

372. SCHINUS TEREBINTHIFOLIUS AND INDIGOFERA SUFFRUTICOSA POTENTIAL FOR REDUCING INTERNAL PARASITES IN GOATS. Matthew Stevenson*; University of Hawaii at Manoa, Lihue, HI

ABSTRACT

Parasite resistance to anthelmintic drugs is a growing problem, especially in small ruminant operations in the tropics, leading to dramatically reduced profitability. Range goats readily eat both *Schinus terebinthifolius* and *Indigofera suffruticosa*, and some Hawaii ranchers have identified these tropical plants as potentially having anthelmintic properties. Twenty-four variously crossed 6-7 month old goats averaging 18kg were randomly assigned to one of three groups: *S. terebinthifolius* supplement (SS), *I. suffruticosa* supplement (IS), and a control with a grass supplement (C). Parasite loads were estimated by fecal egg count on Day 1, Day 7, and Day 14 of the trial. Treatment feeds were cut and stored in a refrigerator for no more than 48-hours prior to offering. Goats were penned by treatment overnight then given access to supplements at 8:00 for two hours. Goats were then released to graze freely in grass dominated pasture. At 18:00 each day, goats were again penned overnight with access to water only. Owing to low intake rates of treatment supplements, starting on Day 8 goats were put in separate paddocks by group and allowed access to supplements all day. Intake increased but remained low overall. All groups maintained higher than 1,000 eggs per gram (EPG) during the trial, a level considered to require treatment with anthelmintics. Average EPG did not show a significant trend in any group. While not statistically significant, SS showed a decrease in average EPG from 3,800 to 1,600. Individuals varied greatly in both their supplement intake and EPG, and in the case of SS the two may be correlated. After attempting to determine the cause of poor intake of otherwise readily eaten forages, this study will be repeated with particular attention to *S. terebinthifolius* and with individual feeding stations to estimate dose responses in any effects.

373. DROUGHT MANAGEMENT TOOLS FOR HAWAIIAN RANGELANDS. Mark Thorne*¹, Glen Fukumoto², Matthew Stevenson³, Melelani Abran⁴; ¹University of Hawaii - Manoa, Kamuela, HI, ²University of Hawaii at Manoa, Kealahou, HI, ³University of Hawaii at Manoa, Lihue, HI, ⁴University of Hawaii-Manoa, Kamuela, HI

ABSTRACT

Sustainable livestock production is dependent on reliable forage resources that maintain animal health and fecundity. Temporal and spatial variation in forage production in most range systems is closely linked to the timing and amount of precipitation. Livestock producers often make grazing management decisions based on their knowledge of past or average forage production levels with little certainty that sufficient precipitation will fall in time to produce what is anticipated. The cumulative effects of inaccurate grazing management decisions are loss in soil fertility, increased rates of soil

erosion, and establishment of weeds. Research has linked global precipitation patterns with the occurrence of grass, shrub, and forested lands and provided regression functions relating Aboveground Net Primary Production (ANPP) with Mean Annual Precipitation (MAP). These tools are sometimes used to understand the impacts of drought on forage production for a given land unit. However, these globally derived functions are of limited use for making management decisions as they cannot account for temporal and spatial precipitation patterns that also influence forage production. Managers faced with difficult decisions can be more proactive with the development and use of indexes that account for locally derived variations in precipitation and primary production. This presentation will highlight the research and development of the Hawaii Rainfall and Forage Production Index that is used for forecasting forage production and suitable stocking rates, drought planning and mitigation, and development of prescribed grazing standards.

374. EFFECT OF TERRAIN HETEROGENEITY ON FEEDING SITE SELECTION AND LIVESTOCK MOVEMENT PATTERNS. Derek W. Bailey*¹, Mitch Stephenson¹, Marco Pittarello²; ¹New Mexico State University, Las Cruces, NM, ²University of Torino, Grugliasco, Italy

ABSTRACT

Feeding site selection is a critical part of livestock foraging that can constrain and/or increase choices available during diet selection. When livestock choose new feeding sites, vegetation and nutrient profiles can differ from previously visited sites. The objective of this study was to evaluate how terrain and corresponding heterogeneity may affect cattle feeding site selection patterns. Grazing patterns of mature cows were evaluated on 6 ranches located in Arizona, Montana and New Mexico. Eleven to 19 cows were tracked for 1 to 3 months at each ranch using global positioning system (GPS) collars. Positions were recorded at 10 or 15 minute intervals and used to identify where cows grazed during the early morning (0500 to 1000 hours). Pastures (336 to 9740 ha) at each ranch were divided into 7 to 9 sections (48 to 1082 ha) as an indicator of feeding sites. Classification was based on cattle density and topographical and vegetation types. Sequences of selected sections were evaluated using transition matrices. For all ranches, the sequence of section selection differed from what would be expected by chance indicating that the section selected on the following day depended on the section selected on the previous day. For ranches with relatively gentle terrain, cattle selected a different feeding site each day for about 70% of the tracking period. In contrast, cows at the ranch with the most diverse terrain stayed in the same feeding site for over 10 successive days for 42% of the tracking period. Smaller pastures with only mountainous terrain were intermediate. Cows grazing gentle topography alternate among feeding sites (sections in this study) more frequently than cows grazing in pastures with more rugged topography. This pattern could potentially help livestock mix forages and select a more diverse diet.