

378. SEASONAL VARIABILITY IN DIET SELECTION BY SHEEP GRAZING AT THE SEMI-ARID RANGELANDS OF THE KORDOFAN REGION OF SUDAN. Mohammed M. Abdelkreim\*, Babo M. FADLALLA; college of forestry and range science, khartoum, Sudan

#### ABSTRACT

This study was conducted at El- khuwei Locality, Kordofan region, Sudan. Two sites were selected, El-Rosa enclosure and a control in the open area nearby. This study investigated seasonal variability in diets selection by sheep grazing. Vegetation measurements were conducted and botanical composition of the diet selected by sheep was determined using the bite count technique. Moreover, voluntary feed intake was assessed using the product of the quantity of feces collected over a specific period of time and in vitro digestion coefficient of forage plants selected by sheep. During the flowering season, plants with highest relative preference index (RPI) in the enclosure were *Zornia* spp. (12.9), *Merremia* spp. (12.6) and *Desmodium* spp. (2.0). In the open range the plants with highest (RPI) were *Desmodium* spp. (15.9), *Ipomea eriocapa* (15.7) and *Echniochloa colinum* (5.1). The most important plants selected by sheep at the seed set stage within the enclosure as indicated by RPI were *Ceratotheca* spp. (22.4), *Zornia* spp. (2.1), *Desmodium* spp., and *Eragrostis tremula* (1.7). In the open range the plants with highest RPI were *Desmodium* spp. (10.4), *Zornia* spp. (6.5) and *Ipomea eriocapa* (2.5). The crude protein (CP%) of biomass at flowering stage within the enclosure was 10.9%. That of the simulated diet at the same time was 15.3%. In the open range CP% of biomass was 10%. That of the simulated diet at the same time was 11.9%. Individual herbaceous plants found to contain high CP% were *Acanthus* spp. (18.4%), *Zornia* spp. (16.6%) and *Desmodium* spp. (16.6%). Sheep can select a diet superior to the average quality of the vegetation. The most preferred plants by sheep in this study were *Desmodium dichotomum*, *Zornia* spp., and *Ceratotheca* spp.

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379. DO MOVEMENT PATTERNS OF GPS-TRACKED CATTLE ON EXTENSIVE RANGELAND PASTURES SUGGEST INDEPENDENCE AMONG INDIVIDUALS? Mitch Stephenson\*, Derek W. Bailey, Adrienne Lipka, Steven Lunt; New Mexico State University, Las Cruces, NM

#### ABSTRACT

In grazing behavior studies, livestock within the same pasture usually are not considered as independent experimental units because of potential social interactions among individuals. However, treating individual animals as independent experimental units in extensive rangeland pastures may be useful for some experimental designs. The objective of this study was to evaluate the association patterns among Global Positioning System (GPS) tracked cattle grazing at 6 different study sites in the western United States. Association among 11 to 17 GPS-tracked cows grazing in herds ranging from 37 to 250 cows were analyzed over 33 to 90 d periods

using the computer program ASSOC1. Half-Weight Index (HWI) association values were calculated for each pair of GPS-tracked cows (i.e., dyad) at each study site to determine the proportion of time cattle were within 75 m and 500 m from each other. Cattle at 2 study sites exhibited relatively low mean HWI-association values (i.e. less than 0.23 HWI at 500 m); whereas, associations at the other study sites tended to have greater mean HWI associations (i.e., greater than 0.35 HWI at 500 m). Distinguishing features between study sites that had low and high association values were management of cattle prior to the study, herd size, pasture size, and number of watering points. At 5 of the 6 study sites, at least 75 % of all dyads had HWI association values less than 0.5 at 500 m, indicating that most of the GPS-tracked cows were greater than 500 m from each other for over 50 % of tracking period. While interactions among cattle in the same pasture are often inevitable, movement patterns of a sub-set of individual GPS-tracked cows grazing in extensive pastures may have levels of independence sufficient to be considered as individual experimental units under some situations.

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380. TARGETED SHEEP GRAZING IN AGRICULTURAL ECOSYSTEMS: EFFECTS ON COVER CROP, WINTER WHEAT, AND SHEEP GAINS. Jasmine K. Westbrook\*, Craig Carr, Patrick Hatfield, Perry Miller, Fabian Menalled; Montana State University, Bozeman, MT

#### ABSTRACT

Targeted sheep grazing has been proposed as an alternative to conventional cover crop management. This study assessed the use of targeted sheep grazing to terminate a field pea (*Pisium sativum*) cover crop as part of a rotational winter wheat production system. Rambouillet yearlings grazed the cover crop for 32 days during summer 2013 either in rotational or continuous grazing systems. The effects on cover crop termination, sheep live weight gains, and subsequent winter wheat emergence and yield were quantified. Sheep grazing was compared with tillage and chemical termination methods. Sheep grazing was the most effective termination method using post-treatment plant cover (77% dead pea, 1% live pea, 22% bare ground), then tilled (60% dead pea, 5% live pea, 35% bare ground) and chemically treated (18% dead pea, 73% live pea, 9% bare ground) plots. Cover comparisons among treatments were significantly different ( $p < 0.05$ ) except percent live pea cover between grazing and tillage. Average daily gains (ADGs) did not differ between grazing treatments with sheep exhibiting ADGs of 0.40 lbs day<sup>-1</sup> and 0.34 lbs day<sup>-1</sup>, for rotational and continuous treatments, respectively ( $p = 0.117$ ). Winter wheat seedling emergence post grazing was higher under the continuous grazing treatment ( $p = 0.0172$ ). However, there was no difference in wheat yield ( $p = 0.914$ ). Winter wheat yield did not differ between grazed and chemical termination (84.9 bu ac<sup>-1</sup> and 85.9 bu ac<sup>-1</sup> respectively), but was lower in tilled plots with 74.4 bu ac<sup>-1</sup> ( $p = 0.0144$ ). Results indicate that targeted grazing is a viable method of cover crop termination.