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Cottonwood and Antelope Range Livestock Research Stations Unit Report

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Summary

Two research stations, the Cottonwood and Antelope Range Livestock Research Stations, are located in western South Dakota that allow research projects focused on needs of range livestock producers in that region. The stations are comprised primarily of native rangeland that is grazed by cattle at both stations, and also by sheep at Antelope. The philosophy of the research efforts has been focused on conducting applied research to solve problems and address rangeland and livestock management opportunities relevant to the livestock producers and land mangers of the region.

Introduction

Two research stations are operated by the Animal and Range Sciences Department that are used to conduct research applicable to the semiarid, rangeland environment of the West River portion of South Dakota. The Cottonwood Station, located near Philip, comprises about 2640 acres of rangeland. It is utilized for range management and beef cattle research. Besides facilities for grazing cattle research, there is also a 12-pen feedlot at Cottonwood. The Antelope Station, located near Buffalo, comprises about 8165 acres of rangeland. Livestock at this station include both sheep and cattle. Again, it is used for both range and livestock research.

Historically, these stations were operated as separate entities with each having its own cow herd. A few years ago, the two herds were merged and then the cattle were separated among the two stations by cow age. The Cottonwood Station became the location for replacement heifers and young cows to be housed. The Antelope Station became the site for the mature cows. This allowed grouping of cows that allowed research to focus on heifers, young cows, or mature cows. With all cows of a given age group combined in one location, the number of cows or heifers of the appropriate age that could be devoted to any given project was increased. This has been particularly useful for research with heifers and young cows because the number of animals in each of these groups had been too small for valid research projects when each station had a separate cow herd. The Cottonwood Station has been the ideal location for this effort because the combination of rangeland pastures and feedlot facilities has allowed the flexibility to use these young cattle in a variety of projects that required the various facilities to meet experimental objectives involving the combined nutritional demands of maintenance, reproduction, and growth that challenge the productivity of heifers and young, growing cows.

The larger numbers of mature cows in the combined herd on the ranch-scale sized area of land at the Antelope Station has allowed the ability to evaluate alternative management strategies in a total production-system setting. With the carrying capacity for 200-plus cows at this station, adequate numbers of cows can be allocated across four or more alternative management strategies and still maintain an adequate number of cows and land allocated to each treatment to be representative of livestock industry production standards and to allow adequate statistical power to compare management treatment responses. The sheep at the Antelope Station have been utilized in a similar philosophy to evaluate the influence of management alternatives in a system setting.

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Current Research Projects

Research activities conducted during 2006 at each station includes:

Cottonwood.

1. Livestock Water Quality: A project funded by NCR-SARE that focuses on methods to mitigate the toxic effects of high-sulfate water for cattle. Investigators are Pat Johnson, Roger Gates, Ken Olson, Cody Wright, and Mindy Hubert.

2. First-Calf Heifer Management: A project funded by the South Dakota Corn Utilization Council to evaluate the utilization of dried distillers grains or other byproduct feeds to meet the nutrient requirements of young, growing cows. The principal investigator is George Perry.

3. Summer by Winter Forage Production Clipping Study: A project to evaluate the response of rangeland forage production after winter grazing. The principal investigator is Sandy Smart.

4. Long-Term Range Production and Stocking Rate Study: A project that has continued for over 50 years to document differences in vegetation production and cattle gains associated with controlled stocking rates. The principal investigators are Pat Johnson, Roger Gates, Mundy Hubert, and Ken Olson.

5. Additionally, the Cottonwood Station hosts an Acid Rain Deposition Site for NOAA and a weather station for the South Dakota State Climatological Office.

Antelope:

1. Beef Cattle Systems-Effects of Early Weaning and Winter Feeding Strategy: A project funded by the Four-State Ruminant Consortium to evaluate the combined effects of weaning date (early or normal) and winter feeding strategy (limited or full) on livestock performance, rangeland forage utilization, and economic response. Investigators are Pat Johnson, Roger Gates, Ken Olson, Mary Beutler, Scott Fausti, Mindy Hubert, Sandy Smart, George Perry, and Robin Salverson.

2. Sheep Grazing to Control Sagebrush: A project to evaluate the use of sheep grazing in spring or fall to reduce the amount of sagebrush on rangeland. Investigators are Sandy Smart and Jeff Held.

3. Yellow-Flowered Alfalfa: A project funded by CSREES to evaluate the adaptation and value of yellow-flowered alfalfa for rangelands. Investigators include Roger Gates, Arvid Boe, Xu Lan, Pat Johnson, and Mindy Hubert.

4. Summer by Winter Forage Production Clipping Study: A project to evaluate the response of rangeland forage production after winter grazing. The principal investigator is Sandy Smart.

5. Additionally the Antelope Station hosts a Meteorological Monitoring Site for NOAA and a weather station for the South Dakota State Climatological Office.

In addition to these research activities, both stations have been used for Extension and teaching activities. Extension educator training has been conducted at Antelope and the Cottonwood has been used as a laboratory setting for Range 325, a course entitled Range Measurements.