**Grazinglands Research Laboratory (GRL) [USDA-ARS]**

The USDA-ARS Grazinglands Research Laboratory (GRL) was established in 1948 on a former U.S. Cavalry remount station (http://ars.usda.gov/ ). The GRL is located about 45 km west of Oklahoma City, Oklahoma within the central Rolling Red Prairie geomorphic province. The 2,711 ha of land are planted in a variety of forages including: native prairie (1,214 ha), wheat (365 ha), improved grass varieties (809 ha), and numerous experimental plots of cool and warm season perennial and annual grasses and legumes (Fig. A1-36). The most common soil types on GRL are silty-clay loams on crests and side slopes of hills that developed on the Permian-age Dog Creek shale formation. Distribution of precipitation is generally bimodal with peaks in April-May and September-October. Moderate to severe droughts are common, and can persist for several years. The frost-free growing season varies from 179 to 249 days, and averages 219 days.

The GRL is situated near the transition zone between tallgrass prairie to the east and mixed grass prairie to the west. The prevailing native vegetation is defined as southern tallgrass prairie, often reaching 1 to 3 m in height. Depending on growing conditions, 60 to 90% of annual herbaceous production is by warm season tallgrasses [big bluestem (*Andropogon gerardii*), indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*)], and the mixed grass little bluestem (*Schizachyrium scoparium*). The most-common perennial cool-season grasses include western wheatgrass (*Elymus smithii*), Canada wildrye (*Elymus canadensis*) and Scribner's panicum (*Panicum oligosanthes*). Farming within the region is largely dryland with conventional tillage practices the norm, but interest in conservation tillage is increasing.

Fig. A1-36. Developing integrated crop, forage, and livestock systems under variable climate, energy and market conditions is a focus of the Grazinglands Research Laboratory (GRL USDA-ARS) near Oklahoma City, OK. Photo: Michael Brown.

**Research focus.** The primary focus of the GRL is to control stocking rate and timing of grazing, to use complementary farmed forages to enhance livestock production, to apply prescribed spring burns to control woody species, and to control broadleaf weeds with herbicides.

**Long-term studies.** Species composition and productivity of southern tallgrass prairie vary in response to management and precipitation. As the dominant tall- and mixed- grasses decline in response to disturbance, they are replaced by less-common components of the plant community and/or invasive perennial grasses. This shift is impermanent, and species composition will generally return to a tallgrass-dominated state with increased precipitation and/or reduced grazing pressure.