

Fort Keogh Livestock & Range Research Laboratory (FTK)

Fort Keogh is a USDA Agricultural Research Service facility with a long and interesting history. The Fort was established by Congress as an Army Cavalry post on July 22, 1876, approximately one month after the Battle of the Little Bighorn. The 100 section (64,000 acres) Fort was named after Captain Myles Keogh, an adjutant to General Custer at the Battle. The initial commander of Fort Keogh was General Nelson Miles for whom Miles City is named. The Army relinquished the land in 1922 and following the complete withdrawal of all military personnel in 1924, Congress transferred Fort Keogh to the U.S. Department of Agriculture for the purpose of conducting agricultural research. For a more detailed treatment of Fort Keogh's military history, we recommend reading Josef Warhank's unpublished California State University Master of Arts thesis entitled *Fort Keogh: Cutting Edge of a Culture*, available on our website.

The earliest research at Fort Keogh focused on animal genetics and range management. At one time the Fort maintained purebred herds/flocks of Milking Shorthorn and Hereford cattle, Rambouillet ewes, Belgian, Morgan and Thoroughbred horses, Bronze turkeys and Wiltshire Side hogs. Gradually, the sheep, horse, turkey, milk cow, and hog research was phased out, with the last to go being the hog research in 1986. Today, the animal research herd is restricted to beef cattle and includes research conducted in three broad disciplines; genetics, reproductive physiology, and nutrition. The earliest rangeland ecology and management research began in the 1930s under the direction of the U.S. Forest Service. This pioneering research focused on establishing "safe" winter and summer stocking rates for the Northern Great Plains. Today, the rangeland ecology and management research is conducted in four broad disciplines; rangeland ecology, plant ecophysiology, weed ecology, and range animal nutrition.

Fort Keogh currently consists of about 22,700 ha with about 20,600 ha of native rangeland, 1,000 ha of seeded dryland pasture, 400 ha of irrigated pasture, and 300 ha of irrigated cropland. The Fort Keogh experimental breeding cow herd consists of about 250 Line 1 Herefords, the oldest and purest line of Herefords in the world, 500 CGC's, a composite gene combination herd consisting of 50% Red Angus, 25% Tarentaise, and 25% Charolais; and about 750 mixed breed cows.

Site characteristics. Research site is located on Fort Keogh proper approximately 11 km SSW of the Miles City, MT airport, site of the local NOAA weather station (46.26 N, 105.53W, 800 m a.s.l.). Regional topography ranges from rolling hills to broken badlands with small intersecting streams that seasonally drain into large permanent rivers meandering through broad, nearly level valleys. The potential natural vegetation is a grama-needlegrass-wheatgrass (*Bouteloua-Stipa-Agropyron*) mixed grass dominant. Long-term annual precipitation averages 340 mm with about 60% received during the 150-day, mid-April to mid-September growing season. Average daily temperatures range from -10°C in January to 24°C in July with daily maximum temperatures occasionally exceeding 37°C during summer and daily minimums occasionally dropping below -40°C during winter.

Research focus. The broad mission of the Fort Keogh research program is to develop ecologically and economically sustainable range livestock production systems. Drought is an

inherent property of range/grassland ecosystems and we have been investigating the impacts of periodic drought on a wide array of abiotic and biotic variables for 13 years. Current rangeland research at Fort Keogh is focusing on quantifying the role of rangelands and management in regulating atmospheric carbon dioxide flux; identify ecological mechanisms and quantifying impact of livestock grazing on long-term sustainability; quantify role of planted forages on ecological and economic sustainability of the beef cattle industry; elucidate interaction effects of soil water & nitrogen on herbage production and plant species composition between indigenous perennial and alien annual grass species; and determine ecological effects of fire and the interactions of fire and herbivory.