

1892 Environmental factors affecting the racing time of Quarter Horses in Brazil. Marcilio Mota and Rodrigo Taveira*, *Unesp Universidade Estadual Paulista.*

The aim of this paper was to study the environmental factors affecting the racing time of Quarter Horses which participated in races held in Sorocaba and Ribeirao Preto racetracks, Sao Paulo state, Brazil. The data consisted of 4684 performances evaluated based on the 1428 animals final time (630 females and 798 males) that have run from 1983 to 1997. The analytical methods involved the GLM procedure of the Statistical Analysis System, SAS (1996). Age of animals (2,3,4 e >4 Years), jockey's weight (44-62 Kg), race year (1983-1997), sex (male, female), origin (national, imported), racetracks (Sorocaba and Ribeirao Preto) and distance (301,320, 365,402 and 503 meters) were the fixed effects considered in the linear model. Racetrack and origin have presented no significant effects (p>0,05). Animal age equal or over 4 years old and

jockey's weight at 59 Kg were the fastest (p<0,001), while those at 2 years old and jockeys at 62 Kg have shown the worst performances. Males and females had no significant difference (p>0,05). The linear regression of the time on the race year has pointed out an animal decrease annual next to 0,16 second, about 2 seconds in the studied period. The decrease occurred, may be, in part, due to improvements in veterinary, nutritional and training features as well as gains obtained by selection. The quadratic regression of the time on distance ($y = -0,077 + 0,0617X - 11E-6X^2$) has shown that when the 402 and 301 distances (101 meters difference) have been compared, a 0,31 m/s increase in the animal speed has occurred (17,51 m/s and 17,2 m/s respectively). In the same way when 503 and 402 distances have been compared (also 101 m difference), a lightly higher increase in the 0,34 m/s speed has been observed.

Key Words: Quarter Horse, race, time

ASAS/ADSA Forages and Pastures: Grazing and Alternative Forages

1893 Growth performance of stocker calves backgrounded on sod-seeded winter annuals or hay and grain. K. P. Coffey*¹, W. K. Coblenz¹, T. G. Montgomery², J. D. Shockey², K. J. Bryant², P. B. Francis², and C. F. Rosenkrans, Jr.¹, ¹University of Arkansas, Fayetteville, AR, USA, ²Univ. of Ar. SE Research and Extension Center, Monticello, AR, USA.

Winter annual forages have the potential to provide a lower-cost, rapid-gain option for retaining ownership of fall-weaned calves. A study was conducted during the winters of 1998, 1999, and 2000 using 180 crossbred calves (261 kg BW) to compare winter backgrounding programs in southeastern Arkansas. Calves were fed bermudagrass hay (ad libitum) and a grain sorghum-based supplement (1% of BW) in drylot (HS) or were grazed on pastures of bermudagrass/dallisgrass overseeded with 1) annual ryegrass (RG), 2) wheat and RG (WRG), or 3) rye and RG (RRG). Calves grazed from mid-December until mid-April, but were fed hay during times of low available forage. During the first two years, calves fed HS gained less (P < 0.05) BW (73.2 kg) than calves that grazed winter annual forages (113.9 kg); gains did not differ (P > 0.10) among RG, RRG, and WRG (121.4, 111.3, and 109.0 kg, respectively). During the third year, undesirable environmental conditions limited growth of the winter annual forages; total gain did not differ (P > 0.10) among the four treatments (65.7, 58.3, 57.0, and 55.0 kg for HS, RG, RRG, and WRG, respectively). Mean CP and IVDMD concentrations were 19.0 and 71.1%, respectively across sampling dates and winter annual forages, but three-way interactions among forage treatments, year, and sampling date were detected (P < 0.01) for available forage, and concentrations of CP, NDF, and IVDMD. Available forage did not differ (P > 0.10) among RG, RRG, or WRG on any sampling date. The IVDMD of RRG was greater (P < 0.05) than that of RG in the 1999. A treatment by sampling date interaction was detected for forage CP in 1998 (P < 0.05) and 1999 (P = 0.05) but not in 2000 (P > 0.10). Winter annual forages offer potential to provide high quality forage for calves retained until spring, but consistent forage production is a concern when sod-seeding techniques are used.

Key Words: Stocker cattle, Winter annuals, Forage quality

1894 Steer grazing behavior on endophyte-free, toxic endophyte-infected, and non-toxic endophyte-infected (Max QTM) tall fescue. J. A. Bondurant*, M. A. McCann, J. S. McCann, J. H. Bouton, C. S. Hoveland, R. H. Watson, and J. G. Andrae, *The University of Georgia, Athens, GA.*

Fescue toxicosis decreases grazing time and depresses performance in cattle as they alter grazing behavior to cope with the toxicosis. In an attempt to capitalize on improved animal performance and health as well as agronomic benefits, non-toxic endophytes that enhance plant persistence have been inserted into tall fescue. The objectives of the present study were to assess grazing behavior in stocker steers grazing non-toxic endophyte-infected (MaxQTM) Jesup tall fescue versus endophyte-free (EF) and toxic endophyte-infected (EI) Jesup tall fescue. Hereford steers weighing approximately 270 kg were stocked at 3.71 hd/ha on replicated (n=2) .809-ha tall fescue paddocks at the Central GA Branch Station for 69 days commencing October 11, 2000. Computerized grazing behavior recorders and jaw movement sensors were fitted to 12 steers for two 5-d collection periods from October 11-16

and December 4-9. Jaw movement data was collected for a minimum of 20 h/hd/d and was analyzed with GRAZETM software. Mean available forage was approximately 3100 kg DM/ha. Steers on all treatments spent less (P<.05) time grazing, a similar (P>.05) amount of time ruminating, and more (P<.05) time in other activities in October. Numbers of grass boli swallowed/h were not different (P>.05) among treatments or periods. Fewer (P<.05) mastications/h and fewer (P<.05) prehensions/h were observed during October versus December. In addition to the period differences, treatments affected grazing behavior. On the toxic EI paddocks, steers had more (P<.05) mastications/h than the cattle on the EF and MaxQTM treatments during October. In December the number of prehensions/h were lower (P<.05) on the toxic EI paddocks. Time spent neither grazing nor ruminating was lower for cattle on MaxQTM paddocks in December than for cattle on toxic EI or EF treatments. Data from two cool-season periods demonstrates no adverse effects of MaxQTM tall fescue on steer grazing behavior.

Key Words: grazing behavior, tall fescue, MaxQTM

1895 Use of *Ascophyllum nodosum* for alleviation of fescue toxicosis in cattle. J.E. Williams*¹, A. Rodriguez², E. Navarro¹, and D.P. Colling³, ¹University of Missouri, Columbia, MO, ²University of Puerto Rico, Mayaguez, PR, ³Land O'Lakes Farmland Feed, Kansas City, MO.

Cattle grazing endophyte-infected tall fescue (EIF) sprayed with seaweed extract *Ascophyllum nodosum* show reduced fescue toxicosis and improved immune function as compared to untreated animals. In order to evaluate the impact of Tascotm seaweed extract (SWE) and Tascotm seaweed meal (SWM) on fescue toxicosis, a feedlot study was conducted with measures of ADG, DM intake, rectal temperature, and respiration rate. Eighty continental crossbred yearling steers (avg. 291 kg) were assigned to one of four treatments (5 pens per treatment and 4 steers per pen): 1) endophyte-free tall fescue (EFF) seed; 2) EIF seed; 3) EIF seed + 2.0 % SWM; 4) EIF seed + 0.5 % SWE. The EIF seed provided 10 ug ergovaline / kg BW. The EFF seed, EIF seed, and EIF seed with SWE or SWM were fed daily prior to the morning feeding. The SWE and SWM were fed from 0 to 14 d, while the EFF seed and EIF seed were fed from 0 to 42 d. The diet consisted of cottonseed hulls and cracked corn based diet to provide 0.92 Mcal/ kg Neg and 11.2 % CP. Rectal temperatures were recorded 7 times while respiration rates were recorded 13 times throughout the 42 d study. The air temperature (Ta) and % relative humidity (RH) were recorded continuously. During 0 to 14 d, the average Ta was 27.1 C and RH was 71%; for d 14 to 42, the Ta was 27.5 C and RH was 66.7%. During the first 14 d and 14 to 42 d period, respiration rates were not affected (P > 0.30) by treatment. During the first 14 d period, there was a treatment X time (P = 0.10) interaction for respiration rates. Rectal temperature was not affected (P > 0.50) by treatment for either period. ADG, DM intake, and feed / gain ratio were not affected (P > 0.40) by treatment. The moderate Ta conditions were responsible for the lack of an effect of SWE and SWM on reducing respiration rates and rectal temperatures in cattle. Additional studies are warranted to determine the effects of SWE and SWM on reducing signs of fescue toxicosis in cattle.

Key Words: Heat stress, Cattle, Seaweed

1896 The effects of grazing a brown midrib vs a conventional sorghum x sudan hybrid on animal performance and gain/ha. J. B. Banta*, F. T. McCollum, III, and L. W. Greene, *Texas A & M University System, Amarillo.*

Abstract: An experiment was conducted to determine animal performance and gain/ha of beef steers (mean initial wt.: 241 kg) grazing a conventional sorghum x sudan hybrid (C) versus its near isogenic brown midrib (BMR) variety. The experiment was conducted during the summers of 1999 and 2000 in the Texas Panhandle. During both summers 8 pasture plots (2.2 ha) were blocked by location and randomly assigned either C or BMR. Fertilization and irrigation were similar for both varieties. Data were analyzed using a model containing year, block, forage type, and year by forage type. The interactions were not significant. Pastures were grazed using put and take stocking for an average of 41 and 58.5 d at an average stocking rate of 6.71 and 5.10 head/ha for years 1999 and 2000, respectively. Head d/ha, gain/ha, and ADG were determined. Steers grazing BMR tended ($P = .0651$) to gain more rapidly (1.33 kg/d) than steers grazing the C hybrid (1.19 kg/d). Gain/ha (361.5 kg, $P = .12$) and head d/ha (286.9, $P = .98$) were not different. BMR varieties are known for less lignin content, which should result in improved digestibility and thus increased ADG.

Key Words: Beef Cattle, Forage, Digestibility

1897 Use of temperature data loggers to measure body temperature in cows grazing toxic or non-toxic tall fescue. R.H. Watson*, M.A. McCann, J.A. Bondurant, J.G. Andrae, and L.L. Hawkins, *The University of Georgia, Athens, GA.*

Cattle grazing toxic tall fescue often suffer from thermoregulatory dysfunction. Elevated body temperature (BT) is often used as an indication of fescue toxicosis. To better understand the affect of grazing toxic tall fescue on BT, it is necessary to take multiple diurnal measurements while the animal is grazing, which is not possible using hand-held thermometers. Cattle ($n=10$) were randomly selected from herds grazing either toxic or non-toxic tall fescue. Equipment consisted of a temperature data logger (TDL) with 61-cm thermistor cable, housed in a plastic case. A halter was placed on the animal with the TDL attached to the neck strap so that the subcase sat comfortably behind the poll. The thermocouple end of the thermistor was coated with anti-biotic ointment and inserted into the ear canal until it met resistance at a 45° turn near the tympanic membrane. A foam block was molded into the outer ear to hold the cable in place, and insulate the ear canal from the external environment. The ear was wrapped in vet-wrap and elastic tape to secure the foam block. The TDL was programmed to record BT every 15 minutes. After 14 grazing days, the TDL was removed and the data downloaded onto computer. Rectal temperature was recorded at 1200h on the last day of grazing by hand-held thermometer. BT was significantly different between cattle grazing toxic and non-toxic fescue only when environmental temperatures were high ($>23^{\circ}\text{C}$) or low ($<12^{\circ}\text{C}$). There was no significant difference in rectal temperature between toxic and non-toxic cattle (39.4°C and 39.2°C respectively). TDL results showed that BT in cattle grazing toxic fescue is influenced by environmental temperature. The TDL method allowed measurement of BT in grazing animals across a range of environmental conditions, and sampling times.

recorded	Environmental Temp. recorded ($^{\circ}\text{C}$)	Body Temp. ($^{\circ}\text{C}$)	
		Toxic	Non-toxic
0600	9.9	38.2 ^a	38.7 ^b
1200	23.4	38.7	38.9
1800	25.5	40.2 ^a	39.6 ^b
2400	14.7	39.1	38.9

^{a,b}Mean body temperatures in a row are different ($P < .05$)

Key Words: Temperature data logger, Toxic tall fescue, Grazing cattle

1898 Effects on forage quality and animal performance of steers grazing smooth brome pastures interseeded with legumes. M. D. Ullerich*, B. E. Anderson, T. J. Klopfenstein, and M. A. Trammell, *University of Nebraska-Lincoln.*

A trial was conducted to evaluate the effects of interseeding legumes into smooth brome (*Bromus inermis*) pastures on animal performance and forage quality compared to a smooth brome control. Forty-eight

steers (254 ± 16 kg BW) were assigned randomly to one of four treatments consisting of smooth brome pastures interseeded with 1) alfalfa (ALF; *Medicago sativa*), 2) birdsfoot trefoil (BFT; *Lotus corniculatus*), 3) kura clover (KC; *Trifolium ambiguum*), or 4) fertilized with 56 kg N/ha (CON). Steers rotationally grazed during four 36-day periods (May 2 to September 22). In addition, four ruminally fistulated steers were assigned to one of the four treatments in a 4 x 4 Latin square design. Diet and omasal samples were collected. Forage diet samples contained (DM basis) 62.1% in vitro digestible dry matter (IVDMD), 16.80% CP, and 1.48% undegradable intake protein (UIP; % DM) for ALF; 62.9% IVDMD, 16.30% CP, and 1.45% UIP for BFT; 70.8% IVDMD, 17.40% CP, and 1.46% UIP for KC; and 62.6% IVDMD, 16.10% CP, and 1.39% UIP for CON. The UIP contents of the diets across treatments were not statistically different. Undegradable intake protein content of omasal samples were similar to diet samples. Animal gains on legume/brome treatments were higher ($P < .05$) than the control (0.89 kg/d vs. 0.78 kg/d) with KC gaining the most (0.93 kg/d). The IVDMD were higher ($P < .10$) for the legume/brome treatments than the control with KC being the most digestible. Therefore, the increases in gain may be attributed to the increased energy of the legume/grass diets and not a protein (UIP) response when compared to a smooth brome control.

Key Words: Undegradable Intake Protein, Grazing Cattle, Legumes

1899 Tall fescue based forage systems for developing beef replacement heifers. J.C. Waller*¹, F.N. Schrick¹, M.C. Dixon³, A.E. Fisher¹, A.M. Saxton¹, and H.A. Fribourg², ¹Department of Animal Science, University of Tennessee, ²Department of Plant and Soil Sciences, University of Tennessee, ³Ames Plantation, Grand Junction, TN.

Effects of *Neotyphodium coenophialum* infested (E+) tall fescue (*Festuca arundinacea*) based forage systems on heifer growth and reproductive competence were evaluated. Each year, 36 fall-born heifers were weaned in mid-June and randomly allotted to one of four triplicate pasture treatments: (1) E+ tall fescue; (2) E+ tall fescue with ladino white (*Trifolium repens*) and red clover (*T. pratense*); (3) endophyte free (E-) tall fescue; (4) E- tall fescue with clovers. Each 1.2 ha pasture was stocked with 3 heifers. Weaned heifers grazed from mid-June to mid-November. All heifers were removed from experimental pastures, estrus was synchronized, bred artificially, and exposed to a bull. At 30 and 60 d after insemination, pregnancy was diagnosed by ultrasonography. Bred heifers were re-allotted to the same pasture treatment grazed as weaned heifers. Grazing occurred from early March until the end of calving season in December. A mixed model (SAS) blocked on year (1995-2000) was used to test fescue, clover, calf sex, and weaned/bred fixed effects. Quadratic regression for repeated measures over weigh dates was used to estimate average daily gain (ADG). Heifers (weaned and bred) grazing E- tall fescue had higher ($P < 0.05$) ADG than heifers grazing E+ tall fescue, 0.59 and 0.46 kg d⁻¹ respectively. The presence of clover improved ($P = 0.05$) performance of heifers grazing E+ and E- tall fescue. Once confirmed pregnant, no differences in fetal losses of heifers grazing either E+ or E- tall fescue were observed. Calf birth weight was lower ($P < 0.05$) when dams grazed E+ tall fescue than when dams grazed E- tall fescue, 24.5 and 31.7 kg, respectively. Bull calves weighed more ($P < 0.05$) than heifer calves at birth on E+ and E- tall fescue systems. The difference in calf birth weight may be explained by decreased ADG of bred heifers grazing E+ tall fescue.

Key Words: tall fescue, replacement heifers, *Neotyphodium*

1900 Effect of grain supplementation on methane production of grazing steers. D. A. Boadi*¹, K. M. Wittenberg¹, and W. P. McCaughey², ¹University of Manitoba, Winnipeg, Manitoba Canada, ²Agriculture and Agri-Food Canada, Brandon, Manitoba Canada.

The objective of the study was to examine the effects of supplemental grain on methane (CH₄) production of grazing steers. Eight beef steers (344.6 ± 6.4 kg) were assigned to legume- grass pastures (CON; $n = 4$) or legume-grass pastures and a rolled barley supplement (SUP; $n = 4$). In a completely randomized design with repeated measures, CH₄ production was measured for 2-24 hr periods using the SF₆ tracer gas technique as steers entered and exited paddocks. Two, 4 and 4 kg of rolled barley was fed to SUP steers during the Early (June 17-25 1998), Mid (July 20-29 1998) and Late (Aug. 12-21 1998) period of the grazing season, respectively. Supplementation reduced forage DMI by 11%

($P = 0.03$), and increased total digestible OMI (TDOMI) by 20% ($P = 0.001$) of SUP steers. Daily CH_4 production was similar for CON ($310.5 \pm 25.9 \text{ Ld}^{-1}$) and SUP ($331.2 \pm 24.6 \text{ Ld}^{-1}$) steers ($P = 0.58$). Methane, % of total gross energy intake (TGEI) ranged from 4.7 to 8.4% (mean $6.5 \pm 0.3\%$) during the grazing season, and there was no difference between SUP (6.4 \pm 0.6%) and CON (6.7 \pm 0.6%) steers ($P = 0.71$). There was a diet \times period interaction in the grazing season ($P < 0.05$), where (LCH_4 , $\text{kg}^{-1}\text{TDOMI}$) was lowered by 29% with grain supplementation only during the Mid period ($P < 0.05$). The lower (CH_4) loss observed during the Mid period was however 38% lower ($P < 0.05$) than losses occurring during the Early period without supplementation. It can be concluded that there were marginal effects of supplementation on CH_4 production and the study implies that pasture quality plays a major role on the extent to which CH_4 production can be lowered with grain supplementation in grazing animals.

Key Words: Methane production, Grazing steers, Grain supplementation

1901 Effect of infusing protein post-rotationally and graded levels of ruminally available protein on the utilization of low-quality prairie hay by beef steers. T. A. Wickersham*, R. C. Cochran, E. C. Titgemeyer, C. G. Farmer, E. A. Klevesahl, and J. I. Arroquo, *Kansas State University, Manhattan.*

An experiment was conducted to evaluate the effect of infusing post-ruminal protein (P) with graded levels of supplemental ruminally available protein (R) on low-quality prairie hay utilization. Twelve ruminally fistulated steers (BW = 361 kg) were used in a 12-treatment, 2-period, crossover design. Steers were subjected to a 17-d depletion period (ad libitum access to hay only) before onset of the trial. Each period had 5 intervals: 1) 10-d adaptation to treatments; 2) 7-d measurement of intake and digestibility; 3) 3-d ruminal sampling; 4) 10-d ad libitum access to hay only; 5) 7-d measurement of intake. Steers were given ad libitum access to prairie hay and supplemented in a 2×6 factorial arrangement of treatments. For the first factor, steers were abomasally infused once daily with one of two levels of sodium caseinate (0 and 0.087% of initial BW; P) via anchored infusion lines into the abomasum. For the second factor, steers were ruminally dosed once daily with one of six levels of sodium caseinate powder (0, 0.029, 0.058, 0.087, 0.116, and 0.145% of initial BW; R). Provision of R linearly increased total OM intake, total digestible OM intake (TDOMI), and OM digestibility ($P \leq 0.03$). Infusion of P increased hay OM intake ($P = 0.06$). Additionally, P increased total OM intake, TDOMI, and OM digestibility ($P \leq 0.01$). In the absence of supplemental R, P-supplemented steers consumed 50% more TDOMI than those receiving no P. However, as R supplementation increased the additional benefit from P decreased. Addition of P at 0.087% of BW with no R increased TDOMI 65% as much as R at the same level. In conclusion, both R and P improved forage utilization; however, the response to direct ruminal protein provision was greater. Improvements in forage utilization in response to P are likely dependent on N recycling.

Key Words: Beef Cattle, Forage, Protein

1902 Soybean genotypes for grain and stover in smallholder crop-livestock systems in West Africa. Asamoah Larbi*¹, Baffour Asafo-Adjei², Olayinka Yusuf³, and Adekunle Isiaka⁴, ^{1,3}*International Livestock Research Institute (ILRI), West Africa, Ibadan, Nigeria*, ²*International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria*, ⁴*Federal University of Agriculture, Abeokuta, Nigeria.*

Soybean (*Glycine max* (L) Merrill) stover has potential as feed for ruminants, but information on feed value of the stover is limited in sub-Saharan Africa where production is expanding, crop residues are important dry season livestock feed, and source of income. The extent of variation in grain and stover yields and stover quality among 19 early-, 20 medium- and 20 late-maturing soybean genotypes was determined, and genotypes with potential for higher grain and quality stover yields were identified. Stover and grain yields, and stover quality (crude protein, neutral detergent fibre and 48-hour dry matter disappearance) varied ($P < 0.01$) among genotypes for all maturity types. Grain and stover yields were positively correlated (early: $r = 0.79$, medium, $r = 0.85$; late, $r = 0.78$). Genotypes (early: TGX 1878-30E, TGX 1880-3E; medium: TGX 1873-6E, TGX 1869-14E; late TGX 1869-13E, TGX 1440E) with potential for higher yields of both grain and stover, and better stover

quality were identified based on the agronomic and stover quality attributes. The results suggest that stover and grain yield characteristics can be combined in breeding programs to select dual-purpose genotypes for smallholder crop-livestock systems in the northern Guinea savanna zone of west and central Africa.

Key Words: Soybean, Stover and Grain, Stover quality

1903 Yield and fodder quality of dual-purpose groundnut genotypes fed to West African Dwarf sheep. I. Etela¹, A. Larbi*², P.E. Olorunju³, D.D. Dung⁴, and U.I. Oji⁵, ¹*Department of Animal Science, University of Benin, Benin City, Nigeria*, ²*International Livestock Research Institute (ILRI), Ibadan, Nigeria*, ³*Institute of Agricultural Research, Samaru, Nigeria*, ⁴*National Animal Production Research Institute, Shika, Nigeria*, ⁵*Department of Animal Science, University of Science and Technology, Port Harcourt, Nigeria.*

Smallholder farmers in the subhumid zone of West and Central Africa grow groundnut (*Arachis hypogaea* L.) for both seed for humans and fodder for livestock. Genotypes with potential for higher grain and quality fodder yields (dual-purpose genotypes) have recently been selected for smallholder crop-livestock systems in the region, but data on the fodder quality of the dual-purpose genotypes in terms of animal output is scanty. The objective of this study was to compare fodder and seed yields and fodder quality of six dual-purpose genotypes (M170-80I; M554-76; M572-80I; RMP-12; UGA-2; UGA-5). Fodder and seed yields were determined over a 2-year period. Sun-dried fodder of the genotypes was fed as a sole diet to West African Dwarf sheep using a randomized block design with six animals per genotype to determine nutrient intake and digestibility, nitrogen balance, and daily weight changes. Genotype had significant ($P < 0.05$) effect on fodder and seed yields, fodder crude protein (85 - 89 g/kg), neutral detergent fiber (519 - 586 g/kg), lignin (105 - 148 g/kg) concentrations, dry matter (DM) intake (range: 65 - 80 g/kg BW), DM digestibility (33 - 50 g/kg), nitrogen retention (1.2 - 4.3 g/day), and liveweight changes (range: - 6 - 46 g/day). Genotypes M170-80I and UGA-5 had greater potential for higher yields of seed and quality fodder.

Key Words: Fodder, seed, Chemical composition, Liveweight

1904 Grazing method effects on growth rate of St. Croix White hair sheep lambs on a tropical grass-shrub legume over-story. E. Valencia* and R.W. Godfrey, *University of the Virgin Islands, Agricultural Experiment Station, St. Croix VI USA.*

In the seasonally dry eastern Caribbean islands, growing small ruminants are sensitive to availability of high quality tropical grasses. The potential for improved weight gains by growing hair sheep and dry season yield of guineagrass (*Panicum maximum* Jacq.)-Leucaena (*Leucaena leucocephala* Lam de. Wit) was investigated. St Croix White hair lambs (4 mo. of age) were utilized to compare two different grazing systems, with three replicates within each treatment. In the continuous grazing system (CS) each replicate of lambs ($n = 5$) grazed guineagrass-leucaena (10-15% over-story) pastures (.14 ha) at a stocking rate of 650 kg BW/ha/d for a period of 98 d. In the rotational grazing system (RS) each replicate of lambs ($n = 5$) grazed guineagrass-leucaena (10-15% over-story) pastures (.14 ha) at 650 kg BW/ha/d for 126 d. In the RS, each .14 ha pasture was subdivided into 3 equal paddocks and lambs were moved every 14 d which allowed each paddock a 28-d rest period. Lambs were weighed weekly throughout the trial. Forage dry matter yield was estimated in five .25m² areas in each paddock. Pastures were sampled every 28 d in CS and every 14 d in RS. All data were analyzed using GLM procedures of SAS. There was a trend ($P = .09$) for higher average daily gain for sheep on CS (68 ± 3.7 g/d) compared to those on RS (46 ± 3.7 g/d). However, seasonal forage yield was favored ($P < .05$) by RS ($3.5 \pm .4$ Mg/ha) compared to CS ($1.8 \pm .4$ Mg/ha). At season-end, sheep on CS had to be supplemented with leucaena on a cut-carry system (1.6 kg DM/d) as regrowth of leucaena was affected. Grazing selectivity increased under CS, but also favored encroachment of the low-quality hurricane grass (*Bothriocloa pertusa*). These results suggest that weight gains are slightly better under CS, but will require supplementation during the dry season. Forage yield during the dry season is better under RS and may favor the grass-legume over-story in the long-term.

Key Words: Tropical Grasses, Hair Sheep, Weight Gain