Southern Plains LTAR, El Reno, Oklahoma

Jean L. Steiner (Laboratory Director, 405-262-5291, jean.steiner@ars.usda.gov), Sam Coleman, Jurgen Garbrecht, Patrick J. Starks

The Grazinglands Research Laboratory (GRL), www.ars.usda.gov/spa/grl, was established in 1948. Research was established in the Little Washita River Experimental Watershed (LWREW) in 1961 and in the Fort Cobb Reservoir Experimental Watershed (FCREW) 2004. The GRL mission is to develop technologies, management strategies, and tools to evaluate and manage risks and tradeoffs for integrated crop, forage, and livestock systems under variable climate, energy and market conditions.

Research is conducted at: 1) the 27 km^2 GRL which is comprised of tall grass prairie, pastures, and annual crops and forages that support beef cattle herds, 2) the 610 km^2 LWREW watershed which was established study hydrologic impacts of USDA-funded flood retarding structures, and 3) the 786 km^2 FCREW watershed that was established to quantify interactive effects of climate, land use, and agricultural conservation on environmental outcomes. The climate is continental with about 210 days in the growing season. Mean annual temperature is 15.5 C and mean annual precipitation is 848 mm. The research sites are within the Southern Plains NEON domain, the Red-Arkansas HUC 11 watershed, and the Prairie Gateway farm resource region

Research is affiliated with NP211 Water Availability and Watershed Management (2 projects), NP215 Forage, Pasture, and Rangeland Systems, and NP101 Food Animal Production

Major collaborations include:

- The Beef-Grazing USDA-AFRI-CAP (A3101) coalition: Oklahoma State University, Kansas State University, University of Oklahoma, Tarleton State University, The Samuel Roberts Noble Foundation, and USDA-ARS-Bushland.
- Long-term watershed research partners: Oklahoma Mesonet, Oklahoma Water Resources Board (OWRB), USGS, Oklahoma Conservation Commission, USDA-NRCS, EPA, US Bureau of Reclamation, and landholders in the watershed.
- Langston University, Beijing Normal University, Universidad Autónoma de Zacatecas, Joma Kenyatta University, DOI South Central Climate Science Center.

Research Emphases:

1. Productivity and resilience of forage-grazing systems, multiple marketing options
2. Agro-ecosystem impacts of climate variability and change at multiple scales
3. Environmental impacts of conservation practices