



Western SARE

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MEDUSAHEAD GRAZING CONTROL

Research & Education Grant

Title: Grazing Strategies to Control Medusahead in California

Project Number: SW06-038

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Situation

Medusahead, an invasive noxious grass from Eurasia, has invaded a million acres of California annual grasslands, oak woodlands, chaparral, and Great Basin grass and shrublands. It impacts the whole ecosystems, reducing biodiversity, commercial and recreational value, and grazing. Livestock grazing losses can reach \$20 an acre each year.

In the West, 62 million acres are at risk of medusahead invasion. Rangeland managers will be better served knowing optimal control through grazing or mowing.

Reducing medusahead could:

- increase biodiversity
- lower risk and intensity of fire
- increase grazing capacity

Objectives

1. Design a simple, cost-effective "precision" grazing method to control medusahead
2. Study the effects of spatial distribution of attractants such as supplement on spatial distribution of grazing pressure
3. Develop and implement a site-specific simple system to identify and forecast the period of greatest susceptibility of medusahead to mowing and grazing
4. Disseminate results in extension fact sheets, field visits, and newsletters for farm advisors



Medusahead has invaded thousands of acres of land in California.

Actions

These activities were conducted at private ranches:

1. Assessed stocking density and duration to control medusahead by precision grazing on two ranches
2. Tested low-moisture supplement blocks as attractants for cattle on five ranches
3. Developed models to predict time of medusahead susceptibility to grazing in 11 counties
4. Evaluated precision application of herbicide and mowing to reduce medusahead
5. Assessed nutritional quality of medusahead and goatgrass at various phenological stages
6. Evaluated economic impacts of management options for medusahead control

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The Western Region, one of four SARE regions nationwide, is administered through Utah State University.

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MEDUSAHEAD GRAZING CONTROL

Key Findings to Date

Precision Grazing with Sheep

Treatments involved small pastures with short grazing periods and high stocking densities and larger pastures with longer grazing periods and lower stocking densities. Precision grazing was effective in controlling medusahead regardless of duration or level of utilization obtained. Heavy grazing affected seed production on the target weed more than on other species.

Precision Grazing with Cattle

Pastures, 50 meters by 150-200 meters, were oriented so one end was near a riparian area with a watering point, the other near the top of a rocky hill, a layout designed to achieve results for comparison of usage in much larger pastures. Preliminary results indicate that animals imposed a gradient of utilization, with areas of high use having less medusahead.

Low-Moisture Blocks as Attractants

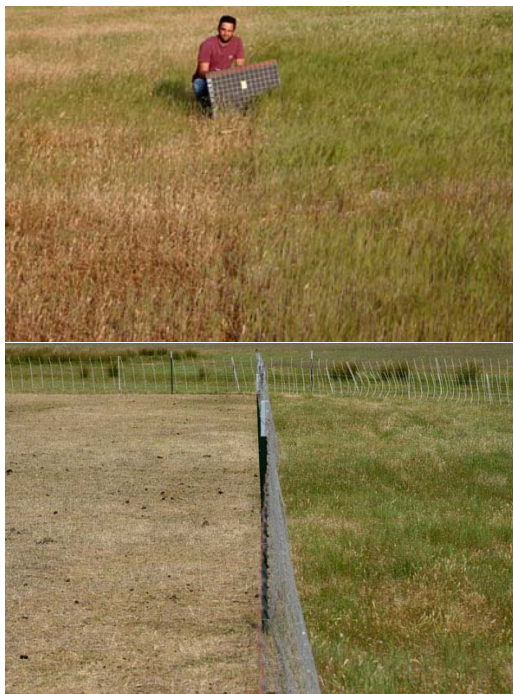
Livestock were trained to find and consume a highly palatable low-moisture supplement placed in areas of high medusahead density. A series of transects with exclosures was also established. The exclosures themselves served as attractants, confounding results. Regardless of confounding, areas along transects in supplemented areas exhibited the lowest proportion of medusahead.

Effect of Mowing

Mowing in 2007 and 2008 had positive impacts. The rancher reported that sheep and cattle concentrated on mowed areas, finding more palatable species without the medusahead thatch. The results were so positive, the rancher opted to double the area mowed.

Nutritional Evaluation

The digestibility of medusa-



The top photo demonstrates the impacts of mowing medusahead. The bottom photo shows the contrast between grazed areas, left, and ungrazed areas of medusahead.

head and goatgrass were compared with that of ryegrass and alfalfa. Medusahead and goatgrass have relatively low nutritional value and are intensely avoided, especially after awns emerge from the flag leaf sheath, meaning their impact must be evaluated on this behavioral component as well as the chemical composition.

Economic Impacts

Preliminary evaluations of economic impact show that all treatment methods (precision grazing, supplementation, and mowing) have a lower cost per acre than the forage loss caused by medusahead.

Potential Benefits

- Awareness increased about invasive species, familiarizing producers, agency personnel, consultants, and team members with phenology and growth stages of medusahead
- Grazing treatments on several ranches impacted several hundred acres

- A group was formed to share information relevant to invasive species control and other rangeland management issues

The project has reached more than 400 people through field days, presentations, ranch visits, and scientific meetings. Many of these people are extension agents, who will multiply the reach of the project through presentations to land management groups.

Work to Be Completed

- Add information to new websites for California Rangelands and Weed Research at UC Davis
- Conduct measurements, sampling, and laboratory and statistical analysis for grazing experiments conducted in Glenn and Yolo counties
- Incorporate data from 2008 into phenology model to determine time of grazing to control medusahead
- Publish information in peer-reviewed journals