

ewes treated on G9. In conclusion, ewes with rapid and complete luteal regression, ovulation occurred from the dominant follicle of wave 2 when the animals are treated on days 7 and 9.

Key Words: follicles, prostaglandin, ultrasonography

T234 Endocrine function and follicular growth in sheep treated with exogen progesterone. L. F. Uribe Velásquez^{*1}, M. I. Lenz Souza², and A. Correa Orozco¹, ¹University of Caldas, Manizales, Caldas, Colombia, ²Federal University of Mato Grosso do Sul, Campo Grande, MS, Brazil.

The effects of progesterone (P₄) on ovarian follicular growth and reproductive endocrinology were studied. Fourteen ewes, synchronized using prostaglandin (PGF_{2α}), were randomly divided in two groups (n=7/group); control group and progesterone-treated group (CIDR) after ovulation (day zero). From one day before PG injection until day 10, ultrasonic scanning was carried out transrectally while the animals were fixed in a standing position using an Aloka SSD-500 with a 7.5 MHz for to establish follicular growth. Blood samples were collected from one day before PG until day 10 post-ovulation and serum concentrations of P₄ were determined by radioimmunoassay. For profile of luteinizing hormone (LH) pulses, blood samples were collected at 30-min intervals for a period of 8h on days one and six. LH were determined by previously validated radioimmunoassay. The growth rate was different between groups (P<0.001), being 0.91±0.15 and 0.70±0.16mm/d for control and treated group, respectively. Mean concentrations of P₄ (P<0.001) were different between treatments, with values on the day of maximum follicular growth of 3.82±0.17 ng/ml (control) and 5.56±0.56 ng/ml (treated). Mean plasma LH concentration and LH pulse amplitude there were no significant differences between groups (P<0.05). Differences in LH pulse frequency on day one (P<0.01) and day six (P<0.05) were observed (Table1). These data suggest that the inhibitory effects of exogen P₄ on the diameter of dominant follicle was mediated by reduced LH pulse.

Table 1. Mean LH concentrations (µg/L) and LH pulse frequency (pulse/8h) and amplitude (µg/L) on day one and day six of the estrous cycle (Mean ± SD).

Day	Group	Concentration	Pulse amplitude	Pulse frequency
1	Control	0.66±0.11 a	0.33±0.30 a	2.55±0.09 a
1	Treated	0.56±0.27 a	0.42±0.21 a	1.49±0.11 b
6	Control	0.68±0.11 A	0.87±0.30 A	2.20±0.09 A
6	Treated	0.58±0.27 A	0.70±0.21 A	1.22±0.11 B

Mean with different letters within columns differ: a vs b (P<0.01) y A vs B (P<0.05)

Key Words: follicular dynamic, LH, progesterone

T235 Real time PCR quantification of mRNA expression in the corpus luteum of cows induced to ovulate following different hormonal treatments. P. Ponce Barajas^{*1,2}, M. G. Colazo¹, J. P. Kastelic³, M. K. Dyck², and D. J. Ambrose^{1,2}, ¹Alberta Agriculture and Rural Development, Edmonton, AB, Canada, ²University of Alberta, Dept of Agricultural Food and Nutritional Science, Edmonton, AB, Canada, ³Agriculture and Agri-Food Canada, Lethbridge, AB, Canada.

The objective was to determine if the expression of genes involved in steroidogenesis (StAR, P450scc) or otherwise relevant to CL function (NR3C1, VEGFA, FAS, EP2, PGHS2, SREBP1, OCT4, OXTR, and PGFR) differed among CL formed spontaneously or after ovulation induced with GnRH, porcine LH, or estradiol benzoate (EB). Twenty-four cows were induced to ovulate naturally without any treatment (Control; n=4) or with 1 of 4 treatments [12.5 mg pLH (n=4), 25 mg pLH (n=6), 100µg GnRH (n=5) or 1 mg EB (n=5)]. On Day 12 post ovulation, ovaries were surgically removed for the total RNA (1µg) purification from CL tissue sections using TRIzol[®]Plus kit for a two-step real-time Q RT-PCR analysis with Power SYBR[®] Green PCR Mix in a 7900HT Fast Real-Time PCR System. Data obtained as cycle threshold (C_T) value, were normalized in the comparative C_T method using a normalization factor of the geometric mean of three selected house keeping genes (H2AFZ, G3PDH and SDHA). Data were transformed with control group mean as calibrator (Vandesompele et al. 2002; Genome Biol. 3/7/research/0034). GLM procedure was used to analyze the data and comparison of means performed using the pdiff option in SAS. No statistical differences were evident in the expression of most genes analyzed. The expression of StAR in CL of cows induced to ovulate with 12.5 mg pLH tended (P<0.07) to be greater than in Control (1.94 vs. 1.00), whereas the expression of OXTR gene was lower in CL induced after EB and GnRH treatments, relative to Control (0.33 and 0.29 vs. 1.00; P<0.05).

Key Words: corpus luteum, gene expression

Production, Management and the Environment: Dairy

T236 A stochastic decision support system tool for dairy expansion. J. Janowski* and V. E. Cabrera, University of Wisconsin, Madison.

Study objectives included addressing specific producer needs during periods of herd growth and developing a stochastic decision support system tool employed for risk management in dairy production and expansion. Three million lactations from the past five years have been compiled in a database which includes monthly recordings of milk and component production, pregnancy status, and culling decisions. Simulation based on those records will guide the development of best management practices using identified performance measures as benchmarks.

Markov chain simulation assigns probabilities to predicted performance levels of individuals or groups of cattle within specific time periods. Creation of a decision support system tool with functions designed for modeling herd structure and production over time will allow users to run “what-if” analyses adapted to a wide variety of herd management and economic conditions. Four bred heifer purchasing strategies were evaluated over a 54-month period and income over variable cost calculations were conducted to identify optimal herd growth strategies for a herd that grew from 150 to 300 cows. A strategy which involved purchasing 98 bred heifers within the first three months of the expansion phase

produced a 14% higher income over variable cost compared to mean values of all scenarios evaluated. Sensitivity analysis was conducted to further validate these results using price levels 10% above and below past five year averages for milk, culling, and bred heifer prices. Mean total income over variable costs for the optimal purchasing strategy during the 54-month term was \$1,743,282 (SD = 457,117) or \$5,267 (SD = \$1,380) per cow. Although initial results indicate strong positive gains in income over variable costs for all growth strategies, facility and other capital investments were not considered in this study. Inclusion of these costs is subject to further development.

Key Words: decision support system, simulation, dairy expansion

T237 Airborne endotoxin concentrations at a large open lot dairy in Southern Idaho. R. S. Dungan and A. B. Leytem*, *USDA-ARS, Kimberly, ID.*

Endotoxins are derived from Gram-negative bacteria and are a potential respiratory health risk for animals and humans. To determine the potential for endotoxin transport from a large open lot dairy, total airborne endotoxin concentrations were determined at an upwind location (background) and five downwind locations on three separate days. The downwind locations consisted of the edge of the lot, 200 and 1,390 m downwind from the lot, and downwind from a manure composting area and wastewater holding pond. When the wind was predominantly from the west, the average endotoxin concentration at the upwind location was 24 (SE = 11) endotoxin units (EU) m⁻³, while at the edge of the lot on the downwind side it was 259 (SE = 68) EU m⁻³. At 200 and 1,390 m downwind from the edge of the lot, the average endotoxin concentrations were 168 (SE = 27) and 49 (SE = 9) EU m⁻³, respectively. Airborne endotoxin concentrations downwind from the composting site and wastewater holding pond, and 1,390 m from the edge of the lot, were not significantly different than the upwind location. In addition, there were no significant correlations between ambient weather data collected and endotoxin concentrations over the experimental period. The downwind data show that the airborne endotoxin concentrations decreased exponentially with distance from the lot edge. Decreasing an individual's proximity to the dairy should lower their risk of airborne endotoxin exposure and associated health effects.

Key Words: endotoxin, dairy, lipopolysaccharide

T238 Iodine levels in Canadian bulk-tank milk. S. I. Borucki-Castro*¹, R. Berthiaume¹, S. Turcotte², A. Robichaud², and P. Lacasse¹, ¹*Dairy and Swine R&D Centre, Sherbrooke, QC, Canada*, ²*Health Canada, Food Directorate, Health Products and Food Branch, Longueuil, QC, Canada.*

A study was conducted, to determine concentration of iodine in bulk-tank milk and its relationship with milking and feeding management practices. Milk samples were collected from the bulk-tank of 501 farms across all provinces of Canada. In order to obtain further information about the farm's management, a questionnaire was completed by each of the selected farms. Total iodine concentration (organic and inorganic) of milk was determined using inductively coupled plasma mass spectrometry. Descriptive statistics and the analysis of the relationship between management practices and iodine levels were done using Student- t and ANOVA statistic tests. The mean iodine level in Canadian bulk-tank milk was 304 ± 8.4 µg/kg. There was a wide range of iodine concentrations (54 to 1,902 µg/kg), with a high coefficient of variation (61.7%). Analysis of the questionnaire's data suggests that farms using

total mixed rations instead of component feeding produced higher milk iodine (340 vs. 269 µg/kg; P < 0.001). Interestingly, neither usage of mineral supplementation nor the form of the supplementation affected iodine levels in milk. Washing the teats before milking was associated with lower concentrations of iodine (314 vs. 286 µg/kg; P = 0.09). Teat dipping before milking resulted in higher levels of iodine in bulk-tank milk (328 vs. 274 µg/kg; P < 0.001), but the form of application of the teat sanitizers appears important as spray applications (in line or hand spray) were associated with higher levels compared with the dip cup procedure (408 vs. 312 µg/kg; P < 0.05). As the vast majority of farms used teat dipping after milking, no significant association was found. However, its form of application appears important (P < 0.01) averaging 296, 447 and 328 µg/kg for dip cup, in line spray and hand spray respectively. In conclusion, Canadian bulk-tank milk iodine concentration varies considerably and appears to be influenced by feeding and milking practices. *This research was supported by the Dairy Farmers of Canada.*

T239 Sicilian dairy herd demographics with a focus on culling. D. Galligan*¹, G. Azzaro², A. Pozzebon², S. Ventura², and G. Licitra^{2,3}, ¹*University of Pennsylvania, School of Veterinary Medicine, Kennett Square*, ²*CoRFiLaC, Regione Siciliana, Ragusa, Italy*, ³*D.A.C.P.A., University of Catania, Italy.*

Measuring culling is an important metric in managing a dairy herd. Basic, herd demographic data (number of cows, age, reproductive status, etc) and culling information (date of culling, reason for culling) was collected from 1999-2008, on the CoRFiLaC computer record system for dairy farms in the Hyblean region, Province of Ragusa, Sicily. Over the study period, a total of 403 dairy farms participated with 388 herds starting in 1999. Complete culling records (27,714) from 32,819 culled cows were examined and comparisons made to similar records from the US dairy NAHMS (2007) report. The top ranking reasons for culling (% of culled cows), reproductive inefficiency (28.8%), and mastitis (13.1%) matched in ranking the findings of the NAHMS for US dairy herds. Other reasons for culling included traumatic reticulitis 10.9%, low production 6.2%, and lameness 2.4%. Eight percent of culls occurred before 42 days in lactation. Four methods were used to estimate the annual culling rate/herd: A) culled/calving per year, B) number culled/ (average of starting and ending population), C) number culled/(average of starting and ending + culls), and D) based on the average age of cows and heifers calving. These methods were compared to an epidemiological rate based on the (number annually culled/(sum of total cow days in the herd/365)). Equation B was symmetrical to the epidemiological rate, reflecting the limitations of estimating the average annual population on a beginning and ending point. Equation A over-estimated the culling rate, reflecting the fact that many cows have calving intervals greater than 12 months thus reducing their measured presence in the denominator. At very low culling levels, equation C was symmetrical around the epidemiological calculation but then underestimated the rate at higher levels.

Key Words: culling rate, management, dairy cattle

T240 The effect of pregnancy on milk fat percent. C. D. Dechow*¹, J. E. Vallimont¹, J. S. Clay², and C. G. Sattler³, ¹*The Pennsylvania State University, University Park*, ²*Dairy Records Management Systems, Raleigh, NC*, ³*Select Sires, Inc., Plain City, OH.*

The objective of this study was to estimate the effect of pregnancy on test day milk fat percent (TDFAT). Dairy Records Management Systems, Raleigh, NC, provided lactation records for 12,726 Holstein cows with

a successful first service that could be confirmed by a subsequent calving date. Lactations commenced between September 2005 and March 2007. Days to first service were limited to 41 to 216 d and first through ninth lactations were represented. Data analysis included 64,041 test days after confirmed conception. Three seasons of calving were used and duration of pregnancy was defined as months carried calf (MCC). Values for MCC were one to eight, as month nine had few observations (n=23) and was combined with month eight (n=2339). Initially, a two trait model in ASREML was used for data analysis of TDFAT and test day milk yield (TDMILK), and variables were MCC, week of lactation, herd-year-season of calving, age at calving, and parity. Residual variance was varied by MCC. Months carried calf and week of lactation were both significant predictors of TDFAT ($P<0.001$). A second analysis was done for TDFAT with TDMILK added to the model as a covariable. Months carried calf remained a significant predictor of TDFAT, and week of lactation and TDMILK were also significant in this model ($P<0.001$). Least-squares-means for TDFAT increased as MCC increased in both models. Test day milk fat percent increased from 3.88% to 3.98% between MCC 3 and MCC 8 in the first model, and from 3.78% to 3.84% between MCC 2 and MCC 8 in the model that included TDMILK as a covariate. Results indicated that increasing duration of pregnancy may influence milk fat percentage of dairy cows.

Key Words: milk fat percent, duration of pregnancy

T241 Effect of rumen protected niacin (NiaShure[®]) supplementation during summer on milk production, and composition in lactating dairy cows. S. Emanuele*¹ and D. Schoenbaum², ¹Balchem, New Hampton, NY, ²Akey, Lewisburg, OH.

Previous studies feeding 12 g/d of rumen-protected niacin (NiaShure[®]) reported that supplementation of niacin to lactating cows during periods of heat stress increased milk fat, milk protein percent and energy corrected milk. The objective for this trial was to determine the effect of supplementation of rumen-protected niacin (NiaShure[®]) at 6 g/d on milk yield and composition in cows producing greater than 45 kg of milk. The trial was conducted on a commercial dairy in central NY. Two groups of early lactation cows (n= 185/group) were balanced for milk yield, DIM, and parity and assigned to either a control or rumen-protected niacin (RPN) diet (6 g/d, NiaShure[®]). Diets were identical except for the addition of RPN. The diets contained whole cottonseed and tallow and dietary fat concentration was 5.8%. Diets were fed June through September. Milk yield and composition was measured monthly by DHIA. Milk yield and composition was analyzed using the mixed model procedure of SAS. Pen was the experimental unit used for statistical analysis. Fixed effects were treatment, month and treatment X month. Milk yield was not different between treatments, 48.6 kg/d and 48.3 kg/d. Milk true protein percent was increased 4.8% by supplementation of NiaShure[®] ($p<0.02$). Milk true protein percent was 2.59% and 2.72% for control and NiaShure[®] diets. Milk fat percent was not different for control and NiaShure[®] diets (3.27% and 3.34%). There was a trend for a reduction in milk fat to protein ratio ($p<0.09$) on the NiaShure[®] diet compared to the control diet (1.23 versus 1.27). Supplementation of NiaShure[®] during the summer increased the value of milk by increasing milk protein by 0.13 units.

Key Words: niacin, rumen-protected niacin, NiaShure

T242 Effect of mixing before on-farm milk sampling on milk fat percent. M. Vazirigohar* and M. Dehghan Banadaki, *University of Tehran, Karaj, Tehran, Iran.*

Adequate air bubbling through the milk in an on-farm weigh jar is required to ensure homogeneity before sampling. Samples (n=960) were taken from 120 lactating Holstein cows at second meal of milking during 2 sequential days. The vacuum is left on and the sampler valve opened to allow air to enter and mix the milk to collect four samples at 0, 10, 20 and 30 seconds air bubbling from the same weigh jar at each milking. Least square means of milk fat percentage was lower ($p<0.01$) without air bubbling ($2.58\pm 0.076\%$) compare to 10, 20 and 30 seconds ($3.5\pm 0.074\%$, $3.57\pm 0.074\%$ and $3.66\pm 0.074\%$, respectively). There was no differences between 10, 20, 30 seconds air bubbling through the milk on milk fat percentage. There were no differences between air bubbling times when a weigh jar contains lower than 6 kg milk.

Key Words: milk sampling, air bubbling, milk fat percentage

T243 Agreement between fat and protein measurements from DHIA and the AfiLabTM real time milk analyzer. A. De Vries*, M. J. Hayen, E. J. Diepersloot, A. H. Sanders, D. W. Webb, and D. R. Bray, *University of Florida, Gainesville.*

Objective of this study was to assess the degree of agreement between measurements of %fat and %protein from DHIA and the AfiLabTM real time milk analyzer. The AfiLabTM milk analyzer measures milk components for each cow at each milking in real time. The AfiLabTM milk analyzer is based on light scattering off matter. One milk analyzer was installed in each stall of the double-12 milking parlor at the University of Florida Dairy Unit in 2007. In 2008, approximately 400 Holstein cows were milked 2X daily in 12-hour intervals. Standard DHIA testing was performed each month alternating between the morning and evening milking. The AfiLabTM method was calibrated after each test day with the DHIA test day results for %fat and %protein. For this study, all available data from the test days in July through December 2008 were used (6 test days). Pairs of measurements by the DHIA and AfiLabTM methods were available for %fat and %protein (n=2,324). Mean and standard deviation (SD) were $3.66 \pm 0.87\%$ for DHIA %fat, $3.72 \pm 0.70\%$ for AfiLabTM %fat, $3.10 \pm 0.36\%$ for DHIA %protein and $3.07 \pm 0.37\%$ for AfiLabTM %protein. The unadjusted concordance correlation coefficients were 0.59 for %fat and 0.70 for %protein. Differences were calculated as DHIA measurement minus AfiLabTM measurement. Mean and SD of the unadjusted differences between both methods were -0.054 ± 0.716 percentage points (PP) for %fat and 0.036 ± 0.273 PP for %protein. The 1-, 50-, and 99-percentile unadjusted differences were -1.73, -0.08, and 2.14 PP for %fat and -0.63, 0.03, and 0.79 PP for %protein. The 95% limits of agreement were -1.36 and 1.46 PP for %fat and -0.61 and 0.54 PP for %protein. Variance components for these limits were obtained with a mixed model for each trait with the random effects of method x cow and cow x test day following the standard approach in method comparison studies. In conclusion, there can be considerable discrepancies between the 2 methods and the degree of agreement is moderate. Either method could contribute to the lack of agreement because the true %fat and %protein are not known.

Key Words: fat, protein, agreement

T244 Imprinting effects of lactational performance from dam to calf during gestation. V. A. Absalón Medina*, R. W. Everett, M. E. Van Amburgh, and W. R. Butler, *Cornell University, Ithaca, NY.*

The objective of this research was to investigate effects associated with the dam's milk production during gestation on female offspring's birth weight and first lactation milk production. The database consisted of 415 heifer calves born between 2001 and 2005 in a single herd. Milk production data was obtained using a test day model (TDM) that adjusts for the effects of calving year, season, management and environment on lactation performance reported as residual values (deviations from the grand mean). A two-level cow effects model was used to assess the effect of the dam's lactation residual milk production (Lac Res) during gestation on the offspring's birth weight (BWT). A second model estimated the effect of the same independent variable (Lac Res) on the offspring's first lactation milk yield, also assessed by test day residuals. The model used was $Y_{ij} = \gamma_{00} + \gamma_{01}(x_j) + u_{0j} + r_{ij}$, where $Y = \text{BWT}$ (or first Lac Res in the second model) of the i th heifer calf of the j th dam, γ_{00} is the intercept, γ_{01} is the slope times the j th dam Lac Res; u_{0j} represents the variation in intercepts between cows and r_{ij} represents the variation within cows. There was a positive relationship between the dam's Lac Res and the heifer calf's BWT ($p=0.01$). Parameter estimates are represented as: $\text{BWT} = (42.9 \text{ kg}) + (0.000455) * \text{Dam Lac Res}$. Thus for every 450 kg of increased milk production by the dam, the resulting calf would weigh 0.205 kg more at birth when compared to the average. In addition, restricted maximum likelihood (REML) variance components estimates of offspring's BWT accounted for 48.4% variation between cows and 51.6% variation among calves within cows. The second model was: $\text{Offspring Lac Res} = (-390 \text{ kg}) + (0.15364) * \text{Dam Lac Res}$. Thus a 450 kg increase in dam Lac Res resulted in a 69 kg increase in the offspring's first Lac Res ($p=0.014$). REML variance components estimates indicated that there is more variation among calves within dams (73.5%). These data suggest that higher milk production by the dam results in greater offspring birth weight and increased milk yield in the first lactation.

Key Words: milk residuals, multilevel model, test day model

T245 Deviation of reticular temperatures in association with mastitis and estrus. J. M. Bewley*^{1,2}, M. E. Einstein¹, M. W. Grott¹, and M. M. Schutz¹, ¹*Purdue University, West Lafayette, IN,* ²*University of Kentucky, Lexington.*

Reticular cow temperatures were collected using the Phase IV Cattle Temperature Monitoring System (Phase IV Engineering Inc., Boulder, CO) immediately after each milking from 298 Holstein cows at the Purdue Dairy Research and Education Center. Raw reticular temperatures were edited to remove erroneous reads and temperatures potentially influenced by water intake by removing temperatures (1) $< 35.6^\circ\text{C}$ or $> 42.2^\circ\text{C}$, (2) < 3 SD from the overall mean temperature for the entire data set, and (3) < 3 SD from each individual cow's two-week rolling temperature average. The unadjusted mean of the remaining 131,181 temperatures was 38.77°C (± 0.44). Temperatures were then adjusted for the impact of milking time, parity, temperature humidity index, housing system, DIM, and milk yield. Breeding and illness events were recorded by herd managers. Only events with a matching temperature recording on the day of the event were retained for analysis. Eighty-one distinct natural estrus events and 91 distinct mastitis events were used in all subsequent analyses. A rolling mean temperature was calculated using the 5 most recent recorded temperatures. The number of standard deviations (NUDEV) from which each respective temperature varied from this baseline was then calculated. The maximum temperature and NUDEV

among the last 14 temperatures was used as a baseline to assess whether a temperature deviation was observed for mastitis events. Mean maximum temperature and NUDEV were 39.78 (± 0.83) and 4.99 (± 4.30), respectively. The NUDEV was more than 3 in 57.14% of mastitis events and MAXTEMP was greater than 39.44°C for 58.24% of mastitis events. The maximum temperature and NUDEV among the last 4 temperatures was used as a baseline to assess whether a temperature deviation was observed for breeding events. Mean maximum temperature and NUDEV were 39.04 (± 0.50) and 2.03 (± 1.52), respectively. The NUDEV was more than 3 in 24.69% of breeding events and MAXTEMP was greater than 39.44°C for 17.28% of breeding events. Natural variation in cow body temperatures may limit the utility of a reticular-based temperature monitoring system with twice-daily recordings.

Key Words: temperature monitoring, reticular temperature

T246 Effect of Gammulin supplementation in milk of dairy calves during the first 24 d of life on growth and health. G. Lopes Jr.*¹, L. G. D. Mendonça¹, S. Hayes², and R. C. Chebel¹, ¹*Veterinary Medicine Cooperative Extension, University of California Davis, Tulare,* ²*APC Inc., Ankeny, IA.*

Objectives were to evaluate the effect of adding Gammulin (GAM) to milk fed to calves from 2 to 24 d of age. All calves were fed colostrum twice, at 2 and 12 h after birth. Calves were randomly assigned to one of two treatments after balancing for gender, body weight (BW), and serum total protein (TPTN). Calves supplemented (GAM=263) received 25 g of Gammulin divided in 2 feedings from 2 to 24 d of age and control calves (CON=255) did not. From enrollment to 25 d of age calves were fed pasteurized waste milk (WM) and from 26 to 60 d of age calves were fed WM plus replacer (WMR). Calves were weighed at 23 and 60 d of age. Daily, starter intake (SI), attitude and fecal score, and anti-biotic (ATB), anti-inflammatory (AIN), and oral electrolytes (OE) treatments were recorded. Blood was sampled at 8, 15, and 24 d of age for measurement of TPTN and hematocrit (HMT). At enrollment, BW was $40.4 \pm 0.2 \text{ Kg}$ and TPTN 6.5 ± 0.1 and $6.3 \pm 0.1 \text{ mg/dL}$ ($P=0.05$) for CON and GAM calves, respectively. During supplementation, treatment did not affect HMT, but GAM calves had greater TPTN (CON= 5.3 ± 0.03 , GAM= $5.4 \pm 0.03 \text{ mg/dL}$; $P=0.03$). Attitude score was not affected by treatment, but on week 2 of age GAM calves had smaller fecal scores (3.2 ± 0.03 vs. 3.3 ± 0.03 ; $P=0.04$) and on week 3 CON calves tended to have smaller fecal scores (2.2 ± 0.04 vs. 2.3 ± 0.04 ; $P=0.07$). Average SI was greater for CON calves (400.1 ± 8.8 vs. $375.2 \pm 8.7 \text{ g/d}$; $P=0.04$) and BW did not differ at 23 d of age ($48.1 \pm 0.2 \text{ Kg}$; $P=0.21$), but CON calves were heavier at 60 d of age (69.9 ± 0.5 vs. $68.3 \pm 0.5 \text{ Kg}$; $P=0.01$), because from 23 to 60 d of age CON calves gained more weight (577.8 ± 17.3 vs. $544.5 \pm 16.8 \text{ g/d}$; $P=0.05$). Treatment did not affect mortality (5.2%) and incidence of diarrhea (99.6%) or fever (23.2%), but GAM calves were less likely to have diarrhea and fever (1.5 vs. 4.7%; $P=0.05$). Consequently, treatment did not affect number of d calves received ATB ($1.3 \pm 0.1 \text{ d}$) and AIN ($0.3 \pm 0.0 \text{ d}$), but GAM calves received OE for fewer days (5.1 ± 0.2 vs. $5.5 \pm 0.2 \text{ d}$; $P=0.02$). Gammulin reduced severity of diarrhea, but did not improve performance of dairy calves under the conditions of this trial.

Key Words: Gammulin, dairy calve, health

T247 Genetics and environmental effects which influence reproduction and milk production traits in goats in Rio de Janeiro State, Brazil. L. F. D. Medeiros¹, D. H. Vieira², C. A. Oliveira¹, L. Shikasho¹,

V. L. Tierzo³, J. P. F. Silveira³, T. F. Silveira³, P. Persichetti Junior³, and J. L. C. B. Reis^{*4}, ¹Rural Federal University of Rio de Janeiro, Seropedica, RJ, Brazil, ²Center of Creation of Animals of Laboratory, Rio de Janeiro, RJ, Brazil, ³São Paulo State University, Botucatu, SP, Brazil, ⁴University of Agrarian Sciences - University of Marília, Marília, SP, Brazil, ⁵Agricultural Municipal School Adolfo Alves Rezende, Campina Verde, MG, Brazil.

This study was carried out in Rio de Janeiro State of Brazil on three farms, using data of 1875 parturitions. The objective was to evaluate genetic and environmental effects, which influenced the reproduction and milk production of Saanen, Toggenburg and Parda Alpine, between 2004 and 2006. The data were analyzed using SAS (Statistical Analysis system, GLM procedures) and heritability was estimated using MTDFREML with an Individual Animal Model. The analyzed traits were gestation length (GL), age at first kidding (AFK), kidding interval (KI), total milk production (TMP) and lactation length (LL). The statistical model included fixed effects: farm, breed, month of kidding, parturition type, sex of kid; and the covariate, goats weight at matting time. The Parda Alpine breed had the lowest AFK. The Saanen breed had the highest TMP, while the Toggenburg breed had the highest KI. The heritability was low magnitude and dependent of breed. The KI was affected by farm, breed, month of kidding and sex of the kid. The breed and parturition type affected the AFK. The TMK was influenced by breed. The results of this study evidenced that there is a possibility to improve the goat performance in Rio de Janeiro State. The improvement on general management can be a faster option for the reduction of AFK and KI and increase the production levels in the study herd.

Key Words: age at first kidding, gestation length, kidding interval

Ruminant Nutrition: Additives

T249 Effects of capsicum extract on intake and performance of feedlot calves. A. L. Cardillo¹, A. D. Garciarena¹, C. Faverin¹, G. A. Gagliostro¹, J. M. Hernandez Vieyra⁴, and D. Colombatto^{*2,3}, ¹INTA, Balcarce, Buenos Aires, Argentina, ²Universidad de Buenos Aires, Buenos Aires, Argentina, ³CONICET, Buenos Aires, Argentina, ⁴Pancosma, Geneva, Switzerland.

Capsicum extract (CAP) has the potential to influence intake and performance of calves fed on high concentrate diets. Thirty two Aberdeen angus calves (160 kg initial weight) were separated in four groups and randomly allocated to 16 pens of 2 animals each. Treatments were no additive (CON), 133 mg/d of CAP (CAP133), 399 mg/d of CAP (CAP399), and 665 mg/d of CAP (CAP665), added into a mineral mixture. Diets were fed once a day and consisted (DM basis) of 33.6% whole corn grain, 33.6% coarsely ground corn grain, 26.2% pelleted sunflower meal, 5.1% corn silage and 2% mineral mixture. Animals had ad libitum access to water. After 15 days of adaptation to the diets, the experimental period lasted for 98 days. Dry matter intake (DMI), average daily gain (ADG), feed conversion ratio (FCR), rib eye area (REA) and subcutaneous fat deposition (SFD) were determined throughout the study. The REA and SFD deposition rates were determined by ultrasound. Data were analyzed using PROC MIXED, and repeated measures were used for DMI and FCR. Contrasts were also performed, and differences declared at $P < 0.05$. Addition of CAP did not alter ($P = 0.52$) daily DMI (14.8, 15.3, 16.2, and 14.4 kg/pen for CON, CAP133, CAP399, and CAP665, respectively), ADG (1.50, 1.44, 1.47, and 1.49 kg/d, respectively, $P = 0.60$), final live weight (295.9, 289.2, 293.5, and 293.9 kg, respectively, $P = 0.44$), and FCR (5.23, 4.94, 5.08, and 4.84, respectively, $P = 0.69$). Likewise, addition of CAP did not alter final SFD (10.68, 9.75, 10.03, and 10.73 mm for CON, CAP133, CAP399,

T248 Environmental effects and variance components of birth weight in dairy goats in Rio de Janeiro state, Brazil. L. F. D. Medeiros¹, D. H. Vieira², C. A. Oliveira¹, J. P. F. Silveira³, V. L. Tierzo³, M. V. Fonseca¹, T. F. Silveira⁵, P. R. C. Cordeiro⁶, and R. Belintani^{*4}, ¹Rural Federal University of Rio de Janeiro, Seropedica, RJ, Brazil, ²Center of Creation of Animals of Laboratory, Marília, SP, Brazil, ³São Paulo State University, Botucatu, SP, Brazil, ⁴University of Agrarian Sciences - University of Marília, Marília, SP, Brazil, ⁵Agricultural Municipal School Adolfo Alves Rezende, Campina Verde, MG, Brazil, ⁶Celles Lamb Foods, Nova Friburgo, RJ, Brazil.

This study was aimed at the evaluating the environmental effects on birth weight (BW) of 1175 Saanen, Parda Alpine and Toggenburg, males and females, born in 2004 to 2006. The mean was 3.60kg. There were not found significant differences among contemporary groups of birth, breeds or genetic compositions. Sex, twinning and their interaction were significant ($P < 0.01$). Linear and quadratic affects of age of doe at kidding were also significant ($P < 0.01$). Estimates were obtained using the Restricted Maximum Likelihood Method, with the MTDFREML program, assuming an animal a model. The estimatives of direct additive genetic, maternal, residual variance component and heritability for BW obtained were 0.175, 0.158, 0.288 and 0.25, respectively. Kidding BW studied showed moderate magnitude of heritability. Thus, it can be genetically improved.

Key Words: birth weight, dairy breeds, animal model

and CAP665, respectively, $P = 0.52$), rate of SFD (2.87, 2.45, 2.53, and 2.98 mm/month, respectively, $P = 0.21$), REA (53.97, 49.76, 47.65, and 49.29 cm², respectively, $P = 0.16$) and rate of REA growth (8.05, 6.71, 6.32, and 6.91 cm²/month, respectively, $P = 0.31$). These observations suggest that capsicum extract, applied at commercial doses, does not affect intake or performance of calves fed on high concentrate diets. It is yet to be determined whether addition of CAP affects initial rate of DMI or the ingestive behavior of the animals, measured through video images (data not shown).

Key Words: capsicum, feedlot, calves

T250 Effect of a mixture of eugenol and cinnamaldehyde on milk production and composition of goats during the first five months of lactation. D. Bravo^{*1}, N. Manteaux², P. H. Doane³, Y. Senlis², and M. Cecava³, ¹Pancosma, Geneva, Switzerland, ²Sanders Nutrition Animale, Bruz, France, ³ADM Research, Decatur, IL.

Prior meta-analysis of results with a mixture of eugenol and cinnamaldehyde (Xtract 6965, XT) has documented improvements in milk yield and DMI for mid-lactation dairy cows. The intent of this trial was to evaluate XT during earlier lactation, for a more extended period. Milk production and composition of dairy goats was monitored during the first 5 months of lactation. Seventy six pregnant Alpine goats receiving a common diet were selected for the experiment. Fifteen days after kidding, goats were separated in 2 groups balanced by parity and kidding date, multiparous goats were balanced for prior lactation performance. Group 1 received the control diet (CTR, no additive)