**FORAGES AND PASTURES**

**PSXII-12 Heritage Raramuri Criollo Cattle Production as a Potential Strategy for Conservation of Black Grama in the Chihuahuan Desert.** Shelemia Nyamuryekung'e, Richard Estell, Darren James, Andres Cibils, Matt M. McIntosh, Sheri Spiegal, Santiago Utsumi, 1Animal and Range Science Department, New Mexico State University, 2USDA-ARS Jornada Experimental Range

Abstract: The Chihuahuan desert ecosystem has experienced a decrease in black grama (Bouteloua eriopoda), a perennial grass species with high ecological value, alongside a subsequent increase in mesquite (Prosopis glandulosa). This trend is thought to be due to several management- and environment-related factors. We compared diet selection of a heritage Raramuri Criollo (RC) vs. Angus-X-Hereford (AH) cattle, typical of the region, using fecal DNA metabarcoding conducted by a commercial laboratory to determine the proportion of black grama and mesquite in samples. RC and AH cows grazed two adjacent pastures (~1,100 ha) separately, switched at the mid-point of each period. Rectal fecal samples were collected from 10 cows/breed/pasture/period. The study was replicated across seasons (growing and dormant) for three consecutive years (240 total fecal samples) in a completely randomized design. Relative abundance of plant species was ranked over the entire study and by season. The MIXED procedure of SAS 9.4 was used to analyze the proportions of black grama and mesquite in fecal samples by breed, season, year, and all interactions. Black grama was a more important forage resource than mesquite (ranked 8 vs. 11), particularly during dormancy (ranked 3 vs. 7). When examined by breed, AH fecal samples had twice the percentage of black grama vs. RC (P< 0.05) and even more so during the dormant season (P< 0.05). In contrast, RC fecal samples tended to contain a greater percentage of mesquite (P=0.05). Adjustments for BW differences between breeds (545 vs. 350 kg mean BW for AH vs. RC respectively) suggest that AH consumed 3.09-fold more black grama while RC consumed 1.59 times more mesquite. Differences in diet composition appear to support the hypothesis that RC cattle could impose a lighter grazing pressure on black grama populations, potentially serving as a conservation management tool on Chihuahuan Desert rangelands.

**Keywords:** black grama, Criollo cattle, diet selection
**Abstract:** The protein content and nitrogen fixation capabilities of alfalfa (Medicago sativa L.) make it valuable in cropland and rangelands. However, the semi-arid Northern Great Plains climate negatively affects stand establishment and persistence. Falcata alfalfa (Medicago sativa subs. Falcata) produces adventitious shoots from roots, improving stress and drought resistance. This study compared production and forage quality for yellow-flowered falcata alfalfa (FAL) to a conventional alfalfa (var. Vernal [MSP]). Plots were established as randomized complete block design with four replications. Each cultivar was seeded in 2019 as a monoculture. In 2020, two harvests were made and sampled. Dry matter yield (DMY) and nutritive value of alfalfa were determined. Results showed first cut DMY was 4,228±361 and 3,442±720 kg/ha for the FAL and MSP, respectively. Results for forage quality for first harvest indicate that FAL alfalfa had greater (P < 0.05) ash (10.36 vs. 9.85 %), lignin (7.86 vs. 7.14 %), acid detergent fiber (ADF: 38.4 vs. 33.4%), neutral detergent fiber (NDF: 45.4 vs. 39.0 %) but less crude protein (CP; 18.7 vs. 21.2 %, DM basis), total digestible nutrients (TDN: 59.2 vs. 55.5%), non-fiber carbohydrates (NFC: 186 vs. 164), sugar (8.4 vs. 7.0 %), in vitro true dry matter digestibility after a 48-h incubation (IVTDMD48: 58.6 vs. 55.8%), compared with FAL. However, for the second harvest, DMY was 2,837±361 kg/ha for FAL, which had greater CP (20.4 vs. 19.4%), similar ADF (35.4 vs. 35.0), NDF (42.7 vs. 41.8 %), and IVTDMD48 (65.6 vs. 64.0%), but lower lignin (7.68 vs. 7.84%) and TDN (58.1 vs 58.9%) than MSP which yielded 2546 ±515 kg/ha. Falcata had greater nutritive value at second cutting and greater yield compared with Medicago but generally differed little for quality, suggesting falcata can be a viable alternative legume for Northern Plains.

**Keywords:** alfalfa, digestibility, falcata