

**Abstract citation ID: skae019.043**

**103 Goats complement cattle in a woody-plant encroached, diverse Cross Timbers range-**

**land.** Brittany A. Lippy<sup>1</sup>, Cooper Sherrill<sup>1</sup>,

Laura Goodman<sup>1</sup>, Ryan R. Reuter<sup>1</sup>, <sup>1</sup>*Oklahoma State University*

**Abstract:** Our objectives were to 1) determine diet selection of goats and cattle grazing woody plant-encroached tallgrass prairie, and, 2) determine the effect of the presence of goats on cattle diet selection. In 2019, pastures (n = 6) were allocated to 1 of 2 experimental grazing treatments. Pastures (n = 3) grazed by cattle only (crossbred Angus yearling heifers) were moderately grazed year-round at 4.2 ha per heifer. Pastures (n = 3) grazed by cattle (similar heifers) and goats (Boer x Spanish crossbred mature does) were moderately grazed year-round at 4.7 ha per heifer and 2.3 ha per goat simultaneously. Each pasture was burned in 6 patches (2 patches per year) to facilitate range management objectives. Every 35 d from May 2022 until June 2023, fecal samples were collected from all animals and stored frozen and later composited into 2 composites per animal species per pasture. Composites were then analyzed by a commercial lab with DNA barcoding and high-throughput sequencing. For statistical analysis, the top 50 Exact Sequence Variants (ESVs), representing species of forage, across all treatments were used for analysis. Each ESV was georeferenced to eliminate plants that did not grow in the study area, and assigned to a representative functional group: graminoid, forb, legume, and woody plant. Analysis of variance and Tukey's post-hoc separation of estimated marginal means were performed to assess the effects of season, grazer species, and the interaction. The interaction of season and grazer species was significant ( $P < 0.01$ ) for the percentage of diet selected from each functional group of plants. As expected, goats selected a greater percentage of their diet as woody plants in summer (57%) and winter (74%) compared with cattle (27%). Cattle selected more grass in winter (34%) than goats (11%). Goats selected more forbs in spring (33%) than cattle (10%). However, goats selected a lesser percentage of their diet as legumes in summer (16%) than cattle (58%), which was unexpected. Overall, these results indicate that both species of grazers select a diverse diet from these diverse pastures, and selection is dynamic over time. Goat presence in a pasture does not seem to drastically alter cattle selection, actually complementing cattle in these pastures where goats can be used to target species cattle do not prefer.

**Keywords:** cattle, goats, grazing

