

entire composting process, pH was similar ($P < 0.05$) regardless of treatments and phases. The N content increased and C:N ratio decreased ($P < 0.05$) in all treatments during the entire composting process. In both heat cycles, thermophilic temperatures ($> 45^{\circ}\text{C}$) were reached in treatments containing OWSC. The C group was characterized by reaching mesophilic temperatures (25 to 45°C). At the beginning of the maturation phase, all OWCS were degraded; OM and the IM were higher ($P < 0.05$) in YW and YWW, respectively, compared to the C group. These results suggest that composting could be an alternative for the disposal of organic wastes from slaughter houses. Further studies are needed in order to evaluate its use as an organic fertilizer.

Key Words: Composting, Organic Wastes, Slaughter Houses

W143 Effects of pit flushing frequency on farrowing house odor and gas concentrations. J. M. Schlipf*, M. Ellis, J. Ni, Y. Zhang, A. Mutlu, and T. L. Funk, *University of Illinois, Champaign-Urbana*.

This study was carried out over a 15-d period to determine the effect of pit flushing on gaseous emissions from a farrowing facility. A randomized block design was used with six rooms selected from a 14-room farrowing complex with five replicates over time. Two treatments were compared: control and flushed. Pits were flushed before the start of the study only for the control treatment and before the start and on d 8 of the study for flushed treatment. Samples were collected one day after sows were moved into the room, (d 1) and on d 8, 9, and 15. Samples were taken inside the room at the exhaust fan and outside at the pit fan exhaust. For odor analysis, air samples were pumped into 10 L Tedlar sampling bags and subsequently assessed by an 8-member olfactometry panel. Ammonia and hydrogen sulfide concentrations were measured using colorimetric detector tubes. Fan speed (taken at the same time as gas measurements) were not different ($P > 0.05$) between control and treated rooms. For the control rooms, concentrations of odor, NH_3 , and H_2S in the exhaust air from room and pit fans increased from the start (d 1) to the end of the study (d 15); e.g., pit exhaust concentrations increased from 2.65 to 3.19 (SEM 0.071; $P < 0.001$) for odor units, from 1.27 to 2.75 (SEM 0.157; $P < 0.001$) for NH_3 , and from 0.13 to 0.97 (SEM 0.067; $P < 0.001$) for H_2S . On d 8, odor and gas concentrations were numerically lower after flushing the pit than before from the room and pit exhausts, however, only the H_2S levels were different ($P < 0.05$).

Beef Species: Management and Beef Performance

W145 Evaluation of SafeGuard® (fenbendazole) oral drench in addition to Ivomec® (ivermectin) pour-on on performance and carcass merit of finishing heifers. C. D. Reinhardt*, J. P. Hutcheson, and W. T. Nichols, *Intervet, Inc, Millsboro, DE*.

One thousand one hundred six English×Continental crossbred heifers (340 kg) were used in a randomized complete block study. Treatments were: 1) SafeGuard® (5 mg/kg BW) and Ivomec® pour-on (500 mcg/kg BW) day 0 (SGPO), and 2) Ivomec pour-on (500 mcg/kg BW) day 0 (PO). There were 8 pens per treatment with an average of 69 head per pen. Heifers were fed for 135 days. Heifers treated with SGPO had 73% ($P = 0.06$) and 68% ($P = 0.06$) fewer eggs per 3 g fecal sample at d98 post-treatment and at the end of the feeding period than heifers treated with PO. Heifers treated with SGPO had higher dry matter intake, higher average daily gains, heavier final weight, and heavier carcass weights than heifers treated with PO alone ($P < 0.05$). Percentage of carcasses grading Prime+Choice was higher ($P = 0.07$) and marbling score tended to be higher ($P = 0.13$) for heifers treated with SGPO vs. heifers treated with PO alone. These data indicate that feed intake, daily gain, carcass weight, and carcass quality of feedlot heifers can be improved using fenbendazole in conjunction with ivermectin pour-on compared to using ivermectin pour-on alone due to improved parasite reduction of the combined treatment protocol.

Trt	Egg ct ²	Carcass-adjusted performance ¹				
		ADG,kg	DMI,kg	G:F	HCW,kg	Pr+Ch,%
SGPO	3 ^a	1.53 ^c	8.12 ^c	.190 ^c	337 ^c	47.9 ^a
PO	12 ^b	1.47 ^d	7.93 ^d	.187 ^d	332 ^d	42.6 ^b

¹ HCW divided by .6193; ² eggs/3g sample d98 post-trt
a,b differ ($P < .10$)^{c,d} differ ($P < .05$)

Key Words: Fenbendazole, Feedlot, Parasites

Concentrations of H_2S 4 h before and 4 h after flushing were 0.54 and 0.10 ppm, (SEM 0.119) respectively, in the room exhaust, and 0.87 and 0.24 (SEM 0.125) ppm, respectively, in the fan exhaust. However, at the end (d 15) odor and gas levels were similar in the control and flushed rooms. Overall, results suggest that flushing the pits in this farrowing facility had a limited, short-term effect on odor, NH_3 , and H_2S concentrations.

Key Words: Pigs, Odor, Gaseous Emissions

W144 Evaluation of round bale feeding sites on soil fecal bacteria and nutrient concentrations. N. A. Lenehan, J. M. DeRouchey*, T. T. Marston, M. L. Christian, and G. L. Marchin, *Kansas State University, Manhattan*.

An experiment was conducted over seven months (January to July, 2003) to evaluate fecal bacteria and nutrient concentrations in soil surrounding round bale feeders. Six-inch soil samples were taken monthly from 10 feeding sites at distances of 3, 12, 21, and 30 m from the feeder. Soil samples were taken prior (January) to livestock access to the sites, during (February, March, and April) the feeding period, and after (May, June, and July) cattle removal from the sites. Fecal *E. coli* concentrations reached their highest levels in April at distances of 3 and 12 m, and were greater ($P < 0.03$) than all other months except March. At 21 and 30 m from the feeder, fecal *E. coli* concentrations were greater ($P < 0.01$) in April than all other months. At a distance of 3 m from the feeding area, fecal *streptococci* concentrations were greater ($P < 0.01$) in March and April compared to all other months. While fecal *E. coli* concentrations in July had returned to levels similar to that in January, fecal *streptococci* remained at higher levels ($P < 0.05$). For soil nutrients tested, the greatest increase generally occurred at 3 m from the feeders, with little differences thereafter. The highest level of soil phosphorus at 3 m was recorded in April, and concentrations exceeded ($P < 0.02$) those in January, February, and May. Soil dry matter had quadratic decreases ($P < 0.02$) in March, April, and July, and linear decreases ($P < 0.01$) in May and June as the distance from the feeding area decreased. Results indicate that the immediate area surrounding round bale feeding sites should be cleaned of manure, wasted feed, or bedding following cattle removal to reduce environmental impacts.

Key Words: Feeding Sites, Fecal Bacteria, Environment

W146 Examination of reproduction and weaning results in Limousin cattle population in Hungary. F. Szabo*¹, Z. Lengyel¹, S. Balika², I. Erdei¹, D. Marton¹, T. Major¹, and S. Bene¹, ¹University of Veszprem Georgikon Faculty of Agriculture, Hungary, ²Hungarian Limousin Association, Budapest, Hungary.

Weaning performance, gestation length and calving difficulty of 2555 purebred calves (1305 male and 1250 female) born from 713 cows mated with 43 sires were analyzed in two farms. Heritability, repeatability, breeding value, genetic and environmental variance of weaning weight (VS), preweaning daily gain (SGY), 205-day weight (KVS), gestation length (VI), calving difficulty (EL) the genetic, phenotypic and environmental correlation between VS and SGY were calculated. The genotype-environment interaction was analysed with method of rank correlation. Farm, year of birth, season of birth, sex, number of calving as fixed, while sire as a random effect was treated. Data were analyzed with Harveys (1990) Least Square Maximum Likelihood Computer and SPSS 9.0. The overall mean value and standard error of VS, SGY, KVS, VI and EL were 208 ± 5.29 kg, 997 ± 24.50 g/day, 205 ± 5.54 kg, 285 ± 1.54 day and 0.97 ± 0.03 , respectively. The average age of the analysed calves was 211 days. The heritability of traits was between 0.10 and 0.44. The genetic, phenotypic and environmental correlation between VS and SGY was strong and positive. The rank correlation values were low in the case of the investigated traits ($r = 0.05-0.27$), therefore the order of sire rank were different in the two farms.

Key Words: Weaning Wt, Heritability, Correlation

W147 Predictors of the final carcass grades in crossbred steers. K. Uetake^{*1}, T. Ishiwata¹, N. Abe², Y. Eguchi¹, and T. Tanaka¹, ¹*School of Veterinary Medicine, Azabu University, Sagami-hara, Japan*, ²*Faculty of Agriculture, Tamagawa University, Machida, Japan*.

To determine the predicting parameters for the final carcass grades, 35 Japanese Black × Holstein steers aged 6-10 mo were followed up until slaughter. They were allocated to three pens (6.0 m × 9.5 m each) and fed with commercial grain feed. The steers were allowed to access dry hay or oat straw on an ad libitum basis in the early (E) or middle (M) fattening stage. Behavioral observations (15 categories) for 2 h after morning and evening feedings were performed every 2 mo. BW measuring, blood sampling (7 hormones and 5 metabolites), ultrasonic scanning and physical measuring (10 parts) were conducted after the morning observation. Temperament scores during these handling procedures, entry order into a crush, social rank and ADG were assessed. Carcass grades were obtained after the slaughter. A principal factor analysis with the Harris-Kaiser rotation extracted 11 and 10 clusters in the E and M stages. One-way ANOVA determined clusters in which their factor scores were different between the carcass grades: In the E stage, they were a cluster of chest girth (loading 0.90) and depth (0.88), body weight (0.86), withers (0.84) and hip (0.79) height and rump length (0.77) ($P < 0.01$), and a cluster of the number of scratching their head or neck with facilities (0.92) ($P < 0.05$) for the carcass yielding grades; a cluster of social rank (0.73) and triglyceride concentrations (0.62), and a cluster of the numbers of investigating facilities (0.65) and eating hay (-0.86) (both $P < 0.10$) for the carcass quality grades. In the M stage, they were a cluster of cortisol (0.84) and adrenaline (0.60) concentrations, and the number of eating hay (-0.67) ($P < 0.10$) for the carcass yielding grades; a cluster of hip height (0.87), body weight (0.71), cannon circumference (0.69), chest depth (0.62), withers height (0.57) and chest girth (0.55) ($P < 0.10$), and a cluster of the number of eating grain feed (0.91) and stand-chewing the cud (-0.61), and social rank (-0.66) ($P < 0.10$) for the carcass quality grades.

Key Words: Beef Cattle, Carcass Grades, Prediction

W148 Evaluation of implant strategy and days on feed on performance and carcass merit of finishing yearling steers. J. P. Hutcheson^{*1}, W. T. Nichols¹, C. R. Reinhardt¹, S. R. Swingle², and K. J. Karr², ¹*Intervet, Inc., Millsboro, DE*, ²*Cactus Research, Ltd, Amarillo, TX*.

One thousand nine hundred and eighty-eight head of crossbred, yearling steers (383 kg) were used in a randomized complete block experiment with a 2 × 2 arrangement of treatments to evaluate the effect of implant type and days on feed. Implant treatments were 1) Revalor-S (120 mg trenbolone acetate + 24 mg estradiol) implanted on day 0 only (RS); 2) and Revalor-IS (80 mg trenbolone acetate + 16 mg of estradiol) implanted on day 0 only (IS). Steers were fed 123 or 145 days. There were 5 pens per treatment with an average of 98 head per pen. Steers implanted with RS had higher ($P < 0.05$) live and carcass adjusted average daily gain at both days on feed when compared to IS implanted steers. Daily dry matter intake tended ($P = 0.07$) to be greater in RS steers fed 123 days compared to IS implanted steers. Feed conversion was improved ($P < 0.05$) in RS implanted steers fed 145 days compared to IS implanted steers, but was not different in steers fed 123 days. Hot carcass weight was greater ($P < 0.05$) in RS implanted steers at 123 days on feed compared to IS steers. Steers fed 145 days, had lower average daily gain, higher feed to gain and greater final weight compared to steers fed 123 days ($P < 0.05$). There were no differences in quality or yield grade measurements between implant treatments at either slaughter time. However, feeding steers implanted with RS an additional 22 days did increase the percentage of Choice & Prime carcasses from 48 to 56%. Cattle fed 145 days had a higher dressing percent, greater carcass weight, more rib fat, higher average yield grade and more empty body fat (EBF) compared to cattle fed 123 days ($P < 0.05$). There were no differences in quality grade by days on feed. Feeding cattle an additional 22 days increases out weight and carcass weight with a reduction in average daily gain and increased feed to gain without affecting quality grade. Implanting yearling steers one time with RS provides improved performance without compromising quality grade when compared to steers implanted with IS at either slaughter time.

Animal Performance and Carcass Traits

Days on Feed	123	123	145	145	P-value	P-value	P-value
Implant Type	IS (1)	RS (2)	IS (3)	RS (4)	1 vs 2	3 vs 4	1,2 vs 3,4
In Wt	385	383	385	381	.34	.13	.58
Out Wt	601	606	630	634	.08	.27	<.01
ADG, kg	1.75	1.81	1.69	1.74	<.01	.04	<.01
DMI, kg	9.62	9.83	9.71	9.67	.07	.66	.63
Feed:Gain	5.51	5.43	5.75	5.57	.30	.03	<.01
HCW, kg	385	390	407	410	.03	.15	<.01
Pr+Ch, %	53.0	48.3	57.0	56.4	.46	.93	.20
EBF, %	29.9	29.6	30.8	29.8	.16	.46	<.01

Key Words: Implants, Feedyard, Steers

W149 Comparison of weaning and yearling ultrasonic measures of body composition in Angus breeding cattle. T. Perkins^{*} and A. Rimal, *Southwest Missouri State University, Springfield*.

The objectives of this study were to assess the relationship between ultrasound measurements taken at weaning and yearling weigh periods. One hundred seventy-five registered Angus bulls (n=88) and heifers (n=87) were scanned ultrasonically for ribeye area, fat thickness, percent fat (for the equivalent to marbling score) and rumpfat prior to weaning and again at approximately one year of age. The cattle used in this study were from the Falcon Seaboard Ranch located in Fredericksburg, Texas. Ultrasound values at weaning were then compared to measurements taken at approximately one year of age. All ultrasound measurements were taken by an Ultrasound Guidelines Council (UGC) field and laboratory certified technician, at weaning and yearling, using the Beef Image Analysis (BIA) software. Weaning images were processed by the scanning technician whereas yearling images were interpreted by the National CUP Lab in Ames, Iowa. Weanling means for scan weight (WSW), ribeye area (WREAU), fat thickness (WFTU), percent fat (WPFU), and ribeye shape (WREAS) were 291.9 ± 33.42 kg, 53.78 ± 7.45 cm², .42 ± 0.24 cm, 3.90 ± .67 %, and 2.50 ± 0.73, respectively. Yearling means for scan weight (YSW), ribeye area (YREAU), fat thickness (YFTU), percent fat (YPFU), and rump fat (YRFU) were 469.4 ± 61.39 kg, 66.45 ± 10.49 cm², .64 ± 0.20 cm, 4.54 ± 1.27 %, and .78 ± 0.23 cm, respectively. Pearson correlations for WSW and YSW, WPFU and YPFU, WREAU and YREAU were 0.57, 0.52, and 0.55, respectively; whereas, the correlation between WFTU and YFTU were lower and non significant at 0.16. These coefficients indicate that the relationship between weaning and yearling carcass attributes for scan weight, percent fat, and ribeye area were high and statistically significant. However, these results indicate that ultrasound was not a useful tool in assessing external fat levels on weanling calves prior to going into a performance testing program.

Key Words: Ultrasound, Weaning, Beef

W150 Effects of an artificial sweetener (Sucram C-150) on performance and health of newly received beef cattle. J. D. Rivera^{*1}, J. T. Richeson¹, M. L. Galyean¹, W. Rounds², and P. Schlegel³, ¹*Texas Tech University, Lubbock*, ²*Prince Agri Products, Inc., Quincy, IL*, ³*Pancosma, Geneva, Switzerland*.

Two hundred crossbred (British × Continental) beef steers (average BW = 190.1 ± 4.07 kg) were shipped 1,588 km from an order buyer facility in West Point, MS to the Texas Tech University Burnett Center in New Deal, TX and used in a randomized complete block design to evaluate the effects of an artificial sweetener (Sucram C-150; Pancosma, SA) added to the diet on performance and health for a 60-d receiving period. On arrival, cattle were vaccinated for respiratory disease and clostridial antigens, given a unique ear tag, weighed, dewormed, and assigned to one of two treatments: 1) Control: a standard 65% receiving diet; or 2) Sucram: a standard 65% receiving diet with 200 mg/kg (DM basis) of Sucram C-150 artificial sweetener. Following processing, cattle were moved to their assigned pens, and offered the receiving diet free choice. Long-stemmed sorghum sudangrass hay (1.81 kg/animal, DM basis) was fed for the first 5 d only. Cattle were observed daily for symptoms of bovine respiratory disease (BRD), and treated as needed when rectal temperature was > 39.7 °C. Sucram C-150 did not affect ($P > 0.10$) DMI at any time in the 60-d study, nor, did it affect ADG from d 0 to

14; however, feeding Sucram tended ($P < 0.12$) to increase 28-d ADG (1.43 vs. 1.50 kg/d for Control and Sucram, respectively) and increased ($P < 0.10$) ADG for the overall 60-d period (1.24 vs. 1.33 for Control and Sucram, respectively). Gain efficiency did not differ between treatments, except from d 0 to 28 ($P < 0.02$), when Sucram improved G:F. No differences were detected ($P > 0.10$) for morbidity between the two treatments (59.7% and 58.0% for Control and Sucram, respectively); however, feeding Sucram decreased ($P < 0.02$) the proportion of animals requiring two or more antibiotic treatments (52.6% and 41.0% for Control and Sucram, respectively). The addition of 200 mg/kg (DM basis) Sucram C-150 to the diet of newly received cattle increased receiving period ADG and resulted in fewer repeat antibiotic treatments to recover from BRD.

Key Words: Artificial Sweetener, Beef Cattle, Diets

W151 Effect of shade in feedlot pen on growth performance response of finishing beef cattle the cold season in the northwest of Mexico. R. Barajas^{*1}, B. J. Cervantes¹, R. J. Virgilio², and P. Castro², ¹FMVZ-Universidad Autonoma de Sinaloa, Culiacan-Mazatlan (Mexico), ²Tecnologia de Maxima Produccion S.A. de C.V., Mexico.

To determine the effect of shade in feedlot pen on growth performance response of finishing beef cattle the cold season in the northwest of Mexico, a 63-d feedlot performance experiment was conducted from January to March of 2003. Sixty-six brahman crossed bull calves (Males, BW=370.14±4.28 kg), were used in a complete block randomized experimental design. The animals were blocked by initial weight, and placed in ground pens (6 x 12 m), the treatments consisted in: 1) Pens without shade (Control); or pens fitted with roof that provides 3 m² of shade by animal (Shade treatment). Animal were fed with 14.86 forage:concentrate, cracked corn based diet containing CP 14%, NEm 1.85 Mcal/kg, and NEg 1.22 Mcal/kg. Mean temperature was 22.4°C and total precipitation was 14.2 mm. Shade increased ($P < 0.01$) 4% final weight (432 vs. 482 kg), and 16% average daily gain (1.50 vs. 1.74 kg/day). Dry matter intake was not affected ($P = 0.58$) by treatments (10.41 vs. 10.14 kg/day). Feed conversion was improved ($P < 0.01$) by use of shade (6.94 vs. 5.84). Carcass weight increased ($P < 0.01$) 5.7% by shade inside of pen (294.10 vs. 310.95 kg). Carcass dressing was not affected ($P = 0.29$) by treatments (64.5 vs. 63.9%). NEM obtained from the diet was improved ($P = 0.02$) by shade (1.866 vs. 2.127 Mcal/kg), and NEg was increased ($P = 0.02$) with shade in pen (1.226 vs. 1.455 Mcal/kg). Observed/expected NEM ratio was 14% higher ($P = 0.02$) in shade treatment (1.01 vs. 1.15), and observed/expected NEg was increased ($P = 0.02$) 18% by shade (1.01 vs 1.19). It is concluded, that the use of shade inside of feedlot pen improves growth performance response of finishing beef cattle in the northwest of Mexico.

Key Words: Shade, Growth-Performance, Beef Cattle

W152 Effect of hormonal implant failure on growth performance response of finishing beef cattle re-implanted during raining hot season in the northwest of Mexico. R. Barajas^{*1}, B. J. Cervantes¹, R. J. Virgilio², and P. Castro², ¹FMVZ-Universidad Autonoma de Sinaloa, Culiacan-Mazatlan, Mexico, ²Tecnologia de Maxima Produccion S.A. de C. V., Mexico.

The objective was to determine the effect of hormonal implant failure on growth performance response of finishing beef cattle re-implanted during raining hot season in the northwest of Mexico. A 73-d feedlot performance experiment was conducted from September to December of 2003. Ninety four brahman crossed bull calves (Males, BW=335±4.74 kg), were used in a complete block randomized experiment design. Calves from a 91-d growing period were weighed and reimplanted in the left ear with Revalor. Calves were placed in 12 ground pens and fed finishing diets for 73 d. Calves were harvested and left ear was obtained to evaluate implant condition. Implant condition criteria were: 1) Absorbable implant (Normal, Brocket, etc.); or 2) Not absorbed implant (Encapsulated, Absessed, and not found). Implants in 31 calves were considered as not absorbed. Thirty d prior to implantation, the mean temperature at 14:00 hours was 33.5 °C, relative humidity was 60.41%, and precipitation was 252 mm. Ending weight was not affected ($P = 0.22$) by implant condition. Body weight gain was decreased ($P < 0.05$) in 9% by loss or implant activity (98.02 vs. 89.49 kg), and average daily gain was diminished ($P < 0.05$) in 5.5% (1.33 vs 1.26 kg/day). Carcass

weight, dressing, marbling score, KPH fat, and meat color were not affected ($P > 0.10$) by implant condition. Carcass grading was higher ($P < 0.05$) for carcass from animals with implant failure. It is concluded, that under raining hot condition, implant failure can be high and this negatively affects weight gain in finishing beef cattle. #8482#8482

Key Words: Hormonal Implants, Growth Performance, Beef Cattle

W153 Long term comparative trial of ear tags and ceramic boluses for the electronic identification of beef cattle under European rangeland conditions. J. J. Ghiradi^{1,2}, G. Caja¹, C. Conill¹, M. Hernández-Jover^{*1}, and D. Garín^{1,3}, ¹Universitat Autonoma de Barcelona, Spain, ²Universidad Nacional del Litoral, Esperanza, Argentina, ³Universidad de la Repblica, Montevideo, Uruguay.

A herd of Bruna dels Pirineus beef cows (n = 161) grazing under European rangeland conditions in the Pyrenees Mountains was used to compare two type of electronic identification devices for a period of 7 years (1997-2003). All cows wore two officially approved plastic ear tags with two flaps numerically and barcode recorded by laser (weight, 6 g; Azasa-Allflex, Madrid, Spain), according to the European Regulation for cattle identification (CE 1760/2000), and were also identified with two types of ISO half-duplex radio frequency devices: 1) electronic button ear tags (weight, 10 g; o.d., 30 mm; Allflex, Vitré, France) attached to the left ear; and, 2) electronic ceramic ruminal boluses (weight, 75 g; length×o.d., 21×68 mm; specific gravity, 3.36; Gesimpex, Barcelona, Spain). Reading controls of all devices were carried out at the annual brucellosis and tuberculosis testing and parasites drugging. Electronic devices were read using a Gesreader 2S hand-held reader (Gesimpex). A total of 3 cows died and 95 cows were slaughtered during the experiment. After 7 years, the 63 cows remaining in the herd retained 94.4% of the officially approved plastic ear tags (0.8% annual loss rate). Only 28.6% of tags were read by mean of a barcode reader (Intermec M90, Everett, WA) without immobilizing the head of the cows. Electronic ear tags showed a 96.8% readability (1.5% failed and 3.2% lost). Two electronic boluses (1.2%) were lost 2 h after application and were reapplied on the same day. No new losses or failures of boluses occurred during the experiment. In conclusion, electronic identification proved to be more efficient than conventional ear tagging in beef cows. Long term readability was greater for boluses than ear tags, recommending their use for cattle electronic identification under European rangeland conditions.

Key Words: Electronic Identification, Bolus, Ear Tag

W154 Comparison of pre-yearling, yearling, and post-yearling ultrasonic measurements of body composition in Brahman bulls. T. D. Jennings^{*1}, T. Perkins¹, and J. C. Paschal², ¹Southwest Missouri State University, Springfield, ²Texas A&M University, Corpus Christi.

The objective of this study was to compare ultrasonic measures of body composition in Brahman cattle at various stages of development. There were three individual scan sessions taken on the Brahman bulls (N=72). Individual weights and ultrasonic measurements for ribeye area, fat thickness, percent intramuscular fat and rumpfat were taken during three measurement intervals. The serial measurements were taken every two months (beginning mean age of 11 months and mean ending age of 15 months). The animals used in this study were provided by the J. D. Hudgins Ranch in Wharton, Texas. All ultrasound measurements were taken by an Ultrasound Guidelines Council (UGC) field and laboratory certified technician. Beef Image Analysis (BIA) software was used for the data collection. Pre-yearling, yearling, and post-yearling images were collected and interpreted by the same technician. A positive and significant correlation existed between all pre-yearling, yearling, and post-yearling ultrasonic measurements of body composition within each specific trait (e.g. FTU1 and FTU2 = 0.542; FTU1 and FTU 3 = 0.598; FTU2 and FTU3 = 0.635). Significant correlations existed between post-yearling weight (WT3) and post-yearling ultrasound measures of ribeye area (REAU3), fat thickness (FTU3), and rumpfat (RFU3) (0.676, 0.432, and 0.408, respectively). The correlation between post-yearling percent intramuscular fat (%FatU3) and WT3 was low (-0.05) and non-significant as well as the correlation between %FatU3 and REAU3 (0.013). The correlations between REAU3 and FTU3, and REAU3 and RFU3 were 0.314 and 0.281, respectively. A moderately positive correlation existed between FTU3 and %FatU3 (0.262). These data suggest that ultrasound was effective in measuring changes in body composition traits of external fat thickness, ribeye area and rumpfat.

However, the technology was ineffective in measuring differences in intramuscular fat deposition in pre-yearling, yearling, and post-yearling Brahman bulls.

Key Words: Ultrasound, Brahman, Seriel

W155 Cow-calf efficiency of four different dam genotypes. L. Calegare¹, M. M. Alencar², G. M. Cruz², and D. P. D. Lanna^{*1}, ¹Animal Growth and Nutrition Lab. ESALQ/USP, Piracicaba, SP, Brazil, ²Brazilian Southeast Cattle Research Center, Brazil.

Brazil has 53 millions beef cows, 85% of which from the Nelore breed. However there are no data comparing biological efficiency of Nelore and its crosses with *B. taurus*. The objective of this study was to determine cow-calf efficiency. Forty cows from four genotypes Nelore (NL), Canchim x Nelore (CN), Angus x Nelore (AN), and Simmental x Nelore (SN) were randomized in blocks by calving date. Cows and respective calves were individually fed from postpartum to weaning (15-180 d) a 50:50 hay:concentrate diet (16% CP and 2.34 Mcal ME on a DM basis), adjusted weekly to maintain body weigh and condition score. Calves received the same diet of their dams *ad libitum*, beginning at 40 d of age. Crossbred cows were bred to Canchim (5/8 Charolais) bulls and NL cows to Nelore bulls. Milk yield was estimated by weighing calves before and after suckling. ME intakes by cow/calf units were different ($P < 0.05$); 4139.1±78.7 for SN, 3898.2±78.7 for AN, 3777.8±78.7 for CN and 3523.5±78.7 Mcal for NL. The energy intake was parallel to adult body weight, milk yield and calves growth rate. At weaning empty body weight for NL calves was lower ($P < 0.05$) than crossbred calves; 149.1±9.3 vs. 201.3±9.3 for 1/4S, 192.8±9.3 for 1/4A and 183.1±9.3 kg EBW for 3/4C. Body composition was estimated by 9-10-11th rib analysis. Energy retention (Mcal) was higher ($P < 0.05$) for 1/4A than 3/4C and NL; 462.6±28.8 vs. 384.0±28.8 and 321.8±28.8 Mcal, respectively. Calves 1/4S had intermediate energy retention; 429.8±28.8 Mcal. Cow-calf efficiency was higher ($P < 0.05$) for AN compared to NL cow-calf pairs; 113.6±7.1 vs. 88.9±7.1 kcal/Mcal. Results for Simmental and Canchim pairs were intermediate; 99.2±7.1 and 98.8±7.1 kcal/Mcal, respectively. The higher ME intakes by AN cow-calf pairs were compensated by the higher energy retention and EBW gain. Reproduction was not evaluated, but under unrestricted nutritional conditions cross-breeding improved cow efficiency as measured by proportional energy retention in their calves.

Key Words: Weaning Weight, Body Composition, Biological Efficiency

W156 Efficacy and persistency of pour-on dewormers differing in active ingredient and carrier on weight gain and fecal egg count in stocker beef cattle. Jonathon L Beckett^{*1}, Brian P Wetzell¹, Tim Richards², and Bill Clymer³, ¹Cal Poly State University, San Luis Obispo, ²Kahua Ranch, Ltd, Kamuela, HI, ³Fort Dodge Animal Health, Overland Park, KS.

The objective of the studies was to compare, under field use conditions, the efficacy and persistency of moxidectin (M), ivermectin (I) and doramectin (D) pour-on parasiticides at 500 µg/kg with an untreated control in stocker cattle exposed to naturally acquired nematode infection. The study was conducted over two grazing seasons using single-source crossbred steers and heifers commingled in an intensive grazing situation. During the first year, 100, 100, 99, and 99 cattle (initial weight 146.9kg) were treated on day 0 and retreated on day 70 with M, I, D or CON, respectively. To determine persistency, during the second year, 123, 126, 125, and 125 cattle (initial weight 171.8kg) were treated with M, I, D or CON, respectively, but were not retreated. Weight gains and fecal egg counts (EPG) were determined on 25% of each treatment group each 5-6 weeks. Grazing continued for 105 and 126 days for years 1 and 2, respectively. During year 1, weight gains were 95.3^a, 92.0^b, 94.4^a, and 78.9^c kg for M, I, D and CON treatments, respectively. During year 2, weight gains were 113.7^a, 109.3^b, 110.9^b, and 102.4^c kg for M, I, D and CON treatments, respectively. In both trials, fecal egg counts were significantly higher ($P < .05$) in CON cattle compared with dewormed treatments. No differences in fecal egg counts were consistently detectable between dewormed groups. In summary, with 2 treatments, M and D treatment groups appeared to gain equally while exposed to parasites. Response to ivermectin was poorer than to the other two dewormers ($p < .05$). With only one treatment, moxidectin tended to increase weight gains compared with D or I. CON group demonstrated

significantly reduced weight gains in all cases ($p < .05$). This was true regarding total body weight gain and average daily gain, and is supported by the fecal egg count data. Producers must weigh all of the advantages offered by each of the products including but not limited to efficacy and persistency.

Key Words: Stocker, Cattle, Parasite

W157 Ultrasound and carcass measures of different biological types of beef cattle developed under a rotational management-intensive grazing system. M. L. Thomas^{*1}, T. L. Perkins², A. H. Brown, Jr.¹, R. T. Baublits¹, D. W. Kellogg¹, and Z. B. Johnson¹, ¹University of Arkansas, ²Southwest Missouri State University, Springfield.

Yearling beef steers (n=33) representing four biological types, typical of commercial cattle in northwest Arkansas, were evaluated for muscle and fat deposition utilizing real-time ultrasound measurements and carcass traits. Biological types included large framed, late maturing (LL, n=6), medium framed, late maturing (ML, n=9), medium framed, intermediate maturing (MI, n=9) and medium framed, early maturing (ME, n=9) steers. Animal diet consisted of only forages utilizing a rotational management-intensive grazing system in which animals were allocated new paddocks on a daily basis. Target weight and body condition score at harvest were 454 kg and 6.0 (on a 1 to 9 scale), respectively. Average days on trial before harvest were 300 with a mean harvest weight of 462.8 kg and a 5.9 body condition score. Overall mean gain was 222 kg at a 0.74 kg average daily gain. Generally, carcass data were correlated with the final ultrasound readings. Mean marbling score was greater ($P < 0.05$) for ME than LL steers (346 ± 25 vs. 239 ± 27). There was no difference ($P > 0.05$) in mean marbling score for MI and ML steers (285 ± 24 and 253 ± 22). There was an interaction ($P < 0.05$) between biological types and days on grass until harvest for ribeye area. Days on grass did not affect ($P > 0.05$) other carcass traits. Based on marbling scores, ME steers best fit the all-forage diet utilizing a rotational management-intensive grazing system.

Key Words: Ultrasound, Biological Types, Management-Intensive Grazing

W158 Effect of feeding corn silage diets on reduction of drinking water intake and growth performance of cattle in feedlot under hot humid weather in the Northwest of Mexico. R. Barajas^{*1}, B. J. Cervantes¹, A. Camacho¹, R. J. Virgilio², P. Castro², and E. Sanchez³, ¹FMVZ - Universidad Autonoma de Sinaloa, Culiacan-Mazatlan, Mexico, ²Tecnologia de Maxima Produccion S.A. de C.V., Sector Humaya, Mexico, ³UAEGES, Culiacan-Sanlana, Mexico.

The objective was to determine the effect of feeding corn silage diets on reduction of drinking water intake and growth performance of cattle in feedlot under hot humid weather in the Northwest of Mexico. A 164-d (Jun-Nov/03) feedlot experiment was conducted using 94 Brahman-cross bull calves (BW= 204.8 ± 2.7 kg). Calves were blocked by weight into eight groups for a completely randomized block design. Calves were assigned one or two feeding programs: 1) diets based in ground corn, containing sudan grass hay as roughage during all the feeding period (Control); or 2) diets containing corn silage substituting all sudan grass hay and partially the ground corn. Diets were fed for 126-d and then fed with control diet until the end of experiment (silage). Mean temperature was 28.4° C and precipitation was 651 mm. Silage treatment shown lower ($P = 0.05$) BW during the first 56-d. Ending weight was not affected ($P = 0.36$) by treatments. Average daily gain was lower ($P \#8804 0.01$) for silage in day 28; however from day 57 to 112 ADG was higher ($P = 0.04$) for cattle feed silage diets. ADG throughout the experiment was similar ($P = 0.41$) (1.32 vs. 1.28 kg). DMI was diminished ($P \#8804 0.01$) by silage diets (8.70 vs. 8.31 kg/day). Feed/gain ratio was not affected ($P = 0.67$) by treatments (6.35 vs. 6.23). Silage diets reduced ($P \#8804 0.01$) drinking water intake by 36% during the first 112 days in feedlot (24.3 vs. 16.4 L/day), and 23% ($P = 0.06$) during the entire experiment (23.54 vs. 18.08 L/day). The sum of feed intake (wet basis) plus water intake was similar ($P = 0.66$) in both treatments (34.58 vs. 35.6 kg/day). The amount of drinking water required by kg of gain was diminished ($P = 0.05$) by 25 % in silage diets (16.79 vs. 12.65 L/kg). Carcass weight, dressing, marbling score, KPH fat, color and quality grade were not affected ($P > 0.10$) by treatments. It is concluded that the use of diets containing corn silage, can help to reduce near of 25

% the requirements of drinking water for feedlot cattle, without affect negatively impacting performance or carcass quality.

Key Words: Corn Silage, Drinking Water, Feedlot Cattle

W159 The effect of different types of morphologically abnormal spermatozoa on bovine embryo development after IVF. A. H. Walters*¹, W. E. Eyestone², R. G. Saacke¹, R. E. Pearson¹, and F. C. Gwazdauskas¹, ¹Virginia Polytechnic Institute and State University, Department of Dairy Science, Blacksburg, ²Virginia Polytechnic Institute and State University, Department of Large Animal Clinical Science, Blacksburg.

The study was conducted to evaluate the effect of semen samples collected from bulls subjected to scrotal insulation on embryonic development after in vitro fertilization (IVF). Morphologically abnormal semen samples from four Holstein bulls were cryopreserved following a scrotal insulation period of 48 h (d 0). Three types of semen samples were used for IVF: 1) semen from bulls collected 5 d prior to scrotal insulation (Pre-insult); 2) semen from d 13 (2 wk-PI); and 3) d 20 (3 wk-PI) post-insult. Following an 18 h sperm-oocyte co-incubation, embryos

were cultured for 8 d and evaluated. The post-thawed morphological evaluation of semen revealed a decrease ($P < 0.01$) in the percentages of normal spermatozoa in the post insult samples (3 wk-PI) compared with the Pre-insult samples for Bulls I and Bull III ($74 \pm 2.4\%$ to $22.3 \pm 2.4\%$ and $67.7 \pm 2.4\%$ to $0.5 \pm 2.4\%$, respectively), while the percentage vacuolated spermatozoa increased significantly for Bull II (diadem-0% to $59.6 \pm 2.0\%$; apical vacuoles- $1.06 \pm 3.6\%$ to $47.8 \pm 3.6\%$). There was no change in abnormal sperm population for Bull IV ($<10\%$). The cleavage and blastocyst formation rates and embryo development scores were affected ($P < 0.01$) by the interaction of bull by sample collection time. For Bull I and Bull III (severe responders) there was a decreased rate of cleavage ($77.9 \pm 1.9\%$ to $62.7 \pm 1.7\%$ and $85.5 \pm 1.7\%$ to $66.3 \pm 1.5\%$) and blastocyst formation ($23.4 \pm 1.9\%$ to $10.6 \pm 1.7\%$ and $26.8 \pm 1.7\%$ to $13.5 \pm 1.6\%$) decreased between the Pre-insult and 3 wk-PI samples. In contrast, the cleavage and blastocyst formation rates for Bull II ($71.6 \pm 1.4\%$ and $16.9 \pm 1.5\%$) and Bull IV ($77.8 \pm 1.7\%$ and $21.4 \pm 1.5\%$) were unaffected. In conclusion, a decrease in embryonic development seems to be related to the changes in head shape morphology.

Key Words: Abnormal Spermatozoa,, Scrotal Insult, IVF

Goat Species

W160 Replacement of alfalfa neutral detergent fiber with a combination of nonforage fiber sources on ruminal pH and performance in Alpine goats raised under natural conditions in northern Mexico. P. A. Robles-Trillo*¹, L. Garcia-Palestina¹, E. De Lazaro-Urbina¹, R. Rodriguez-Martinez¹, and R. Bañuelos-Valenzuela², ¹Universidad Autonoma Agraria Antonio Narro Unidad Laguna, Santa-Fe, Torreon, Mexico, ²Unidad Academica de Medicina Veterinaria y Zootecnia, UAZ, Victor Rosales, Mexico.

There has been a limited number of studies carried out on goats about the physiological and productive consequences when NDF is replaced with nonforage fiber sources (NFFS). To evaluate the effect of replacing NDF from alfalfa with NFFS combination (whole linted cottonseed, soy hulls, and wheat bran) on ruminal pH, ADG, dry matter intake (DMI), and feed efficiency (FE), sixteen Alpine goats (body weight of 22.81 ± 1.84 and 7 months old) were used in a 4 x 4 block design. The four diets were basal control diet (LAD) low in forage and fiber (9.27% of alfalfa NDF and 6.72% of corn silage NDF, DM basis), a normal forage diet high in alfalfa (HAD) (LAD diet, plus 14% of alfalfa NDF), and two low forage diets with either 9.4% NDF (LNFD) or 18.18% (HFND) NDF DM basis from the NFFS combination. Ruminal samples were obtained by stomach tube each 3 h by seven times daily to determinate the pH ruminal content by a potentiometer. DMI and FE were calculated by body weight and weight gain daily. The effects of treatments upon pH, ADG, DMI, and FE were evaluated and analyzed by means of ANOVA. Our results showed an effect of treatment ($P < 0.001$) on ruminal pH, which was highest for the HAD treatment and lowest for LAD, without differences between LNFD and HFND. A difference in ADG ($P < 0.05$) was found between LAD and HAD, but values were similar between LNFD and HFND. There were no differences ($P > 0.05$) in DMI. FE was greater ($P < 0.05$) for LAD vs HAD. The replacement of NDF from alfalfa with NFFS did not reduce ruminal pH with respect to the normal forage diet (LAD) and therefore, ruminal function could have remained normal. However, NFFS had a detrimental effect on ADG and FE without affecting DMI, which could be important to economic profitability depending on cost of NFFS products.

Least square means for ruminal pH (pH), average daily gain (ADG), dry matter intake (DMI), and feed efficiency (FE) in goats (N=16) with four different diets (LAD, LNFD, HFND, and HAD) in Northern Mexico (25° NL)

Variables	Treatments				S.E.M.
	LAD	LNFD	HFND	HAD	
pH	6.13 ^a	6.19 ^a	6.26 ^b	6.33 ^c	0.02
ADG	0.089 ^a	0.060 ^{ab}	0.065 ^{ab}	0.043 ^b	0.01
DMI	47.03 ^a	45.21 ^a	46.71 ^a	44.31 ^a	1.62
FE	0.11 ^b	0.08 ^{ab}	0.08 ^{ab}	0.06 ^a	0.01

^{a,b,c}Means within a row with unlike superscriptors are different ($P < 0.05$)

Key Words: NDF, Nonforage Fiber Sources, Goat Performance

W161 Influence of diet and gut fill on blood metabolites and fecal shedding of *E. coli* in sheep and goats. V. R. Gutta*, G. Kannan, B. Kouakou, K. M. Gadiyaram, W. R. Getz, G. W. McCommon, and Y. Lan, Fort Valley State University, GA.

Recent reports have shown that fecal shedding of *Escherichia coli* can be reduced by preharvest management practices in small ruminants. The objectives of this experiment were to determine the effects of diet and feed deprivation time prior to harvesting on fecal *E. coli* shedding and blood metabolite concentrations in sheep and goats. In an RCBD split-plot design, sheep (wethers, n = 16) and goats (bucks, n = 16) were assigned to 8 pens (4 sheep or goats/pen) and fed either a concentrate diet or a hay diet for four days. The animals (8 - 12 mo of age) were then taken to the processing facility and subjected to either 12 or 24 h feed deprivation prior to harvesting, with continuous access to water. Sterile sponges were used to sample (5 x 5 cm area) hind legs of each animal for *E. coli* contamination before and after feed deprivation. Blood samples were also collected to determine urea nitrogen (BUN) and glucose levels prior to harvesting. Generic *E. coli* counts in the rumen were higher ($P < 0.01$) in animals subjected to 24 h feed deprivation than those subjected to 12 h feed deprivation. *E. coli* counts in the rectum were higher ($P < 0.01$) in concentrate-fed than in hay-fed animals. *E. coli* contamination of hair/fleece was higher ($P < 0.05$) in sheep than in goats. Behavioral observations during holding revealed that sheep spent more time lying down than goats, indicating that sheep are more prone for fecal contamination from the pen floor during preharvest holding than goats. The pH values of rumen and colon contents were higher ($P < 0.01$) in hay-fed animals than concentrate-fed animals. Glucose and BUN concentrations were not influenced by diet or feed deprivation. Fecal contamination in sheep and goats can be controlled by preharvest dietary management, with no significant changes in glucose and BUN levels. The results indicate that hay feeding and shorter feed deprivation period decrease *E. coli* counts. Sheep may be more prone for fecal contamination during holding.

Key Words: Sheep and Goats, *E. Coli*, Fecal Contamination