806 Metabolizable energy intake effects on carcass quality of steers finished in southern Chile during summer time. Rodrigo A. Arias*[1], Christian Alvarado-Gilis[1], Tami Brown-Brandl[2], and Terry L. Mader[3], *[1]Instituto de Producción Animal, Universidad Austral de Chile, Valdivia Chile, [2]MARC-ARS-USDA, Clay Center, NE, [3]Mader Consulting LLC, Gretna, NE.*

A total of 24 red Angus steers (BW = 431.2 ± 10.4) were sorted by BW and allocated in 4 pens (6/pen) equipped with a Calan Broadbent Feeding System to assess the effect of metabolizable energy intake (MEI) on carcass quality during the summer in southern Chile, and then allocated into one of 2 treatments 1.85 × or 2.72 × MEI for maintenance. Animals were fed once per day with the same diet, and treatments were applied by controlling DMI. Climatic data were obtained from a weather station located at 5 km southeast to assess animal thermal comfort by mean of 2 thermal indices (THI and the Comprehensive Climate Index). The study considered a period of 84 d on feed plus 19 d of pre-experimental period to allow the animals get used to the facilities and feeders. Finally, steers were slaughtered on 04/28/2014 in Temuco, where carcass data including hot and cold carcass weight, KPH, muscle pH, rib eye area, marbling score, and back fat were collected between 9th and 10th rib, after 48 h post slaughtering. All data were analyzed under a randomized complete block design arrangement (α = 0.05), with each steer an experimental and observational unit. The pH values in both treatments were considered suitable, 5.57 and 5.52 ± 0.05 for T1 and T2, respectively ($P = 0.42$). Values of back fat observed did not show differences (3.92 and 3.87 ± 0.77 for T1 and T2, respectively; $P = 0.96$). In the case of average values for rib eye area and KPH were also similar between treatments ($P > 0.05$). Finally, hot carcass weight was also similar between treatments ($P = 0.15$). Therefore, no differences between T1 and T2 were observed for carcass quality of steers finished during summer time in any of the variables measured. In addition, based on the thermal comfort indices assessed, animals did not suffer heat stress, being able to deal in good shape the summer season. The latter mainly due to the large temperature drop as resulting of cold nights and the availability of water. On the other hand, there were no differences in ADG (0.95 vs. 1.25 ± 0.15 kg/day for T1 and T2, respectively; $P = 0.18$). Based on the data herein collected we can conclude that for southern Chile conditions during summer time, MEI had no effect on beef carcass quality

Key Words: beef, summer, heat stress

807 Metabolizable energy intake effects on tympanic temperature and ADG of steers finished in southern Chile during summer. Rodrigo A. Arias*[1], Christian Alvarado-Gilis[1], Tami Brown-Brandl[2], and Terry L. Mader[3], *[1]Instituto de Producción Animal, Universidad Austral de Chile, Valdivia, Chile, [2]MARC-ARS-USDA, Clay Center, NE, [3]Mader Consulting LLC, Gretna, NE.*

A total of 24 red Angus steers (BW = 431.2 ± 10.4) were used to assess the effect of metabolizable energy intake (MEI) on ADG and tympanic temperature (TT) during summer time in southern Chile. Steers were sorted by BW and allocated in 4 pens (6/pen) equipped with a Calan Broadbent Feeding System, and then allocated into one of 2 treatments 1.85 × or 2.72 × MEI for maintenance. Animals were fed once per day with the same diet, and treatments were applied by controlling DMI. The TT of each steer was collected during 10 d in the summer with an ibutton device. Ambient temperature (AT), relative humidity, wind speed, and solar radiation data were obtained from a weather station near to the farm and used to estimate 2 thermal indices (THI and the Comprehensive Climate Index; CCI). All data were analyzed under a randomized complete block design arrangement (α = 0.05). The mean AT for all the period was 17.2°C. However, there was a great fall of AT (24°C) between day and night. The low temperatures at night allowed for the dissipation of heat accumulated during the day. The steers fed with 1.85 × MEI showed higher TT than those fed with 2.72 × MEI (38.07 vs. 38.02 ± 0.001°C; $P < 0.01$). However, this difference does not represent a significant change from the biological standpoint. None of the observed thermal comfort indices outperformed the thresholds established in the literature (THI = 68 and CCI = 25). However, maximum values of thermal indices THI, THI_{adj} and CCI were 75.5, 79.97, and 34.66, respectively. Animals showed signs of thermal discomfort, due to the increase in respiration rate, which was higher by 20 points during the afternoon ($P < 0.01$). This could be associated with the largest solar radiation received during the afternoon. On the other hand, there were no differences in ADG (1.25 vs. 0.95 ± 0.15 kg/day for 2.72 × and 1.85 × MEI, respectively; $P = 0.18$). In addition, both values are in line with those projected by the NRC Beef model, with superior value predicted in the case of 1.85 × MEI. Based on the data herein collected we can conclude that for southern Chile, the summer weather conditions and MEI had no effect on productive and physiological responses of animals

Key Words: thermal index, environment, climate

808 Effect of maternal heat stress on calf growth performance and metabolism. J-D. Liu*[1], A. P. A. Monteiro[1], B. M. Ahmed[2], T. O. Asar[2], Z. Wu[1], M. J. Hayen[2], G. E. Dahl[2], J. K. Bernard[1], and S. Tao[1], *[1]University of Georgia, Tifton, GA, [2]University of Florida, Gainesville, FL.*

Preliminary study suggests that maternal heat stress (HS) during late gestation exerts carryover effects on calf's insulin response after weaning, but comprehensive evaluation of how maternal HS affects calf feed intake and metabolic response from birth to weaning is still lacking. Our objective was to evaluate the effects of maternal HS during the dry period on calf feed intake, growth and metabolism from birth to weaning. After birth, 20 heifers born to either HS (n = 10) or cooled (CL, n = 10) dry cows were immediately separated from their dams and fed 3.8 L of pooled colostrum within 4 h. Then, all heifers were managed identically and weaned at 49 d of age (DOA). Calf starter intake was recorded daily, and body weight and withers height were assessed twice a week from birth to 56 DOA. Blood samples were collected at birth (before colostrum feeding), 24 h after birth, and then twice weekly until 56 DOA to assess hematocrit, plasma total protein, and concentrations of insulin and metabolites. To evaluate metabolic responses to maternal HS, a glucose tolerance test, insulin and epinephrine challenges were performed on 3 consecutive days for all heifers at 8, 29, and 57 DOA. Maternal HS during the dry period did not affect heifer birth weight. Compared with HS, CL calves consumed more starter (0.34 vs. 0.53 kg/d, $P < 0.06$) from birth to 56 DOA, were heavier (61.4 vs. 71.7 kg, $P < 0.01$) and tended to be taller (82.2 vs. 84.5 cm, $P = 0.15$) at 56 DOA. Although there was no treatment effect on hematocrit, a treatment by time ($P < 0.05$) interaction was observed, such that CL calves had higher hematocrit at birth (35.7 vs. 32.3%, $P = 0.03$) and 24 h after birth (31.9 vs. 28.4%, $P < 0.05$) compared with HS. Further, there were no differences between treatments on plasma total protein and concentrations of insulin and glucose. In conclusion, maternal HS during late gestation reduces calf starter intake and negatively affects calf growth. The

lower hematocrit of HS calves relative to CL at birth may indicate fetal hypoxia due to maternal HS.

Key Words: calf, heat stress, growth performance

809 Cows exposed to heat stress in utero exhibit improved thermal tolerance. Bahroz M. S. Ahmed*[1], Umair Younas[1], Turky O. Asar[1], Serdal Dikmen[2], Peter J. Hansen[1], and Geoffrey E. Dahl[1], *[1]University of Florida, Gainesville, FL, [2]University of Uludag, Bursa, Turkey.*

Maternal heat stress during the dry period affects calf performance during postnatal life. The objective was to evaluate whether calves that experienced heat stress in utero have altered thermoregulatory responses to acute heat stress later in life. Cows used in the study were born to dams exposed to heat stress (HT) or cooled (CL) during the dry period preceding their birth. All animals were raised postnatally under identical management. Eight HT (173 ± 132 DIM; 28.9 ± 5.2 kg/d milk) and 8 CL (167 ± 124 DIM; 30.1 ± 8.0 kg/d milk) lactating Holstein cows were used for the study. A heat stress challenge was conducted in 2 blocks using 4 HT and 4 CL cows matched according to milk yield, stage of lactation, and parity. Each challenge, which consisted of transfer from a barn with shade and evaporative cooling to one with shade but no additional cooling for a period of 48 h, was replicated twice for each block. Sweating rate, respiration rate, rectal temperature (RT), and skin surface temperature were measured on each cow at 0900, 1100, 1300, 1500 and 1700 h for 2 consecutive days. Mean ambient temperature across 4 challenge days was 23.8 ± 3.8°C. Sweating rate and skin temperature were measured on the right side of the cow on both shaved (5 × 5 cm) and un-shaved areas on the rump of the cow. During the challenge, differences were observed between treatments for RT (CL: 39.2 ± 0.06; HT: 39.0 ± 0.06°C; $P = 0.02$) and respiration rate (CL: 68.1 ± 1.6; HT: 62.2 ± 1.6 breath/min; $P = 0.01$). There were also tendencies for differences in sweating rate for shaved skin (CL: 30.7 ± 1.6; HT: 27.1 ± 1.6 g/m^{2}h; $P = 0.12$) and for unshaved skin (CL: 23.95 ± 1.18; HT: 21.44 ± 1.18 g/m^{2}h; $P = 0.13$). There was no effect on skin temperature at the shaved area (CL: 35.28 ± 0.12; HT: 35.32 ± 0.12°C; $P = 0.81$) or the un-shaved area (CL: 34.1 ± 0.14; HT: 34.0 ± 0.14°C; $P = 0.55$). The results support the hypothesis that heat stress in utero in late gestation increases heat tolerance at maturity by increasing capacity to dissipate heat to maintain core body temperature.

Key Words: heat stress, heat tolerance, cow

810 Feeding slow fermentable grains has the potential to ameliorate heat stress in sheep. Paula A. Gonzalez-Rivas*, Kristy DiGiacomo, Brian J. Leury, Jeremy J. Cottrell, and Frank R. Dunshea, *Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Parkville, Victoria, Australia.*

Rapid rumen starch fermentation of wheat increases the heat of fermentation and may increase the risk of heat stress (HS). Therefore, feeding slowly fermentable grains such as maize and reducing metabolic heat load may reduce HS in grain-fed sheep. Twenty-two Merino x Poll Dorset wethers were housed in 2 climate-controlled rooms and were fed either maize grain plus forage (39% starch) (MF, n = 11) or wheat grain plus forage (37% starch) (WF, n = 11) during 3 experimental periods: P1) 7 d of thermoneutral conditions (18–21°C and 26–30% relative humidity (RH)) and restricted feed intake (85% of unrestricted feed intake) ; P2) 7 d of HS (28–38°C and 40–50% RH) and restricted feed intake ; and P3) 7 d of HS as P2 with unrestricted feed intake (1.5 times maintenance) in a complete randomized block design. Water was offered ad libitum. Physiological parameters—rectal temperature (RT), heart rate (HR), respiration rate (RR) and left and right flank skin temperature (LST, RST)—were measured at 0900, 1300, 1700, and 2100 h. Blood samples were collected on d 2 and 7 of each period for pH, blood gas and hematocrit (HcT). Data were analyzed using restricted maximum likelihood (REML) in GenStat v14. All physiological parameters were elevated ($P < 0.001$) during HS especially during P3. RR, RT, LST, RST and HR were lower ($P < 0.05$) in sheep fed MF, particularly during HS. LST was higher ($P < 0.001$) than RST and sheep feed WF had a larger ($P < 0.001$) difference between LST and RST. During HS total CO_2 ($cTCO_2$), hemoglobin (cHgb), bicarbonate ($cHCO^{-3}$), HcT, lactate, glucose and base excess were lower than P1 ($P < 0.05$). In sheep fed MF, the partial pressure of CO_2, $cTCO_2$ and $cHCO^{-3}$ were higher ($P < 0.05$), while cHgb, pH and HcT were lower ($P < 0.05$) than WF. In conclusion, dietary maize, a slowly fermentable grain, reduced the metabolic heat load from feeding, expressed as reduced physiological parameters at thermoneutral conditions and ameliorated some of the physiological responses negatively affected by HS compared with dietary wheat.

Key Words: heat stress, sheep, grain

811 Heat stress at conception affects lifetime fertility, milk yield, and survival of Holstein cows. Pablo Pinedo*[1,2] and Albert De Vries[3], *[1]Texas A&M AgriLife Research, Amarillo, TX, [2]Department of Veterinary Pathobiology, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University System, College Station, TX, [3]Department of Animal Sciences, University of Florida, Gainesville, FL.*

The objective of this study was to analyze the association between month of conception (associated with heat stress) and subsequent milk yield, fertility, and survival in cows maintained in FL dairy farms. The hypothesis was that stress conditions at conception and during the initial stages of embryonic development would have a lifetime impact on performance and survival after birth. Initial data consisted of 667,104 DHI lactation records from cows calving between 2000 and 2012 in 152 FL herds. The magnitude of heat stress in each herd was evaluated after fitting Wood's lactation curves and comparing residuals from predicted and actual test-day milk yields by month as the direct effect of season. A sine function was fitted on the 12 residuals per farm using PROC NLIN (SAS). The difference between the highest and lowest points on the sine function was used as a seasonality index (SI). Only herds within the highest quartile for SI were included in the analyses. Cows were grouped according to the date when they were conceived: Summer (SU: Jul-Sept) and winter (WI: Dec-Feb) and comparisons were performed by parity using logistic regression and ANOVA. Control variables included calving month and year, age at first calving, and herd. Age at first calving (d) were 781 vs. 796 ($P < 0.001$) for WI and SU. The odds (95%CI) of survival to a second calving for WI cows were 1.19 (1.09–1.28) times the odds of survival for SU cows. Days from calving to first breeding were 138 vs. 143 ($P = 0.070$); 126 vs. 132 ($P = 0.030$); and 124 vs. 131 ($P = 0.004$) for WI and SU in parities 1, 2, and ≥ 3. Days to conception were 172 vs. 180 ($P = 0.003$); 182 vs. 187 ($P = 0.070$); and 179 vs. 184 ($P = 0.010$) for WI and SU in parities 1, 2, and ≥ 3. Milk yields (305d; kg) were 7,612 vs. 7,099 ($P < 0.001$); 8,011 vs. 7,665 ($P < 0.001$); and 7,814.6 vs. 7,532 ($P < 0.001$) for WI and SU in parities 1, 2, and ≥ 3. Milk yield by 70 DIM (kg) were 30.0 vs. 27.3 ($P < 0.001$); 35.5 vs. 33.1 ($P < 0.001$); and 36.8 vs. 35.2 ($P < 0.001$) for WI and SU in 1, 2, and ≥ 3 parity. In conclusion, cows that were conceived in the winter had better subsequent performance and survival than cows that were conceived in the summer.

Key Words: heat stress, conception, performance

812 Effect of mild and moderate heat stress on milk yield and bovine milk composition in the tropical region. Vivian Fischer*[1], Alexandre Sausenbach Abreu[3], Marcelo Tempel Stumpf[4], André Thaler Neto[2], Daise Werncke[1], and Fernando André Schmidt[2], *[1]Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil, [2]Universidade Estadual de Santa Catarina, Lages, SC, Brazil, [3]Universidade do Sul de Santa Catarina, Tubarão, SC, Brazil, [4]Universidade de Rio Grande, São Lourenço, RS, Brazil.*

In hot climates, the combination of high temperature, humidity and intense solar radiation impose stress to the animals, especially if temperature is not sufficiently reduced during the night or if animals do not have protection against high temperatures or radiation, which is very frequent in the tropics. Variation in environmental variables between and within days affects the negative impact on dairy production. The present trials aimed to evaluate the effect of mild and moderate heat stress on dairy production, stability and physicochemical characteristics of milk. The temperature and humidity index (THI) was used to classify the heat stress as mild (72 to 78) or moderate (79–88). Two experiments were conducted in the tropical region, from January to March, on Tifton pasture. The first was conducted with 16 lactating Holstein cows, 520 ± 74 kg BW, BCS of 3.0 ± 0.3, MY of 21.5 ± 4.2 kg/day, 120 ± 61.2 DIM. The second trial was carried out with 14 lactating Holstein cows, 537.6 ± 93.5 kg of BW, BCS of 2.8 ± 0.3, MY of 20.6 ± 6.5 kg/day, 149.3 ± 48.9 DIM. In both trials the cows were allocated into 2 groups: paddocks without shade (NSH) and paddocks with natural shade (SH) - more than 10m^2/head of shade. At 15:00 h, under mild stress, paddocks with shade and without shade presented THI values of 75.2 and 77.7, respectively. Under moderate stress, THI values in paddocks with and without shade were 77.7 and 83.8, respectively. Under mild stress, cows in NSH and SH did not present any differences in MY and composition. Under moderate stress, cows in NSH decreased MY by 50%, ethanol stability from 75% to 68%v/v, coagulation time from 190 s to 49 s, crude protein by 15%, lactose by 4% while they increased titratable acidity by 43%, fat by 13% and MUN by 12% when compared with cows in SH. After 1 week of regaining access to shade, all differences disappeared. Shade kept MY and milk composition within normal range under moderate stress. Under mild stress shade did not provide beneficial effects on milk yield and composition.

Key Words: heat stress, milk composition, severity of stress

813 A cow cooling investment decision support tool for dairy farms in low and high humidity regions. Bettie S. Kawonga* and Jeffrey M. Bewley, *Department of Animal and Food Sciences, University of Kentucky, Lexington, KY.*

The objective of this study was to develop an interactive cow cooling investment decision support tool for dairy farms in low and high humidity regions, and to demonstrate the economic benefits of investing in cow cooling. The low humidity region in the study was specific to semi-arid areas of sub-Saharan Africa (e.g., Malawi and Zambia) with THI range of 68 to 72. The high humidity region represented countries in the temperate regions with a climate distinctly different from that of sub-Saharan Africa in terms of humidity and temperature. The user inputs included total herd size, lactating herd size, milk yield, feed required per kg of added milk, feed price per ton, and milk price. Cow cooling inputs included fan and soaker costs, water and electricity cost, annual number of days cooling system was used, annual interest rate, discount rate, tax rate, predicted daily increase in milk production due to cooling and predicted yearly increase in pregnancy rate for the herd. The investment analysis outputs included net present value (NPV) and benefit: cost ratio (BCR). Assumptions used in calculating NPV and BCR included economic benefits of reduced heat stress extend to periods of low heat stress, no cooling existed, fans installed in stalls and holding area, and soakers installed in feed line and exit area from parlor. The assumptions were sourced from published literature and actual market prices of farm inputs and utilities. Using a herd size of 100 cows and a 10-year investment horizon, cow cooling in a high humidity region had a greater NPV ($54,653) compared with a low humidity region ($26,520). This could be attributed to high operating and initial investment cost for low humidity region. The BCR was greater than 1 for all the regions, indicating a good investment scenario. Further studies should be conducted to compare the current cow cooling investment analysis and other heat abatement strategies such as feed adjustment for small herd sizes in low humidity regions and semi-arid environments.

Key Words: cow cooling, net present value, cost:benefit ratio

814 Effect of feeding phytogenic compounds on preweaned dairy calves in a commercial setting. Bryan G. Miller*[1] and Nicolas D. Bettencourt[2], *[1]Biomin USA, San Antonio, TX, [2]A.L. Gilbert, Oakdale, CA.*

Feeding programs and feed ingredients that maximize calf growth rate add to a dairy's profitability through both reduced feed costs and lifetime days open. Phytogenic feed additives, derived from plant extracts, offer a potential means of supporting feed intake and calf growth. A field trial was conducted at a commercial "calf ranch" near Atwater California in the summer and fall of 2014. Calf growth was compared between those that consumed a standard calf starter with those that received the same diet with a phytogenic product, Digestrom Calf (Biomin Inc.) Holstein heifer calves were individually housed. To accommodate farm labor, calves were fed calf starter with or without Digestarom Calf as a group based upon calving date. Calves were fed a calf milk replacer (26% CP, 11% CF) and a calf starter (18% CP, 4.4% CF) either containing or not containing Digestarom Calf. Calves were fed between 72 and 78 d. Weight and height were measured at weaning. During the trial, morbidity, both in the form of scours and respiratory issues, was recorded for each set of calves. There were no apparent starting date effects and data from all groups were combined and a simple *t*-test for differences was conducted. Treatments for scours or respiratory diseases were analyzed using Chi-squared differences; results are in Table 1. Those calves supplemented with the phytogenic product, Digestarom, had greater average daily gain and hip height.

Table 1 (Abstr. 814). Growth and recorded health incidences among preweaned calves in a commercial setting

Treatment	Calves (no.)	Average days fed (no.)	Initial wt (kg)	Final wt (kg)	ADG (kg)	Hip height (cm)	Scours (%)	Pneumonia (%)
Control	50	73.7	38.5	80.3[a]	0.57[a]	92.5[a]	60.0[c]	28.6[e]
Digestarom	115	72.0	38.2	84.0[b]	0.64[b]	95.0[b]	42.5d	18.4[f]

[ab]Means in the same column differ ($P = 0.0002$).
[cd]Means in the same column did not differ ($P = 0.1352$).
[ef]Means in the same column differ ($P = 0.0732$).

Key Words: calves, phytogenic, growth

815 Effect of condensed tannin extract supplementation on beef cattle performance and nitrogen balance: II. Finishing phase. Pake J. Ebert*[1], Adam L. Shreck[2], Jenny S. Jennings[3], Noel A. Cole[2], and Eric A. Bailey[1], *[1]West Texas A&M University, Canyon,*

TX, [2]USDA-Agricultural Research Service, Bushland, TX, [3]Texas A&M AgriLife Research, Amarillo, TX.

Nitrogen emissions from concentrated animal feeding operations are of increasing concern to regulatory agencies. As such, we evaluated the effect of top-dressing a finishing diet (14.4% CP) for beef cattle with a commercially available condensed tannin extract (CT) at 3 levels (0, 0.5, and 1.0% of diet, DM basis). British-cross steers (n = 27; initial BW = 350 ± 32 kg) were fed individually via a Calan gate system for 126 d. Diet digestibility and N balance were estimated approximately 30 d after the experiment began (EARLY) and 30 d before the animals were harvested (LATE), using TiO_2 as a marker of fecal output and creatinine:BW ratio as a marker for urine output, respectively. Inclusion of CT in the diet did not affect ($P \geq 0.21$) ADG or DMI over the entire finishing period. Hot carcass weight was not different ($P = 0.83$) among treatments, but fat thickness and LM area tended to decrease ($P \leq 0.08$) when CT was included in the diet. Organic matter intake tended ($P = 0.10$) to increase when CT was fed during EARLY. Apparent total-tract starch digestibility during EARLY was lesser ($P = 0.03$) for 1% CT than either 0 or 0.5% CT. Intakes of OM and starch were similar ($P \geq 0.31$) among treatments during LATE; similarly, apparent total-tract digestibility of OM and starch were similar ($P \geq 0.31$) during LATE. Nitrogen intake did not differ ($P \geq 0.11$) among treatments during EARLY and LATE, but fecal N excretion was greater ($P = 0.05$) for 1.0% CT than 0% CT during EARLY. Urinary N excretion was not different ($P \geq 0.43$) among treatments during EARLY and LATE, but urine N:total N excretion decreased when CT was included in the diet during EARLY. Retention of N was not different ($P = 0.40$) among treatments during EARLY, but tended to decrease ($P = 0.07$) when CT was included in the diet during LATE. Under the conditions of this experiment, supplementation of a finishing diet with condensed tannins had minor effects on performance and nutrient digestibility of beef steers fed a finishing diet, but did alter the site of N excretion.

Key Words: condensed tannin, feedlot, nitrogen balance

816 Evaluation of an extended release anthelmintic on performance and fecal parasite load of beef cattle grazing cool season pastures. J. D. Rivera*, M. L. Gipson, R. G. Gipson, and P. J. Slusher, *Mississippi Agriculture and Forestry Exp. Station White Sand Branch Unit, Poplarville, MS.*

Seventy-four crossbred beef steers (average BW = 239.2 + 10.7 kg) were used in a randomized complete block to evaluate the use of an extended-release eprinomectin (ER) on performance and fecal worm count during grazing. Steers were stratified and blocked by BW into sixteen 1.2-ha pastures of annual ryegrass, and pasture was randomly assigned to one of 2 treatments: a single injection of an extended release eprinomectin (ER) or 2 injections (d 0 and d 64) of a typical anthelmintic used in stocker operations (doramectin; DOR). Steers were individually weighed and fecal samples collected on d 0 and 114. Steers in the DOR group were re-worked on d 64 for a second dose of DOR. Data were analyzed as a mixed model with block considered random and treatment considered fixed, LSMEANS were separated using PDIFF. Pasture was the experimental unit. No differences ($P = 0.36$) were noted in initial BW (238.9 vs. 239.6 kg for DOR and ER, respectively), however at final BW, steers treated with ER (366.4 kg) were heavier ($P = 0.04$) than steers treated with DOR (357.8 kg). Moreover, steers treated with ER had greater ADG than DOR ($P = 0.05$; 1.11 vs. 1.04 kg/d for ER and DOR, respectively). As a result, steers treated with ER had greater gain per ha compared with steers administered DOR ($P = 0.05$). Due to the greater cost of ER and despite reworking costs of DOR, overall working cattle cost was greater for ER compared with DOR ($P = 0.009$; \$41.44/hd vs. \$39.83/hd for ER and DOR respectively. Total pasture cost per ha was greater ($P = 0.009$) for ER (\$99.82/ha) compared with DOR (\$99.37/ha), however increased weight gain resulted in decreased cost of gain ($P = 0.04$) for ER (\$1.13/kg) compared with DOR (\$1.19/kg). No differences among treatments ($P = 0.66$) were noted for fecal egg count at d 0, nor were any differences detected for fecal egg count at d 114 ($P = 0.32$), with a tendency ($P = 0.13$) for decreased percentage of fecal egg count associated with ER (88.9%) when compared with DOR (76.1%). Despite the greater costs associated with ER and similar fecal egg control compared with DOR, ER resulted in greater performance and decreased cost of gain.

Key Words: beef cattle, anthelmintic, grazing performance

817 Effect of yeast culture plus enzymatically hydrolyzed yeast supplementation during transition period on milk production and metabolic profile of dairy cows. Claudia Faccio Demarco[1], Vanessa Oliveira Freitas[1], Tatiele Mumbach[1], Eduardo Xavier[2], Raquel Fraga e Silva Raimondo[3], Fernanda Medeiros Gonçalves[1], Francisco Augusto Del Pino[1], Viviane Rohrig Rabassa*[1], Sangita Jalukar[4], Marcio Nunes Corrêa[1], and Cássio Cassal Brauner[1], *[1]Universidade Federal de Pelotas, NUPEEC, Pelotas, RS, Brazil, [2]Granjas 4 Irmãos S/A, Rio Grande, RS, Brazil, [3]Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil, [4]Arm & Hammer Animal Nutrition, Princeton, NJ.*

The aim of this study was to evaluate the effect of yeast culture plus enzymatically hydrolyzed yeast on milk production and metabolic profile during transition period of dairy cows. Twenty-nine multiparous Holstein cows were blocked by milk production on the previous lactation and randomly assigned into 2 groups: one received 28 g/d top-dressed yeast culture plus enzymatically hydrolyzed yeast (YC-EHY; Celmanax, Arm & Hammer Animal Nutrition, Princeton, NJ), while the control group did not receive the supplement. The experiment was conducted from d −35 relative to calving until 150 of lactation. During this period cows were weighed weekly and their body condition score (BCS) evaluated. Cows were milked twice daily and were kept in a semi-extensive production system. Milk yield and milk composition were evaluated weekly from calving to 150 DIM. Plasma samples collected on −21, −14, −7, 0, 3, 7, 14, 21, 28, 35, and 42 d relative to calving were analyzed for β-hydroxybutyrate (BHBA), Nonesterified fatty acids (NEFA), cholesterol and plasma urea nitrogen (PUN). Data were analyzed using mixed models with repeated measures over time. The YC-EHY group had higher milk yield (27.75 vs. 24.98 ± 0.5 kg/d, $P = 0.05$) versus the control group. However, the control group had more milk protein concentration (2.97 vs. 2.87 ± 0.03%/d, $P = 0.03$) in comparison with YC-EHY group. Other milk compounds were not affected ($P > 0.05$) by supplementation. No differences ($P > 0.05$) were observed for BHBA, NEFA, cholesterol, and PUN concentrations during the transition period. Also body weight and BCS were not affected ($P > 0.05$) by supplementation. In conclusion, yeast culture plus enzymatically hydrolyzed yeast supplementation increased milk production during the first half of lactation, however, metabolic profile are not affected by supplementation during the transition period in dairy cows.

Key Words: yeast, bovine, metabolism