Western Region Sustainable Agriculture Research and Education
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Final Results

FW01-039

Noxious Weed Grazing with Goats

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Salmon , Idaho

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$7,000

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OBJECTIVES

This project sought to introduce an alternative method of noxious weed control that is environmentally and rancher friendly. The goal is to see if goats can suppress the noxious weeds to the point that weed-eating beetles can contain or eliminate the weeds.

The project has two distinct parts:
1. Graze spotted knapweed in a demonstration area to determine whether grazing is a viable control method
2. Use goats to control leafy spurge in the Carmen Creek/Badger Springs area north of Salmon, Idaho

ABSTRACT

Cashmere goats are hardy highland animals capable of withstanding cold winters. They are easy to raise, requiring minimal care or shelter, and they remain relatively healthy. The goats produce a fine fiber preferred for softness, warmth and durability, and, when bred with meat goats, they produce a marketable meat. Further, goats have shown a propensity to graze noxious weeds, providing a marketable service for goat owners.

Thousands of acres of Lemhi County, Idaho, are infested with noxious weeds. Wildlife and agriculture land is lost every year to spotted knapweed. Herbicides and biological control are the main management tools, but herbicides are not an option in some areas because of the plant species, terrain or acreage infested. To test goats' weed-eating skills, project coordinator Bonnie Jensen and technical advisor Shannon Williams implemented grazing trials using Jensen's Salmon River Cashmere goats on spotted knapweed and leafy spurge in areas where other controls are difficult or disallowed. The studies confirmed that grazing reduces spotted knapweed seed head production. Grazing also works against leafy spurge, having the added benefit of enhancing biological control.

SPECIFIC RESULTS

Spotted Knapweed. Based on the work at the University of Idaho and the U.S. Sheep Experiment Station at Dubois, Jensen and Williams, Lemhi County extension educator, designed a demonstration area to answer three questions: 1) At what stage of growth can spotted knapweed be grazed to have the greatest reduction in seed set? 2) A what stage of plant growth will grazing have the greatest reduction in canopy cover and plant count? 3) At what stage(s) of growth will goats consume spotted knapweed?

The demonstration, established on the University of Idaho's Nancy M. Cummings Research & Extension Center in Carmen, Idaho, just north of Salmon, evaluated four treatments: 1) grazing the knapweed at the rosette to bolt state; 2) grazing at the bud to bloom stage; 3) grazing twice, once at the rosette to bolt stage and again at the fall rosette stage; 4) ungrazed control. Each treatment cell was replicated three times, each treatment being 0.9 acres with five goats per cell. The goats, restrained by electric netting, grazed until 80-90% of the knapweed had been grazed and they started grazing other species.

Results indicate that grazing at the bud-to-bloom stage has the greatest potential as a control tool. Grazing at the rosette-to-bolt stage does reduce seed count, plant count and canopy cover, but not at the levels of bud to bloom. Grazing twice reduces seed heads the most but results in increased plant count, perhaps because grazing disturbs the seed bank causing quicker germination or because the goats don't eat the dry seed heads, instead knocking them to the ground.

In August 2002, the project team moved 250 goats to Salmon City Water Works, the city's water source that is infested with spotted knapweed but cannot be sprayed with herbicides. In four days, the goats consumed all of the buds and blooms and striped the leaves from the knapweed. Six weeks later, fewer than 5% of the plants bloomed again. Further, the goats selected for the spotted knapweed, consuming minimal grass and sagebrush.

Leafy Spurge. The Lemhi County Cooperative Weed Management Area adopted grazing to control leafy spurge with the objectives of determining the best way to manage goats on leafy spurge and to see if the goats will utilize grasses and desirable forbs.

On June 1, 2002, the project turned 250 goats into a 40-acre test area for four days. Six weeks later, the spurge had regrown but not flowered. In 2002, the Bureau of Land Management increased the area to be grazed, using two herds of 250 goats each. Spurge grazed in June had regrown to an average of 10 inches, and spurge grazed in July had regrown only six inches.

The BLM asked that grazing be curtailed around biological control areas during the mating season. While biological control agents had been established in several areas, it had not developed to the point where the control agents could be swept and moved. An unexpected benefit of the goat grazing was that after the old growth of leafy spurge was removed, the biological control numbers exploded, and they could be swept and moved.

Lessons learned. The SARE project members learned that the herder is key to success. Using one or two dogs and riding horseback, the herder must make sure the goats are eating weeds, not grasses or shrubs. One herder can typically handle 250 goats, and the goats are typically penned at night. The goats used in this project are Boer-Spanish-Cashmere crosses purchased from Montana and Texas.

The current rate is $1 per goat per day, including herder, goats, dogs and horse. The rate seems to work in Lemhi County. The area has been assessed by GPS, and the data are being crunched to determine the cost per acre. The Cooperative Weed Management Area contract required an eight-hour grazing day and removal of 90% of leafy spurge, assured by regular BLM inspections.

In 2001, the kids and does grazed together, with the kids tackling the spurge at eight weeks of age. However, as the distance to the spurge increased, both kids and does lost body condition. In 2002, the kids were weaned and returned to the ranch July 1, allowing the does to travel farther without losing body condition. Areas grazed the second year required one-third the time with the same number of goats, because the old growth had been removed and only young plants remained.

The goats don't need water when grazing young leafy spurge, which has ample moisture, but they do need water at night.

Potential Benefits

The ability to harness goats to suppress noxious weeds not only provides a non-chemical option for weed control, it provides producers with a feed source for their goat operations. Using goats has increased the overall profitability of Jensen's operation. In addition, since diversifying the operation, the Jensens hire one to three people, typically during the summer to help with the grazing contracts they've received as a result of this project. The contracts, over the past two years to graze leafy spurge in the Carmen Creek/Badger Springs area are growing in size because of the goats' superior weed-grazing performance. In 2002, they grazed more than 4,000 acres.

Farmer Adoption and Direct Impact

As a result of the knapweed demonstration, five producers now use grazing to control knapweed in the spring, and three more are considering buying goats to include in multi-species grazing plans on their private property. In addition, land managers in the Forest Service and Bureau of Land Management are beginning to recognize grazing by small ruminants as an effective weed management tool.

After a PowerPoint presentation, "Grazing as a Weed Management Tool," presented at the Idaho Cattle Association's winter school in January 2002, six of the 35 attendees commented that they are considering using grazing as a part of their noxious weed management.

Future Recommendations or New Hypotheses

The project team offers these recommendations:

- Research the needs to be done on the effects of grazing combined with biological control.
- Producers who diversify goats should understand that goats require more intensive management than do traditional cattle operations.
- Before buying added equipment for goats, a producer should assess current equipment to see if it will work. Stan and Bonnie Jensen were able to alter their cattle-working facilities for less than $200.

Dissemination of Findings

Three tours have been taken to the research sites, revealing the high interest among local citizens in the grazing project. At the dedication of the Nancy M. Cummings Research and Extension Center in the summer of 2001, 150 people from around the state visited the demonstration site. The Lemhi Soil and Water Conservation District included the demonstration on its spring tour, drawing 30 local producers. And 40 people participated in the fall tour of the Lemhi Cooperative Weed Management Area.

Producer Involvement

Bonnie and Stan Jenson, owners of Salmon River Cashmere, were the only producers involved directly in this SARE-funded study.