and rumen fermentation in beef cattle offered zero-grazed grass. D. Owens*[1,2], M. McGee[1], and F. P. O'Mara[2], [1]*Teagasc, Grange Beef Research Centre*, *Dunsany, Co. Meath*, [2]*School of Agriculture, Food Science and Veterinary Medicine, University College Dublin*, *Belfield, Dublin 4, Ireland*.

Six ruminally fistulated Holstein-Friesian steers (initial BW 435 ± 13.0kg) were used in two, 2 (treatment) x 2 (17d period) crossover design experiments to examine the effects of regrowth interval (RI), of a predominantly perennial ryegrass sward in spring (Experiment 1) and autumn (Experiment 2) on intake and rumen fermentation characteristics. Regrowth intervals were 38 (long) and 28 (short) days in spring and 45 (long) and 35 (short) days in autumn. Experimental periods consisted of 6d diet adaptation and 11d sampling. Grass was harvested daily in the morning and stored at 4ºC prior to feeding. Grass was offered *ad libitum* at 08:30 h and 20:30 h until d 6 and at 0.95 *ad libitum* for the remainder of each period. Rumen fluid was collected on d 9 of each period at 0, 2, 4, 6, 8 and 10 h post morning feed, to assess rumen fermentation characteristics. Analysis of variance procedures were carried out on the data using the PROC GLM procedure of SAS 9.1. *In vitro* dry matter digestibility (DMD) (g/kg) and crude protein (CP) (g/kg DM) values were 849 and 99 for the long and 849 and 116 for the short RI in spring. Corresponding values in autumn were 826, 165, 819 and 191. Total dry matter intake and rumen pH did not differ ($p>0.05$) due to treatment in either experiment. There was no effect of RI on volatile fatty acid (VFA) concentrations with spring grass ($p>0.05$) whereas in autumn the short RI had higher ($p<0.01$) levels of valeric acid. Rumen ammonia levles were significantly higher for the short RI than the long RI for both spring and autumn grass. Results indicate that allowing grass to grow for an additional 10 days in spring and autumn has little effect on feed intake or rumen VFA proportions but lowers rumen ammonia levels, potentially reducing nitrogen excretion to the environment.

Key Words: Cattle, Rumen fermentation, Grass maturity

Sheep Species

W241 Small Ruminant Nutrition System: A computer model to develop feeding programs for sheep and goats. A. Cannas*[1], L. O. Tedeschi[2], and D. G. Fox[3], [1]*University of Sassari*, *Sassari, Italy*, [2]*Texas A & M University*, *College Station*, [3]*Cornell University*, *Ithaca, NY*.

A computer model to predict site specific nutrient requirements and feed biological values for sheep and goats was developed, based on the structure of the CNCPS for Sheep. This model, called Small Ruminant Nutrition System, uses animal factors (body weight, age, animal insulation, movement, milk production and composition, body reserves, mature weight, pregnancy) and environmental factors (current and previous temperature, wind, rainfall) to predict energy, protein, calcium and phosphorus requirements. Feed biological values are predicted based on carbohydrate and protein fractions and their digestion rates, forage, concentrate and liquid passage rates, microbial growth, and physically effective fiber. Dry matter intake is predicted separately for different sheep categories based on equations developed for sheep fed indoors and on pasture. Based on this information, the Small Ruminant Nutrition System predicts energy balance, which is used to predict body condition score and body weight variations in adult sheep and the amount of milk produced from mobilized body reserves in lactating sheep. In growing sheep, live weight gain, empty body gain, and the composition of the gain (fat, protein, water + minerals) are predicted based on the energy balance and on the relative size of the lambs. The Small Ruminant Nutrition System predicts rumen pH based on dietary effective fiber, rumen N and peptide balance, rumen and whole digestive tract digestibility of each nutrient, microbial and feed undegraded protein, metabolizable protein, and the energetic cost of urea production and excretion. Fecal and urinary excretions for each nutrient are predicted as well. Based on model evaluations, the Small Ruminant Nutrition System can be used to accurately predict growth, milk production, body condition score changes, and nutrient excretion in each unique production situation.

Key Words: Sheep, Goats, Nutrition model

W242 The effect of chicory, burr medic and safflower forages on milk fatty acid composition, especially conjugated linoleic acid cis9, trans11. A. Cabiddu*[1], M. Addis[1], M. Decandia[1], G. Piredda[1], S. Spada[1], M. Fiori[1], M. Sitzia[1], N. Fois[1], G. Molle[1], S. Landau[2], and A. Pirisi[1], [1]*Istituto Zootecnico e Caseario per la Sardegna*, *Olmedo, Italy*, [2]*Gilat Research Center*, *Mobile Post Negev 2, Israel*.

The aim of this study was to evaluate the effect of feeding fresh forages on the fatty acid composition of sheep milk, with special emphasis on the content of conjugated linoleic acid (CLA) and its precursors. Three forage species were compared during flowering phase: chicory (CH, Cichorium intybus), burr medic (BM, Medicago polymorpha) and safflower (SA, Carthamus tinctorius). Thirty-six mature Sarda ewes in late-lactation (157±4 DIM) were blocked into three homogeneous groups (CH, BM and SA) by milk yield (1930±60 ml) and body weight (49.6±0.9 kg) and randomly allocated to the three experimental paddocks. Each paddock was divided into two plots that were rotationally grazed (grazing period 14 d). Sward height and standing biomass were evaluated at the beginning and the end of each grazing period. The botanical and chemical composition of the herbage at the beginning and the end of the grazing period were evaluated. Individual milk yield and composition were measured fortnightly from 28 April to 4 June. Milk yield and milk protein were not influenced by forage species. Fat content was significantly lower for SA than the other forages (5.78% vs 6.37% and 6.75% for SA, CH and BM respectively, $P<0.05$). Milk fatty acid composition was affected by the forage species. CLA content (mg/g of fat) was significantly higher in milk from SA (20.69 vs 15.98 and 15.17 for SA, CH and BM respectively, $P<0.01$). CLA content significantly decreased at the end of the season ($P<0.01$) probably due to the decrease of linoleic and linolenic acid in the forages. On the basis of these results, we conclude that it is possible to manipulate the milk fatty acid composition and in particular to enhance the content of beneficial fatty acids by the use of appropriate fresh forage-based regimens.

Key Words: Pasture, Sheep milk, Conjugated linoleic acid

W243 Effect of whole or ground moisture heat damaged cotton seed on apparent digestibility in Pelibuey sheep. A. Estrada-Angulo*, M. Uribe, J. F. Obregon, E. Vazquez, and J. C. Robles, *Universidad Autonoma de Sinaloa*, *Culiacan, Sinaloa, Mexico*.

The objective of this study was to determine the effect of substituting whole cottonseed (WCS) or ground cottonseed (GCS) with moisture heat damaged cottonseed (DCS) or ground moisture heat damaged cotton seed (GDCS) on apparent digestibility in sheep. The experiment was conducted with four male Pelibuey sheep (24 kg) in a latin square 4 x 4 design. The diets were: 1) Control diet with 20% of WCS, 10% corn stover, 48.5% ground sorghum grain, 5% soybean meal, 10% molasses cane, 3% meat meal, 1% animal fat, and 2.5% mineral premix and vitamins; 2) Diet similar to diet 1, but with 20% of GCS substituting at WCS; 3) Diet similar to diet 1, but with 20% of DCS substituting at WCS; 4) Diet similar to diet 1, but with 20% of GDCS substituting at WCS. The calculated analyses of diets were 15.54% of CP and 3.57 Mcal/kg of DE. The DM, OM and CF excreted in feces was not affected (P= 0.42) by diet. The excretion of CP in feces was higher (P= 0.08) for GDCS (63.16 g/d) compared to other diets; the apparent digestibilities of DM (55.3, 56.1, 56.5, and 57.9% for WCS, GCS, DCS and GDCS respectively), OM (56.8, 57.4, 57.6, and 58.8% respectively) and CF (47.4, 47.2, 47.6, and 50.8% respectively) were similar (P> 0.10) among diets. The apparent digestibility of CP was higher (P= 0.03) for WCS and DCS with 60.12 and 60.46% respectively. The energy digestibility was similar (P= 0.44) among treatments. It is concluded that the DCS can be substituted with whole CS but the grinding of DCS negatively affected the apparent digestibility of CP in the digestive tract of Pelibuey sheep.

Key Words: Cottonseed in sheep, Apparent digestibility, Damaged cottonseed

W244 Effect of cottonseed and animal fat on growth performance and carcass traits in Pelibuey sheep. A. Estrada-Angulo*, E. Martinez, J. F. Obregon, F. G. Rios, and A. B. Perez, *Universidad Autonoma de Sinaloa*, *Culiacan, Sinaloa, Mexico*.

The objective of this study was to determine the effect of whole cottonseed and animal fat on growth performance and carcass traits in Pelibuey sheep. Sixty four Pelibuey sheep (males; average BW= 14.3 kg) were maintained 84 days in a complete randomized block experiment design. The animals were weighed, blocked by weight into 16 groups of four animals each, placed in 16 ground floor pens (2 x 3 m), and assigned to one of four diets: 1) Diet with 12.23% CP and 2.9 Mcal DE/kg, containing 10.0% corn straw, 65% ground broom sorghum grain, 3.0% poultry meat meal, 5.0% soybean meal, 10.0% sugarcane molasses, 3.0% hydrolyzed animal fat, and 2.5% mineral premix (Control); 2) Diet similar to the control diet with 13.9% CP and 2.9 Mcal DE/kg, but containing 10.0% whole cottonseed, 2.0% animal fat, and 57.5% ground broom sorghum grain (WCS10); 3) Diet similar to Control with 15.54% CP and 2.9 Mcal DE/kg, but containing 20.0% whole cottonseed, 1.0% animal fat, and 48.5% ground broom sorghum grain (WCS20); 4) Diet similar to Control with 17.18% CP and 2.9 Mcal DE/kg, but containing 30.0% whole cottonseed, without animal fat, and 39.5% ground broom sorghum grain (WCS30). Feed was offered twice daily so that feed was available at all times. Carcass traits were recorded, the carcasses were dissected and main cuts were measured. Average daily gain (150, 172, 177, and 177 g/d for Control, WCS10, WCS20 and WCS30 respectively), end weight (27.2, 28.3, 29.1, and 28.5 kg), and feed/gain (4.9, 4.6, 4.6 and 4.4 respectively) were increased (P = 0.05) by the inclusion of cottonseed. Daily feed intakes (0.753, 0.796, 0.826, and 0.794 kg/day) were similar among diets. Cold carcass weight, carcass length and width, carcass dressing percentage, rib eye area, back fat, leg circumference, and primary cuts including long loin, short loin, rib, leg, shoulder and neck were not affected (P> 0.05) by diet. We conclude that the inclusion of cottonseed plus animal fat increased production without affecting carcass traits and primary cuts in Pelibuey sheep.

Key Words: Cottonseed, Carcass, Pelibuey sheep

W245 Effect of whole moisture heat damaged cottonseed on growth performance and carcass characteristics in Pelibuey sheep. A. Estrada-Angulo*[1], R. Rodriguez[1], M. Mellado[2], J. F. Obregon[1], F. G. Rios[1], G. Contreras[1], and J. C. Robles[1], [1]*FMVZ-Universidad Autonoma de Sinaloa*, *Culiacan, Sinaloa, Mexico*, [2]*Universidad Autonoma Agraria Antonio Narro*, *BuenaVista, Saltillo, Coahuila Mexico*.

The objective of this study was to compare five levels of whole moisture heat damaged cottonseed (DCS) on growth performance and carcass traits in Pelibuey sheep. Eighty Pelibuey sheep (males; average BW = 14.3 kg) were maintained for 56 days in a complete randomized block experiment design. The animals were weighed, blocked by weight into 20 groups of four animals each, placed in 20 ground floor pens (2 x 3 m), and assigned to one of five diets: 1) Diet with 15.54% of CP and 3.57 Mcal of DE/kg, containing 6.0% corn straw, 28% whole cottonseed (WCS), 44.5% whole corn grain, 5.0% soybean meal, 3.0% poultry meat meal, 10% sugarcane molasses, 1.0% hydrolyzed animal fat, and 2.5% mineral premix (Control); 2) Diet similar to the Control diet with 7% DCS plus 21% WCS (DCS7); 3) Diet similar to Control diet with 14% DCS plus 14% WCS (DCS14); 4) Diet similar to Control with 21% DCS plus 7% WCS (DCS21); and 5) Diet similar to Control with 28% DCS without WCS (DCS28). Feed was offered twice daily so that feed was available at all times. Carcass traits were recorded, and the carcass was dissected and main cuts were measured. Average daily gain (171, 182, 166, 178, and 174 g/d for Control group, DCS7, DCS14, DCS21 and DCS28 respectively), end weight (34.25, 35.13, 34.56, 34.3, and 34.16 kg), feed intake (0.917, 0.910, 0.942, 0.905, and 0.941 kg/d of DM), and feed/gain (5.45, 5.03, 5.7, 5.09, and 5.5 respectively) were similar (P> 0.05) among diets. Hot carcass weight, carcass length and width, carcass dressing percentage, rib eye area, back fat, leg circumference, and primary cuts including long loin, short loin, rib, leg, shoulder and neck were not affected (P> 0.05) by diet treatments. We conclude that the total or partial substitution of whole cottonseed by whole moisture heat damaged cottonseed did not affect production, carcass traits, and primary cuts in Pelibuey sheep.

Key Words: Cottonseed, Damaged cottonseed, Carcass sheep

W246 Carcass yield and loin tissue composition of feedlot lambs fattened with diest containing fish residue silage. A. G. da Silva Sobrinho*[1], S. M. Yamamoto[1], R. M. Vidotti[2], H. B. A. de Souza[1], A. C. Homem Junior[1], and R. S. B. Pinheiro[1], [1]*Unesp-São Paulo State University*, *Jacoticabal, São Paulo, Brazil*, [2]*CAPTAPC/Fishing Institute*, *São José do Rio Preto, São Paulo, Brazil*.

Feeding confined lambs allows early slaughter with adequate carcass fat cover, and the use of alternative protein concentrates such as silages from the fish industry decreases environment impact and reduces

feeding costs, preserving the biological efficiency of nutrients. Eighteen 7/8 Ile de France 1/8 Polwarth lambs averaging 17 kg, confined in individual cages, were used in this study. Animals were distributed among the following treatments: T1- control diet; T2- 8% freshwater fish (*Oreochromis niloticus*) residue silage diet; and T3- 8% sea fish (*Lophius gastrophisus*) residue silage diet. In the production of fermented fish silage, *in natura* fish industry remains were ground and placed in plastic containers, with 7.50% sugarcane molasses, 2.50% natural yoghurt and 0.125% sorbic acid. Ingredients were homogenized and containers were hermetically sealed to produce lactic acid, a pH reducer and pathogen inhibitor. Fish residue silage partially replaced soybean meal, and each diet included 40% corn silage. Lambs were slaughtered at 32 kg of body weigh, and analyses showed that fish residue diets did not affect (P>0.05) quantitative carcass traits, with cool and warm carcass weights of 14.95 and 14.52 kg, respectively, and biological and commercial yields of 55.31% and 47.47%, respectively, and weight lost by chilling of 2.92%. The mean loin eye area was 12.05 cm^2 and muscle and bone proportions 57.61 and 16.67%, respectively. The percentage of fat (19.77%), was lower in loins of lambs that received the control diet, in comparison to lambs fed the fish residue silage diets (T2 = 24.68% and T3 = 24.01%). The composition of the muscle *Longissimus lumborum* was not affected by the diets, with crude protein, ether extract and ash levels of 25.66%, 3.48% and 1.03%, respectively. The replacement of soybean meal with fish residue silage resulted in increased loin fat, with no effect on quantitative carcass traits.

Key Words: Carcass, Fish silage, Lambs

W247 Effects of using raw soybean on performance and carcass characteristics of feedlot lambs. F. S. Urano, A. V. Pires*, I. Susin, C. Q. Mendes, G. H. Rodrigues, R. C. Araujo, and I. U. Packer, *Escola Superior de Agricultura Luiz de Queiroz (ESALQ)/University of São Paulo (USP)*, *Piracicaba, São Paulo, Brazil.*

The high energy and protein concentration present in soybeans makes them an attractive alternative feed for feedlot lambs. Sixty-four Santa Ines ram lambs (initial BW 20 ± 0.2 kg and 75 ± 2 days old) were used to valuate the effects of using raw soybeans (RS) in high grain diets on growth efficiency, carcass characteristics and lamb cuts of feedlot lambs. A randomized complete block design, composed of eight blocks, was used. Lambs were blocked by initial weight and age and assigned to one of four treatments. Lambs were housed in 32 pens. All pens had two lambs. Pen was the experimental unit. Lambs were fed an isonitrogenous diet composed of 90% concentrate (grounded RS, soybean meal, grounded corn and minerals) and 10% coastcross hay (*Cynodon* spp) for 56 days. RS were added at 0, 7, 14 and 21% of the diet dry matter, corresponding to the experimental treatments RS0, RS7, RS14 and RS21, respectively. Data were analyzed using the GLM procedures of SAS. Treatment responses were determined using orthogonal polynomials (linear, quadratic or cubic). Dry matter intake and average daily gain (1.1, 1.0, 0.9 and 0.9 kg/lamb/day; 298, 275, 280 and 255 g/lamb for RS0, RS7, RS14 and RS21, respectively) decreased linearly (P<0.05) with the inclusion of raw soybeans. However, feed conversion, carcass characteristics and lamb cuts were not affected (P>0.05). Although the inclusion of RS adversely affected dry matter intake and average daily gain, even the highest level of its inclusion in the diet provided satisfactory feedlot lamb performance.

Key Words: Hair sheep, Performance, Santa Ines

W248 The effect of feeding yeast (Saccharomyces cevisiae) on growth and white blood cell count as an indicator of the immune system in suckling lambs. F. Kafilzadeh* and M. Rahmani, *Saveh Azad University*, *Saveh, Iran*.

This experiment was carried out to determine the effect of feeding yeast (Saccharomyces cervisiae) on average daily gain and the number of white blood cells (WBC) as an indicator of the immune system in suckling lambs. Twenty Shal suckling lambs were included in a completely randomized design. Lambs were assigned to one of the two treatments (with or without yeast) 15 days after birth. One gram yeast was given once daily in a 50 g concentrate mix to each lamb. Lambs were weighed at two week intervals until weaning time (3 months of age). Blood samples were taken at 45 and 90 days of age. There was a significant (p<0.01) increase in average daily gain in lambs fed yeast compared to lambs without yeast (205 g/d versus 162 g/d). There was no effect (p>0.05) of feeding yeast on WBC count. The frequency of diarrhea occurance decreased markedly in the group fed yeast.

Key Words: Saccharomyces cervisiae, Suckling lamb, Average daily gain

W249 Effects of ACTH and ascorbic acid application on phagocytic activity of neutrophil leukocytes in Akkaraman sheep. F. S. Hatipoglu*[1], C. Altinsaat[2], and N. Sulu[2], [1]*Akdeniz University*, *Burdur, Turkey*, [2]*Ankara University*, *Ankara, Turkey*.

The aim of this study was to determine the effects of ascorbic acid (AA) and ACTH on phagocytic activity of neutrophil leukocytes (PI) of Akkaraman sheep. One year-old Akkaraman sheep (n=18) were assigned randomly to three experimental groups (TRT I=ACTH; TRT II=AA; TRT III=ACTH+AA; n=6 per group). Blood samples were taken one week before the experiment as control values. Sheep in TRT I, II, and III received 20 unit/kg/day ACTH, 100 mg/kg/day AA, and 20 unit/kg/day ACTH +100 mg/kg/day AA, respectively for 7 d. All sheep were fed ad libitum during the experiment. Control values for total leucocyte, neutrophil leukocyte and PI for TRT I, II, and III were 6.36±0.45, 6.26±0.65, and 6.31±0.78 $\times 10^3/\mu L$ (P>0.1); and 1.77±0.30, 1.81±0.39 and 1.86±0.28 (P>0.1)$\times 10^3/\ \mu L$; and 2.07±0.28, 2.13±0.25 and 2.09±0.25 (P>0.1), respectively. Following a week of treatment period, values for total leucocyte, neutrophil leukocyte and PI for TRT I, II, and III were 7.92±0.54, 6.43±0.44, and 6.73±0.52 $\times 10^3/\mu L$ (P<0.05); and 3.52±0.57, 1.92±0.42 $\times 10^3 \mu L$ (P<0.05) and 2.33±0.25; and 1.33±0.36, 2.25±0.26 and 1.89±0.28 (P<0.05), respectively. Thus, ACTH application increased the neutrophil leukocyte and total leukocyte count, and decreased the PI. However, AA administration reversed the action of ACTH. In conclusion, AA had a positive contribution on the phagocytose efficiency of the neutrophil leukocytes in ACTH-exposed Akkaraman sheep.

Key Words: ACTH, Ascorbic acid, Phagocytic index

W250 Gonadal and epididymal sperm counts in growing Ossimi rams in Egypt. A. M. Osman*, *Assiut University*, *Assiut, Egypt*.

Ossimi is the most popular sheep breed in Egypt. Gonadal and epididymal sperm reserves were studied in 48 slaughtered Ossimi rams. Animals were classified into eight age groups (6, 7, 8 to 9, 12, 15, 18, 24 and >24 months). Testis and epididymis (caput, corpus and cauda) of one side were dissected and weighed separately, and their volumes were determined by water displacement. The whole

testis and regions of the epididymis were cut into small pieces, then homogenized with known volumes of saline using an electric mixer. Three drops sodium hydroxide (2%) and two drops eosin solution (3%) were added to 5 ml of the homogenate and gently mixed. Stained sperm heads were counted twice using a cytometer. Sperm were not detected in any organ at 6 months of age, while two animals at 7 months had sperm in only their testes. The average testicular weight, sperm per g tissue and total sperm per gonad in these two animals were 48.5 g, 23.6 x 10^6 sperm, and 1.14 x 10^9 sperm respectively. At 8 to 9 months, sperm were detected in all testes and epididymes. Testis weighed 51.3 ± 1.8 g, while sperm count per g tissue and per organ were 26.1 ± 4.2 x 10^6 and 1.34 ± 0.23 x 10^9 respectively. Total sperm in the epididymis was 1.64 ± 0.19 x 10^9. Testes and total sperm development showed significant increases ($P<0.01$) until 24 months. The maximum number of sperm per g tissue occurred at 15 months (90.2 ± 7.9 x 10^9). Epididymis (weight and total sperm) developed slowly from 7 to 12 months then rapidly until 24 months. Each region of the epididymis grew independently. Ratios of caput and corpus weights to whole epididymis were 41.3% and 20% respectively at 8 to 9 months. These ratios decreased to 39.7% and 13.6% respectively at 18 months. Ratios recorded for cauda increased from 38.7% to 46.7% respectively at the same ages. There were similar trends for sperm counts. At 24 months, cauda contained 45.15 ± 7.9 x 10^9 sperm representing 80.7% of total epididymal sperm. Correlations between testis-epididymis weights and their sperm counts were significant ($P<0.01$). These data may be of value when selecting rams for breeding.

Key Words: Ossimi rams, Testis, Sperm

W251 The effect of two management systems on milk composition in dairy ewes. S. A. Maestá, E. R. Siqueira, M. M. Stradiotto, C. C. Boucinhas, A. Piccinin, and R. M. S. Emediato*, *São Paulo State University*, *Botucatu, São Paulo, Brazil*.

Several factors that contribute to variation in production and quality of ewe milk have been described, such as environment, breed, age of ewe, lactation stage, number of lambs or milking techniques, sanitary condition and udder infections, herd management and nutritional level during gestation and lactation. The objective of this project was to evaluate two milk production systems and their effect on milk chemical composition using 87 Bergamasca ewes. Ewes in one group were separated from their lambs 48 h after birth, while ewes in the second group were kept with their lambs until the lambs were weaned at 60 days of age. All ewes were machine-milked for a period of 90 days. Milk samples were collected once a week for analyses of lactose, protein, fat and total solids using infrared. The analyses were carried out at the Milk Cattle Breeding Management Technology Center, ESALQ/USP, Piracicaba, São Paulo. The data were statistically analyzed using the GLM procedure of SAS. Differences in production of fat, protein, lactose and total solids contents during the whole lactation were observed between the two systems ($P<.05$). Fat content of the milk from the ewe group without lambs was higher (5.51%) than the ewe group with lambs (3.74%). Differences in protein content of the milk were also found; however, average protein values were within levels reported in previous studies.

Key Words: Dairy sheep, Milk constituents, Machine-milking

W252 Identification of quantitative trait loci affecting parasite indicator traits in a double backcross population of sheep. T. Sonstegard*[1], F. Iraqi[2], J. Mugambi[2], C. Van Tassell[1], F. Garcia[3], O. Hanotte[2], S. Nagda[2], J. Gibson[4], and L. Baker[2], [1]*USDA, ARS Bovine Functional Genomics Laboratory*, *Beltsville, MD*, [2]*International Livestock Research Institute*, *Nairobi, Kenya*, [3]*FAO/IAEA Animal Production Unit*, *Vienna, Austria*, [4]*University of New England*, *Armidale, NSW, Australia*.

The natural genetic variability of the ruminant immune system provides a feasible means to control gastro-intestinal (GI) parasite infection. To initiate explanation of important allelic differences, a genome-wide analysis for quantitative trait loci (QTL) was initiated in a double backcross population generated by mating six F1 Red Maasai x Dorper Rams to both Red Maasai (resistant) and Dorper (susceptible) ewes. A total of 1,063 backcross lambs were monitored through two cycles of natural challenge on pasture. Only the phenotypic extremes (most resistant 10% and most susceptible 10%) for fecal egg count (FEC), packed cell volume (PCV) and the decline in PCV (PCVD) measured on 6-month-old lambs were genotyped (N=371 lambs). A preliminary half-sib regression analysis was done on chromosomes (Chr) 6, 8, 9, 10, 11, 13, 14, 16, 20, 23, and 26. Significant QTL ($f > 3.0$) were detected for FEC and PCV indicator traits on Chr 6, PCV on Chr 20, and live weight on Chr 26. The QTL detected on Chr 6 is located in the approximate genome position containing QTL found in cattle and other sheep populations for parasite indicator traits. These results are an initial step in developing breeding schemes based on marker-assisted selection that will introgress genomic regions controlling resistance from one breed to another.

Key Words: QTL, Parasites, Sheep

W253 An ovine whole-genome radiation hybrid map. C. H. Wu*[1], K. Nomura[1], T. Hadfield[1], J. E. Womack[2], and N. E. Cockett[1], [1]*Utah State University*, *Logan*, [2]*Texas A&M University*, *College Station*.

A collaborative project between Utah State University and Texas A&M University has produced an ovine whole-genome radiation hybrid (RH) 5,000-rad panel consisting of 90 clones, with retention frequencies between 15-40%. Large DNA preparations (around 6 mg/clone) have been produced from each cell line and have been diluted to a working concentration of 25ng/µl. The panel has been distributed to four international laboratories. To date, 299 markers that have been previously assigned on the ovine and bovine linkage maps have been tested on the panel. One hundred fifty four (51.5%) of these markers produced resolvable patterns and will be typed across the whole panel. We will also screen primers developed from ovine BAC end sequencing and SNP projects across the panel. These data will be used to develop a framework/comprehensive RH map for sheep.

Key Words: Ovine, Whole-genome radiation hybrid, Comprehensive RH map