh. Churchill County agricultural operations are dependent on a higher percentage of private land than are Nevada producers or the public land managers. Therefore, public perception and support of weed management activities may be less important to them. “Negative public perception of herbicides” was ranked higher by Churchill County producers than the public land managers or Nevada agricultural producers. This may be because Churchill County has an increasing number of organic vegetable producers. Obviously, they will be more concerned with this issue as their customers may reject any produce contaminated by herbicides.

Additional Resources

Analytical Software. 2008. Statistix 9. User’s Manual. Analytical Software. Tallahassee, FL. 454 p.

Creech, E., L. Singletary, J. Davison, L. Blecker, and B. Schultz. 2010. Nevada’s 2008 Weed Management Extension Program Needs Assessment. University of Nevada Cooperative Extension Special Publication 10-03.

Davison, J. P. Powell, B. Schultz, and L. Singletary. 2011 Needs Assessment for Noxious Weeds in Churchill County: Part 1 of 5 – Problem Weeds, Approaches and Methods of Control.

Duncan, C.L. and J.K. Clark (eds). 2005. Invasive Plants of Range and Wildlands and their Environmental, Economic and Societal Impacts. Weed Science Society of America. Lawrence, Kansas. 222 p.

Harris, T.R., and A.K Kerna 2009. An Economic Description of the Agricultural Sectors in Churchill County. University Center for Economic Development. University of Nevada, Reno. Department of Resource Economics Technical Report UCED 2009/10-01. 22 p.

Singletary, L. and M. Smith. 2006. Nevada Agriculture Producer Research and Education Needs: Results of 2006 Statewide Needs Assessment. University of Nevada Cooperative Extension Educational Bulletin 06-02. 118 p.

USDA. 2009. 2007 Census of Agriculture. Nevada State and County Data. Volume 1. Geographic Area Series. Part 28. USDA National Agricultural Statistics Service. Washington, DC.

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Table 1. Problems caused by weeds on lands managed by Nevada’s agricultural producers (n=746), Churchill County’s agricultural producers (n=164) and public land weed managers (n=52) in Nevada. The values are the percentage of respondents who indicated moderate to high importance.

| Problem/Issue | Nevada agricultural producers | | Churchill County agricultural producers | | Public land weed managers | |
|--|-------------------------------|---------------------------------|---|---------------------------------|---------------------------|---------------------------------|
| | Rank | Moderate to high importance (%) | Rank | Moderate to high importance (%) | Rank | Moderate to high importance (%) |
| Cost of weed control | 1 | 68.6 | 1 | 71.7 | 5 | 78.4 |
| Reduced growth of crops or desirable plants | 2 | 57.2 | 2 | 60.9 | 1 | 86.3 |
| Increased risk of fire | 3 | 46.7 | 3 | 44.3 | 3 | 82.4 |
| Loss of productive grazing | 4 | 44.9 | 4 | 43.4 | 9 | 43.1 |
| Loss of income or revenue | 5 | 43.7 | 5 | 42.6 | 13 | 9.8 |
| Reduced water availability | 6 | 32.5 | 7 | 33.3 | 7* | 52.9 |
| Loss of scenic value | 7 | 29.2 | 9 | 26.5 | 7* | 52.9 |
| Injury to humans (thorns, allergies, rashes, etc.) | 8 | 28.2 | 6 | 33.8 | 11 | 19.6 |
| Decreased property values | 9 | 28.0 | 8 | 27.5 | --- | --- |
| Loss of biodiversity | 10 | 23.6 | 10 | 18.4 | 2 | 84.3 |
| Increased soil erosion | 11 | 19.9 | 12 | 16.2 | 6 | 58.8 |
| Loss of wildlife habitat | 12 | 17.9 | 11 | 16.8 | 3 | 82.4 |
| Reduced recreational use | 13 | 10.6 | 13 | 8.1 | 10 | 31.4 |
| Decreased resource values | --- | --- | --- | --- | 12 | 15.7 |
| *indicates results are tied | | | | | | |

Table 2. Obstacles to weed management on lands managed by Nevada’s agricultural producers (n=746), Churchill County’s agricultural producers (n=164) and public land weed managers (n=52) in Nevada. The values represent the percentage of respondents who indicated moderate to high importance. Items are sorted in order of decreasing importance to agricultural producers.

| Obstacles to weed management | Nevada agricultural producers | | Churchill County agricultural producers | | Public land weed managers | |
|--|-------------------------------|---------------------------------|---|---------------------------------|---------------------------|---------------------------------|
| | Rank | Moderate to high importance (%) | Rank | Moderate to high importance (%) | Rank | Moderate to high importance (%) |
| Neighbors with uncontrolled weeds | 1 | 61.6 | 1 | 66.9 | 4 | 56.0 |
| Lack of time or labor | 2 | 59.6 | 2 | 56.2 | 1 | 76.0 |
| Lack of effective control methods | 3 | 55.9 | 3 | 52.9 | 6 | 46.0 |
| Lack of money | 4 | 49.6 | 5 | 44.7 | 2 | 72.0 |
| Lack of public awareness of weeds | 5 | 46.6 | 7 | 43.2 | 3 | 68.0 |
| Negative public perception of herbicides | 6 | 44.6 | 4 | 48.3 | 5 | 52.0 |
| Lack of knowledge or training | 7 | 40.3 | 9 | 40.5 | 8 | 26.0 |
| Poor coordination between public and private lands | 8 | 40.0 | 6 | 43.3 | 7 | 30.0 |
| Absence of a weed management plan | 9 | 37.7 | 7 | 43.2 | 10 | 12.0 |
| Restrictions, policies or regulations imposed by government agencies | 10 | 31.0 | 10 | 32.2 | 9 | 22.0 |