

Maggie Creek Ranch – A Goat Grazing/ Weed Control Case Study

On November 17th, 2009, a group of agency natural resource professionals, ranchers, goat grazers, and interested citizens gathered to discuss the logistics and effectiveness of weed control through grazing of goats. The targeted Maggie Creek Ranch properties are located south of Interstate-80 from the Carlin Tunnels to the area around the Hunter Exit. Many portions of the property are dominated by weed species and others have only patches of weeds. The ranch was spending upwards of \$20,000 per year in treating the weeds with chemical treatments. This amount of overhead sent the management looking for a more effective solution to the issue, which might cost less, better control weeds, and result in increased desirable vegetation production. Grazing of goats was explored to meet the objectives of Maggie Creek Ranch.

Weeds and Setting

Much of the land is sub-irrigated by the river and could be considered a flood plain ecological site. On the periphery, there are sites that fall into sodic flat and loamy sites receiving 8-10 inches of annual precipitation. Weedy species that are targeted by the operation include the following:

- Leafy spurge (*Euphorbia esula*)
- Tall whitetop (*Lepidium latifolium*)
- Russian knapweed (*Acroptilon repens*)
- Rabbitbrush (*Ericameria nauseosa*)
- Scotch thistle (*Onopordum acanthium*)

Goats-Weed Interactions

Operators commented that grazing knapweed earlier was more effective because once the plants dry, the goats become uninterested. Whitetop is a little more difficult to control through grazing because of its density, buildup dry biomass, and ability to re-sprout. The goats graze it well and gain well on tall whitetop. The goats seem to frenzy on rabbitbrush and target the flowers first. Similarly, on the first pass through scotch thistle, the goats pluck the seed heads or buds off of the plants. On the second pass, they take all of the leaves off the plants, and then work the stems to the ground. They will perform this task whether growing or dry. In areas where the goats are corralled or heavily confined, grazing impacts will remove all biomass, leaving the site devoid of above-ground plant material. Current grazing approaches are rotational, allowing multiple grazing events to occur on each infestation without creating negative impacts to residual desired vegetation and soils. The ranch manager and goat producer did not think there was an issue with a tendency of animals to impact residual desired grasses. This is likely reflective of the size and scope of the project area that allows a rotational grazing system and controlled amounts and intensities of grazing.

With any disturbance, ecological niches are opened and the most competitive and available seed source will likely re-colonize the area where weeds were removed. To counteract the re-colonizing of weeds, seeds are broadcast by the herders concurrently with grazing treatments. While weed seeds often remain viable or increase in viability after passing through cattle digestive systems, sheep and goat digestive systems reduce viability of weed seeds. The reasons are likely the result of the grinding action in the mouth of sheep and goats and/or the digestive enzymes found in their guts. It has been recognized at this site and others

that grazing and seeding alone won't remedy the entire weed problem. Currently these treatments are coupled with chemical treatments in areas where additional effort is needed to convert weedy areas to areas dominated by desired vegetation.

Goat Operation

The owners of the goats use immigrant or contract herders to move one or two bands (1,000-2,000) throughout the ranch year-round. The ranch does not charge the goat producers for feed, and the goat producers do not charge the ranch for their weed control services. The producers are using a combination of Bora and Spanish genetics in their herds. Kidding rates can range widely, though the producers are averaging approximately 130%. Kidding generally takes place mid-morning and mid-afternoon, which can influence herd movement and predator control needs during that time. The goats are bedded down in open pasture each night.

There is a lack of regular infrastructure and available markets for goat meat, especially at the local level. Producers ship their product on-the-hoof, and it goes to large cities in the US where Muslim and Hispanic communities create demand. Sales are pre-arranged with delivery dates and locations, and animals must weigh greater than 80 pounds to make the goat production business cost-effective.

Rough prescriptions are formulated for each site by the landowner and the herders. Herders often herd from the front of the herd because the goats tend to get excited and run out in front of the rest of the herd. The faster the animals move through the area, the lighter the grazing impact. By restricting the herd from the front, herders can control the intensity of grazing. Sometimes they will immediately re-graze an area to meet the grazing impact objectives.

Producers conveyed that the goats need a diversity of feeds to be satiated. Without this variety, the animals will become stressed, malnourished, and possibly unmanageable. A diversity of feeds will allow nutritional requirements to be met and goats to maximize their grazing effects on weed populations. If animals are used to graze shrub species, then protein supplements are necessary to fulfill nutritional requirements. These realities play well into the grazing rotation taken at Maggie Creek Ranch where the rotation is described as taking "laps" around the property. This approach allows multiple grazing events to occur on a single site without creating negative impacts to residual desired vegetation and soils.

Predator control is a concern for the goat producers throughout the year, but especially during kidding season. Bobcats, mountain lions, coyotes, and domestic dogs are the primary predators in the area. In addition to mammalian predators, the producers warned that overwhelming the goats with mosquito bites could kill the animals. Another challenge with the goats is their ability to tolerate cold weather. With thinner hide than cattle and lacking wool that sheep have, the animals are vulnerable to cold weather impacts on health.

Recommended Reading

Recent Perspectives in Using Goats for Vegetation Management in the USA
<http://jds.fass.org/cgi/reprint/84/e-suppl/E170.pdf>

Prescription Grazing for Rangeland Weed Management
http://sfc.smallfarmcentral.com/dynamic_content/uploadfiles/152/22.Prescription-Grazing%20-%20%20Frost.pdf

TARGETED GRAZING: A natural approach to vegetation management and landscape enhancement
<http://www.cnr.uidaho.edu/rx-grazing/Handbook.htm>