Impact

Colorado State University Extension

Sharing the difference CSU Extension makes in people's lives and their communities.

County partnership helps landowners remove weeds and save money

A Russian knapweed removal program on private land in Crowley County encouraged other land owners to begin voluntary eradication of this highly invasive weed.

Issue

Russian knapweed *(Acroptilon repens)* grows on over 1,600 acres of land in southeast Colorado's Crowley County. The noxious weed commonly grows on abandoned and uncultivated farmland with alkaline soils high in salt and nitrogen. The proliferation of the weed inhibits the growth of many native perennial grasses, and as a result, spreads easily. Russian knapweed also burns hot and fast. In 2008 the weed contributed to the spread of an 8,000-acre wildfire that swept through the county killing two volunteer firefighters and destroying 24 buildings.

Later that year the Colorado Department of Agriculture awarded Crowley County with a $10,000 High Plains Invasives grant to monitor and control the spread of Russian knapweed on private land. The grant allowed Crowley County to recruit landowners who were willing to pay a portion of the cost of an herbicide to control or treat weeds on their property. However, in order to plan and execute a successful weed control program, the County needed to partner with its area Extension agent for technical assistance backed by proven research and local knowledge.

Extension's Response

Natalie Edumdson, Range and Livestock Extension agent in both Crowley and Otero counties, worked with 14 landowners to identify a total 300 acres of previously irrigated farmland that were ideal for knapweed monitoring and treatment. Before spraying weeds with herbicide, Edmundson established 100-foot line transects on four properties and recorded at five-foot intervals the abundance and diversity of knapweed and other plants.

The 300 acres of property were sprayed in January and February 2009 with the herbicide Milestone at a rate of seven ounces per acre. The decision to spray Russian knapweed in winter was based on recommendations by CSU Extension Weed Specialist George Beck. In the early 1990s Beck found that Russian knapweed root buds become active in fall and continue spurts of growth even through winter when soils freeze. In spring, shoots emerge above ground and root buds die off. Based on research by other weed experts, Beck determined that winter treatement would attack root buts, prohibit shoot growth, and kill the plant.[1]

At four months and one-year following treatment Edmundson recorded abundance and diversity along each transect. The same monitoring protocols occured on one control plot that was not treated.

Before: The transect on the left shows ground in winter dotted with knapweed and no native grass prior to treatment. After: The same transect four months after treatment. Native grasses dominate.

The Bottom Line

- CSU Extension successfully demonstrated that winter aerial treatment is a cost-effective way to attack Russian knapweed.
- After two years of treatment, overall weed density along transects decreased by 97 percent, from 5.24 plants per square foot to 0.133.
- The results have encouraged other landowners to act—an outcome that has the potential to reduce environmental threats, like catastrophic fire, and rehabilitate the land.

By the Numbers

Decreased knapweed density along transect

- 4 months after: 91%
- 1 year after: 75%
- 2 years after: 97%

Impact

Four months after spraying, the density of Russian knapweed along transect lines had decreased by 91 percent; one year later it was reduced by 75 percent. The herbicide also decreased the height and plant cover of the weed which led to an increase in native grass populations. Control results were the same whether herbicide was sprayed in the air or from the ground. With little or no demand for crop dusters during the winter, the decision to apply Milestone reduced treatment costs to $30 per acre. Landowners paid 25 percent of the cost.

The County was awarded a second grant for $5,000 in 2009 to continue treating knapweed. With less money on hand, Edmundson recommended re-treating 200 of the original 300 acres of land to achieve higher rates of control and maximize spending. This time landowners paid 40 percent of the cost and spraying occurred in March, 2010.

Crowley County Invasive Weeds Project Partners

Colorado Department of Agriculture
Crowley County Commissioners
CSU Extension
USDA-NRCS
West Otero Timpas Conservation District
Farm Service Agency
Landowners

[1] Wilson, R.G. and Michiels, A. 2003. Fall herbicide treatments affect carbohydrate content in roots of Canada thistle *(Cirsium arvense)* and dandelion *(Taraxacum officinale)*. Weed Sci. 51:299-304

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. September 2010. Written by Carol Busch.

Contact Information

CSU Extension, Crowley County
603 North Main Street
Ordway, CO 81063
(719) 267-5243