Sheridan Research and Extension Center: 125 Years of Agricultural Research in Northeast Wyoming

B.A. Mealor

The University of Wyoming, in cooperation with the citizens of Sheridan County, initiated the Sheridan Agricultural Experiment Station in 1891. The primary location of the station has moved several times, but agricultural research has been continuous at the Wyarno experiment farm east of Sheridan since 1916. Thanks to cooperation from Sheridan College (SC), Whitney Benefits, and other partners, UW expanded research and outreach efforts over 2012–13 to include irrigated and non-irrigated lands immediately south of the SC campus as well as the SC Watt Regional Agriculture Center and a research greenhouse complex. Our goals today are very similar to the goals of the experiment station described in the original Bulletin No. 1 in 1891: “to acquire useful and practical information” related to agriculture and grazing, “to diffuse the same among the farmers and grazers of Wyoming,” and to hold “Farmer’s Institutes,” where “station workers can talk personally with our citizens about the experiments.”

From its inception, what is now called the Sheridan Research and Extension Center (ShREC) has focused on the development and evaluation of plant materials under local environmental conditions and on assessing how various management practices influence the performance of those plants. Very early efforts included experiments in growing wheat, oats, corn, sorghum, sugarbeets, rhubarb, fruit trees, willows, and other plant species and varieties. Over the years, ShREC has provided valuable, locally relevant, scientific information on dryland farming, vegetable and fruit production, sheep and poultry production, range improvements, ornamental horticulture, weed management, seed production and certification, and other subjects. ShREC’s current efforts reflect advanced scientific methods applied to practical challenges faced by agriculture and natural resources in three primary emphasis areas:

Horticulture

Broadly, horticultural science focuses on producing, improving, marketing, and using plants for food, ornamentation, and aesthetics. Horticultural projects at ShREC encompass this diverse array of subject areas. Developing grape cultivars suited to Wyoming’s relatively harsh climates is a difficult task, but by incorporating conventional breeding techniques with molecular biotechnology, ShREC researchers are using precision breeding in their attempt to accelerate the selection process. Research comparing vegetable production in high and low tunnels to production in unprotected areas seeks to extend the duration of time Wyoming growers can produce vegetables to meet growing demand for locally produced food. Exploration of potential new high-value crops, such as goji berry, may provide new enterprise options for diversified producers.

Figure 1. Sheridan Research and Extension Center faculty and staff, from left, Mike Albrecht, assistant farm manager; Rochelle Koltiska, office associate; Brian Mealor, director; Dan Smith, farm manager; and Sadanand Dhekney, assistant professor.

1Sheridan Research and Extension Center; 2Department of Plant Sciences.
**Forage Agronomy**

Crops grown for livestock consumption make up the majority of farming acreage in Wyoming. Optimizing those forage species' performance under various management scenarios and understanding how to best manage their persistence and productivity through time are key components to any forage production systems. Current forage research projects at ShREC focus on evaluating single-species and mixed-species forage crops for productivity and persistence in irrigated or dryland settings. In addition to comparing relative performance among species and varieties under uniform growth conditions, applied research at ShREC seeks to better understand how field management practices, such as mechanical soil disturbance or including alternative crops into rotations, affect hay production.

**Rangeland Restoration**

This diverse area of research, which includes multiple specializations, focuses on repairing ecological structure and function to rangeland ecosystems that have been degraded by various stressors: invasive plant species, mismanaged grazing, direct disturbance caused by human activities, wildfires, prolonged drought, and others. Successful rangeland restoration requires applying knowledge of biology and ecology toward impaired natural systems. In some cases, reduction or removal of invasive weeds is sufficient to initiate natural recovery of rangeland ecosystems. In other instances, more intensive restoration efforts, such as reintroducing desirable plant species, is needed. ShREC is increasing its efforts in this field with a number of projects, including ones that investigate (1) control of problematic weeds—such as cheatgrass and Canada thistle—with herbicides and non-chemical methods; (2) the contribution of genetic diversity to seeding success; and (3) the use of non-conventional methods to increase native plant materials for restoration.

**Outreach and Education**

While we emphasize the research mission of UW's College of Agriculture and Natural Resources, we actively engage in teaching and extension missions as well. ShREC-based faculty members teach formal coursework in the UW Outreach School and contribute regularly to programs at SC. Students (from junior high to Ph.D. candidates) and local producers gain firsthand experience by participating in internships, field days, and special sessions at ShREC.

**Acknowledgments**

Members of the ShREC team strive to provide a setting where researchers, students, and other partners have access to high-quality research and learning opportunities (Figure 1). Our partnerships with Whitney Benefits, SC, UW Extension, the ShREC Advisory Board, and others expand our ability to serve the needs of stakeholders in Sheridan County and north-central/northeast Wyoming.

**Contact Information**

Brian Mealor at bamealor@uwyo.edu or 307-673-2647.

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