

ments, ensiled in laboratory silos and stored a 25 °C for 45 d. After opening the silos, dry matter (DM), pH, temperature (T), total nitrogen content (TN), protein nitrogen (PN), soluble nitrogen (SN), ammonia nitrogen (AN), PT/TN and N-NDF/TN were determined. The data were analyzed according to a completely randomized design with three replications, significance among mixing levels was determined by Tukey test. DM content of the resultant silages significantly increased ($p \leq 0.001$) with the inclusion of leucaena in the mixtures, reached the highest values (26.49%) with 70%, which is considered as optimal for a good conservation. The introduction of leucaena produced a trend towards a significantly ($p \leq 0.05$) decreased of pH levels of the silages, showing the lowest values (3.48) with 100% leucaena. T was not affected by treatments. TN, PN, SN, PN/TN and N-FND/TN contents increased with increasing proportion of leucaena in the mixtures. However, there were not significant differences ($p \geq 0.05$) among 70-100% levels of leucaena. AN was not detected or only in small amount during ensiling period. Those results indicated that mixing leucaena with king grass would inhibit proteolysis and reduced the loss of nitrogen compounds during fermentation of the silage also leucaena material might inhibit clostridia growth during storage and stimulate lactic acid fermentation, resulting in a decreased pH value of the silage. In this study, the inclusion of leucaena at the rate of 30% or more, increased nitrogenous compounds and improved silage fermentation.

Key Words: silage, *Leucaena leucocephala*, nitrogenous compounds

W131 The effect of sewage irrigation on mineral composition and in-vitro digestibility of two corn forage varieties. E. Yosef¹, E. Zukermann², J. Miron¹, M. Nikbahat¹, and D. Ben-Ghedalia¹, ¹*The Volcani Center, ARO, Bet Dagan, Israel*, ²*Extension Service-Ministry of Agriculture and Rural Development, Bet Dagan, Israel*.

Summers in Israel are dry and forage crops must be irrigated. The usage of sewage irrigation of summer forages, increased in Israel due to regional droughts and the necessity to eliminate the excess of urban waste waters. The purpose of this study was to evaluate the effect of secondary-treated sewage water irrigation on the composition and in vitro digestibility of two corn forage varieties: Oropesa (Europe origin) and 32P75 (USA Pioneer). The irrigation treatments were sewage vs. flood water at a level of 3380m³/ha. In each treatment, both corn varieties were grown as five replicated plots and sampled by manual harvesting at the soft dough stage of maturity. The conductivity of the sewage and flood water used was 1.41 and 0.81 ds/m, respectively. Within each variety, plant morphology, plant yields and cell wall content and composition were not affected by type of irrigation. Despite of the several folds higher mineral concentrations in sewage water as compared with flood water: Na ($\times 5.4$), S ($\times 2.6$), K ($\times 14$), P ($\times 473$), Al ($\times 5.6$), B ($\times 2.4$), Mn ($\times 24.3$), Cu ($\times 31.9$) etc., the mineral composition in both

irrigation treatment of corn plants was similar. The sewage treatment improved dry matter and NDF in vitro digestibility of corn Oropesa as compared with flood water treatment (71.2% vs. 68.8% and 53.8% vs. 45.7%, respectively). However, sewage treatment decreased in vitro digestibility of 32P75 as compared with flood treatment (66.5% vs. 71.6% and 51.3% vs. 57.6%, respectively). In both treatment of each variety the nitrate contents were similar, but Oropesa contained 2-3 folds higher nitrate content than 32P75. In this study the mineral concentrations of secondary-treated sewage water were below the critical level which may damage the corn plants quality.

W132 Biomin® BioStabil Mays enhanced the fermentation and the aerobic stability of corn silage under tropical laboratory conditions.

A. A. Rodríguez¹, Y. Acosta-Aragón², and E. Valencia¹, ¹*University of Puerto Rico, Mayaguez, PR*, ²*Biomin GmbH, Austria*.

An experiment was conducted to determine the effects of the silage additive Biomin® BioStabil Mays (BSM, blend of homo- and heterofermentative bacteria) on the fermentation characteristics and aerobic stability of corn whole plant (QPM variety) growth and ensiled in Puerto Rico. Corn was harvested 75 d after planting and chopped finely. Prior to ensiling, the vegetative material was treated or not with BSM (1 x 105 cfu/ g silage). Treatments were applied to weighted portions of corn forage, manually mixed, and packed into PVC laboratory silos. Samples of fresh forage and triplicates silos of each treatment were taken at 0, 3, 45 and 90 d of fermentation, analyzed for pH, chemical composition, and fermentation products. Statistical analysis was performed as a completely randomized design with a 2 by 4 factorial arrangement of treatments. Tukey t-test was used for mean separation. For aerobic stability determination, triplicate silos from each treatment were emptied after 45 and 90 d of ensiling, placed into styrofoam containers lined with a plastic bag and exposed to air for 5 d. Temperature was monitored every 6 hours during the 5 d with a thermometer embedded in the surface of the exposed silage. pH was measured after 0, 1, 3 and 5 d. Statistical analysis of pH data was performed as a completely randomized design with a 2 by 5 factorial arrangement of treatments. The same model was utilized for temperature data except that 19 times of aerobic exposure (hours) were utilized instead of 5 d. Tukey t-test was also used for mean comparison. BSM enhanced the fermentation characteristics of corn ensiled during 45 d as evidenced by lower pH ($P < 0.05$) and higher lactic acid content ($P < 0.05$). After 90 d of fermentation BSM lowered the ratio of NH₃-N/total-N ($P < 0.05$) as compared with corn ensiled without additive. After the opening of the silos at the d 45 and 90 the temperature of silages treated with BSM was lower than that of the control silage ($P < 0.05$). In summary, BSM improved the fermentation characteristics and the aerobic stability of corn ensiled under tropical laboratory conditions.

Key Words: corn silage, additive, tropical environment

International Animal Agriculture

W133 Dairy farm milk quantity, quality, and revenue within a private organization in Central Thailand. S. Yeamkong¹, S. Koonawootrittriron¹, M. A. Elzo², and T. Suwanasopee¹, ¹*Kasetsart University, Bangkok, Thailand*, ²*University of Florida, Gainesville*.

Survival of dairy farming in Thailand depends on the ability of dairy farmers to increase profitability and efficiency of their dairy operations. Revenues are primarily related to amount of milk produced, and

secondarily to milk quality. The objective here was to determine factors affecting milk quantity, quality, and revenue in dairy farms from a private organization in Central Thailand. The dataset had 34,133 farm monthly records for milk yield per cow (MC), fat percentage (FP), protein percentage (PP), lactose percentage (LP), solids-not-fat percentage (SP), total solids percentage (TP), somatic cell count (SC), and milk revenue per cow (RC) collected from September 2003 to December 2007 in 1,101 dairy farms. Seasons were winter (November to February),

summer (March to June), and rainy (July to October). Farm locations were Muaklek (ML), Wang Muang (WM), Phattana Nikhom (PN), and Pak Chong (PC). Farms were classified by number of milking cows into small (< 10 cows), medium (10 to 19 cows), and large (> 19 cows). The model for each trait had year-season (YS) and farm location-farm size (FLFS) as subclass fixed effects, and farm and residual as random effects. Year-season and FLFS effects significantly affected all traits ($P < 0.05$), except for PP. Least squares means for FLFS ($P < 0.0001$) ranged from 162.3 ± 47.4 kg (small, PN) to 378.3 ± 14.5 kg (medium, PC) for MC, $3.36 \pm 0.04\%$ (medium, PC) to $3.60 \pm 0.10\%$ (large, PN) for FP, $4.54 \pm 0.02\%$ (medium, PC) to $4.61 \pm 0.01\%$ (small, PN) for LP, $8.19 \pm 0.03\%$ (medium, PC) to $8.33 \pm 0.07\%$ (large, PN) for SP, $11.64 \pm 0.05\%$ (medium, PC) to $12.01 \pm 0.14\%$ (large, PN) for TP, $536,450 \pm 48,500$ cells/ml (small, PN) to $1,062,780 \pm 114,030$ cells/ml for SC and $2,015.3 \pm 549.3$ baht (large, PN) to $4,483.7 \pm 168.3$ baht (medium, PC) for RC. Positive trends across YS existed for FP ($0.015 \pm 0.006\%/YS$; $P < 0.04$) and SC ($11,309 \pm 3,067$ cells/ml/YS; $P < 0.004$), whereas a negative trend existed for MC (-6.2 ± 1.4 kg/YS; $P < 0.001$).

Key Words: dairy cattle, milk revenue, tropical

W134 Hormonal profile in superovulated buffalo heifers using pFSH and LH. A. M. Osman* and S. H. Shehata, *Assiut University, Assiut, Egypt.*

Literature show contrasting results with superovulation in buffaloes. Estrogen (e) and progesterone (p) were studied in 15 superovulated buffalo heifers to predict state of ovarian response. Ten heifers injected by pFSH (65 NIH unit divided into 6 equal doses for 3 consecutive days) and Lutalyse (25 mg given with 5th injection). LH (2-10 thousands USP unit) injected 12 hour (h) from treatment. Rest 5 heifers stayed as control. Blood taken before treatment (0h) then after 12, 24, 48, 72, 96, 120 and 144h. Sera separated and kept at -20°C for e and p determinations using IMMULITE Immunoassay. All heifers slaughtered and ovaries studied for new corpora lutea (CL) and unovulated follicles (UF). Data statistically analyzed using SAS computer system version 3.2. In control group, e levels (pg/ml) were 24.6 ± 1.04 at 0h, 30 ± 1.78 at 72h and 18.2 ± 0.89 at 144h. The p levels (ng/ml) were 1.57 ± 0.23 at 0h, 2.93 ± 0.26 at 120h and 2.58 ± 0.25 at 144h. In superovulated heifers, results classified into high response group (HRG) $> 2\text{CL}$ (3.8 ± 0.49) and low response group (LRG) $< 3\text{CL}$ (1.2 ± 0.2). Difference was significant ($P < 0.05$). There was significant increase in e at 72 h in HRG followed by decrease. The increase of e in the LRG continued till the last sample with significant difference ($P < 0.05$). Significant correlation between e and UF presents ($r = 0.65$) during last 2 days. Total number of UF is lower in HRG than LRG (23 versus 37). One day after LH, e levels decreased in all animals without relation to injected doses. Overall p levels (ng/ml) significantly lower ($P < 0.01$) in HRG than other groups (0.86 ± 0.15 versus 2.3 ± 0.21 control and 2.97 ± 0.38 LRG). Lutalyse induced significant reduction in p after 2 days from injection in HRG only. Significant correlation between p and CL present in treated groups ($r = 0.85$) during last 2 days. The overall ratios between p and e were larger in HRG than other groups (1:33 versus 1:11 control and 1: 9.5 LRG). Low levels of p in relation to e before superovulation regime in buffalo might be an indicator for the successful response of the ovaries.

Key Words: superovulation, buffalo, estrogen

W135 Semen quantity and quality of dairy bulls raised in tropical Central Thailand. T. Kongnoi¹, S. Koonawootrittriron¹, M. A. Elzo^{*2},

and T. Suwanasopee¹, ¹*Kasetsart University, Bangkok, Thailand*, ²*University of Florida, Gainesville.*

Widespread use of Holstein (H) and high percent H sires has been used to increase milk production in Thailand. As part of this mating strategy, semen production within Thailand has been promoted by the government. Thus, the objective here was to determine factors that affect semen quantity and quality traits in dairy bulls raised under tropical conditions in Central Thailand. The dataset contained 5,127 records from 57 bulls for semen volume (VOL), semen appearance (APP), semen concentration (CON), abnormal sperm (ABN), active motile sperm (MOT), and active motile sperm after freezing for 24 hr (M24) collected from October 2001 to April 2007. Bulls were grouped by H fraction into BG1 (0.96 to 1.0 H), BG2 (0.91 to 0.95 H), BG3 (0.86 to 0.90 H), BG4 (0.81 to 0.85) and BG5 (0.75 to 0.80 H). All bulls received the same nutrition and management. Semen was collected and evaluated using standard procedures from the Dairy Farming Promotion Organization of Thailand. The statistical model contained year-month of semen collection, ejaculation number (1 to 2), age of bull (339 to 2,988 d), ambient temperature at collection time (11 to 38°C), and breed group as fixed effects, and residual as a random effect. All factors in the model were important for all traits ($P < 0.01$), except for ambient temperature, which affected only CON, ABN and MOT ($P < 0.01$). Older bulls had higher VOL, APP, CON, and MOT, and lower ABN and M24 than younger bulls ($P < 0.001$). Semen collected at higher ambient temperatures had higher CON, higher MOT, and lower ABN ($P < 0.01$). Least squares means (LSM) indicated that BG5 was as good as or better than any other breed group for all traits ($P < 0.05$; VOL = 6.18 ± 0.11 ml; APP = 2.83 ± 0.05 score; ABN = $11.50 \pm 0.15\%$; CON = $1,173.83 \pm 13.26 \times 10^6$ cells/ml; MOT = $45.43 \pm 0.56\%$), except for M24 ($51.75 \pm 0.17\%$) where it was second to BG1 ($52.41 \pm 0.15\%$). Breed groups 1 to 3 tended to have similar LSM, and BG4 yielded the worst results of all breed groups ($P < 0.05$).

Key Words: dairy cattle, tropical, semen

W136 Effect of proportion of females on number of piglets born alive and pre-weaning growth traits in Pietrain swine in Thailand.

T. Punsanit¹, S. Koonawootrittriron¹, T. Suwanasopee¹, and M. A. Elzo^{*2}, ¹*Kasetsart University, Bangkok, Thailand*, ²*University of Florida, Gainesville.*

The proportion of female piglets in a litter is important for producing replacement gilts. Different sex ratios in a litter may influence the level of competition among piglets and affect their growth performance. The objective was to assess the effect of proportion of female piglets born alive (FPB) on litter size and pre-weaning growth traits of piglets in a litter. Traits were total number of piglets born alive (NBA), average birth weight per litter (BW), average weaning weight per litter (WW) and average daily gain per litter (ADG). There were 3,521 litters from 1,252 negative halothane Pietrain sows that farrowed from 2004 to 2007 in a commercial population in Thailand. Sows were raised in an open-house system and received the same management and health care. The FPB was defined as the proportion of female to all piglets in a litter, and classified as LG1 ($0 \leq \text{FPB} \leq 20\%$), LG2 ($20 < \text{FPB} \leq 40\%$), LG3 ($40 < \text{FPB} \leq 60\%$), LG4 ($60 < \text{FPB} \leq 80\%$) and LG5 ($80 < \text{FPB} \leq 100\%$). Seasons were summer (March to June), rainy (July to October), and winter (November to February). Parity was classified as 1, 2, 3, 4, 5, 6, 7, and ≥ 8 . The model had year-season, parity, and FPB as fixed effects, and boar and residual as random effects. First parity sows had the lowest least squares means (LSM) for all traits and increased in later parities ($P < 0.05$). The LSM for NBA of sows in LG3 ($8.41 \pm$

0.07 piglets) was the highest of all litter groups ($P < 0.05$), and sows in LG2 (8.04 ± 0.08 piglets) and LG4 (7.95 ± 0.09 piglets) had higher NBALSM than sows in LG1 (6.61 ± 0.13 piglets) and LG5 (6.42 ± 0.17 piglets). However, LSM for BW were lower for sows in LG2 (1.73 ± 0.01 kg), LG3 (1.72 ± 0.01 kg) and LG4 (1.73 ± 0.01 kg) than those for sows in LG1 (1.77 ± 0.01 kg) and LG5 (1.75 ± 0.02 kg). Similar trends were found for WW and ADG. Sows in LG1 had the highest LSM for WW (7.35 ± 0.08 kg) and ADG (234.51 ± 3.05 g/d), and then declined towards LG4 and LG5.

Key Words: pig, females born alive, growth

W137 The effects of four kinds of NSP enzymes based β -glucanase and xylanase on the performance and meat yield of broilers fed wheat/barley-based diet. H. Shirzadi, H. Moravej*, and M. Shivazd, *Tehran University, Karaj, Tehran, Iran.*

The aim of this research was to compare the effects of four enzyme preparations containing β -glucanase and xylanase activities¹ on performance and meat yield of broiler chicks fed wheat/barley-based diet with and without enzyme. 195 day-old male broiler chicks (Ross 308) were randomly allocated to 5 treatment groups, with 3 replicates and 13 birds per replicate in floor pen. All data was analyzed through the General Linear of Model procedure SAS for a randomized complete block design. The five dietary treatments consisted of the wheat and barley (30, 30%) supplemented with and without enzyme (A, B, C, and D added over the top to diets). Measured traits were body weight (BW), feed intake (FI), feed conversion ratio (FCR) and meat yield. All parameters were measured at 42d. BW was increased by addition all enzymes ($P < 0.05$). However, FI was not significantly affected by enzyme supplementation. FCR were lower in diets containing enzymes compare to the barley-based diet without enzyme ($P < 0.05$). Carcass weight, carcass yield, relative weight of the breast, legs, liver, and gizzard as percentage of live weight were not affected by enzyme supplementation, except enzyme A that reduced the relative weight of the breast ($P < 0.05$). However, relative weight of the abdominal fat was increased by all enzymes addition ($P < 0.05$). Our results led to the conclusion that there were similar improvements on performance of birds fed diets with enzyme supplementation, and performance of them were improved more than birds fed barley-based diet without enzyme supplementation, and choice preference of supplementation should be based on its economic value.¹ Enzyme A provided per kilogram of diet (Endo-1, 4- β -glucanase activity: min 800 units; Endo-1, (4) - β -glucanase activity: min 1800 units; Endo-1, 4- β - xylanase activity: min 2600 units), Enzyme B (Endo-1,3 (4)- β -glucanase: 100 AGL; Endo-1,4- β - xylanase: 1100 visco Units), Enzyme C (Endo-1, 4- β -glucanase: 1500 BGU; Endo-1,4- β - xylanase: 3600 FXU), Enzyme D (1420 units; xylanases: 660 units).

Key Words: β -glucanase, xylanase, broilers

W138 Consumers' preference for egg shell and yolk colour in Nigeria: A case study of Isolo and Alimosho local government area of Lagos State Nigeria. A. A. Mako*, O. K. Awobajo¹, O. I. Abiola-Olagunju¹, I. O. Ewebiyi¹, R. O. Ettu¹, R. A. Hamzat², and A. O. Akinsoyinu³, ¹Tai Solarin University of Education, Ijebu-Ode, Ogun State, Nigeria, ²Quadbis Farms, Ibadan, Oyo State, Nigeria, ³University of Ibadan, Ibadan, Oyo Sate, Nigeria.

The objective of the study was to evaluate the preference for egg shell and yolk colour in the study area. Two hundred and fifty (250) respon-

dents that consume eggs were randomly selected in the study area. The result shows revealed that the respondents' age ranged between 15 to 55 years. 190 (76%) were males while 60 (24%) were females. Not all respondents had formal education, with 20 (8%) illiterates, 38 (15.2%) primary education, 50 (20%) HND, 100 (40%) B.SC, while 32 (12.8%) M.SC qualifications. Majority 180 (72%) of the respondents rear birds, while 70 (28%) do not rear birds. Among the respondents that rear birds 120 (55.56%) rear layers, 60 (33.33%) rear broilers and 20 (11.11%) rear cockerels. All respondents agreed that brown egg shell are more preferable to other colour of egg shell and majority 200 (80%) of the respondents agreed that white shell egg cracks faster than brown shell egg. The result shows that majority 215 (86%) agreed that yellow yolk eggs has better aroma than white yolk eggs. In conclusion, most of the respondents prefer brown egg shell due to its attractiveness and hardness, while yellow yolk is preferred due to its aroma. It is recommended that feed ingredients that produce brown eggs shell and yellow yolk should be used in layers mash to increase market for eggs and enhance large profit.

Key Words: egg shell and yolk, consumer preference, Nigeria

W139 Elaboration of ruminant supplements with byproducts and residues of bio-ethanol produced on farm settings. H. O. Patino*, B. P. Ospina², E. C. Mallmann³, and A. Roa⁴, ¹Dep. Zootecnia, UFRGS, Porto Alegre, RS, Brazil, ²Latin American and Caribbean Consortium to support Cassava Research and Development, CLAYUCA, Cali, Valle del Cauca, Colombia, ³Usinas Sociais Inteligentes, USI, Porto Alegre, RS, Brazil, ⁴Soil Net LLC, Madison, WI.

To establish, validate and evaluate the technical and economic efficiency of a decentralized approach for production of hydrated and anhydrous ethanol (95% and 96% concentration, respectively) a low-cost, small-scale processing plant was built, with a processing capacity of approximately 1,000 liters/day. The plant is easy-to-manage and operate with different feedstock crops (cassava, sweet potato, beet, sugar cane and sweet sorghum) thus avoiding the dependency on just one crop. By transforming crops into a liquid biomass and bio-ethanol, which could be use in power generation (electric or mechanical) or can be sold as biofuel (anhydrous ethanol), farmers can increase their income. The approach proposed also includes a sustainable, added-value management of co-products (leaf, stover, etc) and residues generated (bagasse, vinasse) in the process, using them for the elaboration of products can be used as animal feed and/or fertilizer. Per tonelada de substrate are produced 30 liter of ethanol, 270 liter of vinasse and 700 kg of bagasse. Current approaches to biofuel production are a source of contamination for soils and waters because of the great volumes of effluents generated (8-10 liters/liter bio-ethanol produced) and the very high costs of currently available technologies for managing effluents. In this approaches, the organic content of the effluents is flocculated and agglomerated through the use of a biopolymer-based technology. This organic load is used to prepare multinutritional blocks (10-30% CP; 65-70% TDN) and supplements (17-40% CP; 60-65% TDN) for ruminants. The use of supplements in ruminants has allowed weights gains in calves and steers between 350 and 550 g/day. The remaining waters are cleaner and non-pollutant. Producing biofuels in farms has a great potential to generate added-value, stimulating social inclusion programs and socioeconomic development of family agriculture.

Key Words: biofuels, byproducts, animal feed

W140 Factors affecting milk production in Brazil. R. P. Lana^{*1,2}, G. Guimarães^{1,2}, A. V. Guimarães¹, and M. A. Santos¹, ¹*Universidade Federal de Viçosa - UFV, Viçosa, MG, Brazil*, ²*Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq, Brasília, DF, Brazil*.

Brazil is the 6th milk producer in the world, based on crossbred Holstein-Zebu cows maintained in tropical pastures. This study has as objective to evaluate some factors that affect milk production in farm level and by state of federation. In the first case, data was collected from 50 farmers that sell milk for a dairy plant in the south region of Rio de Janeiro state, including daily milk production per producer, per cow by producer, and per area by producer, total area of farm and for the herd, total of milking cows, total cows in the herd, and breed. In the second case, data was collected from the Brazilian agencies (EMBRAPA and IBGE) in the year of 2004-2006, in which the emphasis was in milk production per state instead of per farmer. In the farmer level (1st case), the daily milk production ranged from 60 to 4000 kg of milk. The increase in milk production was linearly affected by increase in the number of milking cows (kg of milk/producer/day = 12 kg/cow * number of cows - 19.6; $r = 0.94$) and by increase in the area of pasture for the herd (kg of milk/producer/day = 4.92 kg/ha * number of hectares + 89; $r = 0.67$) and, surprisingly, the mean productivity per cow and per area did not correlate with milk production per producer ($r = 0.11$ and 0.06 , respectively). In the country level (2nd case), the result repeated, in which there was high correlation of milk/state/year with total of milking cows compared with milk/km²/year and milk/cow/year ($r = 0.95$, 0.55 and 0.51 , respectively). Concluding, due to the large territorial extension of Brazil, the milk production is still more dependent on pasture extension than in productivity indexes.

Key Words: dairy cattle, milk production, pasture

W141 Bulk tank milk quality in Brazil - 2007/2008. L. M. Fonseca^{*1,2}, R. Rodrigues^{1,2}, M. M. O. P. Cerqueira^{1,2}, M. O. Leite^{1,2}, M. R. Souza^{1,2}, and C. F. A. M. Penna^{1,2}, ¹*Federal University of Minas Gerais (UFMG), School of Veterinary Medicine, Department of Food Technology and Inspection, Belo Horizonte, MG, Brazil*, ²*Laboratory of Milk Quality Analysis, UFMG, Belo Horizonte, MG, Brazil*.

Brazil is facing a transition phase for new standards of milk quality. The objective of the present work was to evaluate the quality of the bulk tank raw milk produced in Brazil. The dairies were located mainly in Minas Gerais State, the largest milk producer in Brazil (approximately 30% of the national production). From January 2007 to July 2008, 1,176,000 samples were collected from 125 dairy industries and analyzed in the Laboratory of Milk Quality Analysis from the School of Veterinary Medicine, Federal University of Minas Gerais, Brazil. The raw milk samples for individual bacteria count (IBC) were preserved with azidiol (sodium azide, chloramphenicol), while the samples for composition and somatic cell count (SCC) were preserved with bronopol. After collection, the samples were properly stored, and sent to the laboratory. The bacteria analyses were done by flow cytometry (BactoCount IBC, Bentley®). The SCC were obtained by flow cytometry and the composition by infrared measurement (Combisystem 2300, Bentley®). Average values for milk composition were, in g/100g (average:SD): fat (3.67;0.52); protein (3.25;0.24); lactose (4.46;0.18); total solids (12.30;0.71), and nonfat solids (8.63;0.35). Geometric mean for microbial population was 347,000 CFU/mL, while for SCC was 380,000 cells/mL. The standard deviation was large for microbial and cellular counting, because of the high variability of these parameters. There was a negative correlation between SCC and lactose and between SCC

and total solids ($p \leq 0.05$), and a positive correlation for CCS and fat content ($p \leq 0.05$). The Fat/Protein ratio was altered mainly at the end of the dry season in Brazil, because of nutritional deficiencies in some herds. Although the data show need for improvement, there has been an increasing awareness by the Brazilian dairy producers, with improvement in dairy practices, besides the payment of milk based on quality by some industries. It is believed that the majority of the milk producers will comply with the legal timeline required for 2011, when Brazilian requirements for milk quality will be similar to European standards. *Acknowledgements:* FUNDEP/UFMG; FAPEMIG; CNPq.

Key Words: Brazil, milk quality, milk standards

W142 Multivariate analysis applied to milk quality evaluation in Brazil. A. M. G. Oliveira^{1,4}, L. M. Fonseca^{*1,2}, I. B. M. Sampaio¹, and Célia L. L. F. Ferreira³, ¹*Federal University of Minas Gerais (UFMG), School of Veterinary Medicine, Department of Food Technology and Inspection, Belo Horizonte, MG, Brazil*, ²*Laboratory of Milk Quality Analysis, UFMG, Belo Horizonte, MG, Brazil*, ³*Federal University of Viçosa, Viçosa, MG, Brazil*, ⁴*LANAGRO, Ministério da Agricultura, Pecuária e Abastecimento, Pedro Leopoldo, MG, Brazil*.

Milk quality data from 723 dairy farms, located in five regions of Minas Gerais State, Brazil, were used to access, in a multivariate space, the association between milk quality variables. Levels of fat, protein, lactose, total solids and nonfat solids were evaluated with somatic cell count (SCC), and total bacterial count (TBC). Three main components, obtained from the correlation matrix, showed variance lower than 0.7. The model was selected by excluding only two variables, solids and nonfat solids, which showed high correlation with protein and fat. After these adjustments, associations between lactose and somatic cell count, and between lactose and TBC were inversely related, with lactose levels decrease correlated with high somatic cell counts and high TBC. Associations for protein and fat levels, and for somatic cell counts and TBC were directly related, with higher intensity for protein and fat. *Acknowledgements:* FUNDEP/UFMG; FAPEMIG; CNPq; CAPES.

Key Words: multivariate analysis, milk quality, Brazil

W143 Azidiol in tablet form as a preservative for milk quality analysis. J. F. Castro¹, L. M. Fonseca^{*1,2}, R. Rodrigues^{1,2}, and C. S. P. Fonseca¹, ¹*Federal University of Minas Gerais (UFMG), School of Veterinary Medicine, Department of Food Technology and Inspection, Belo Horizonte, MG, Brazil*, ²*Laboratory of Milk Quality Analysis, UFMG, Belo Horizonte, MG, Brazil*.

The use of azidiol as tablet in the solid form results in several advantages, including safety for operator and milk collectors, viability to be sterilized inside collecting bottle, reduced manipulation during milk collection, and low cost. The objective of the present work was to compare azidiol, liquid and tablet, as bacteriostatic of raw milk for the analysis of microbial counting by flow cytometry. The tablets of Azidiol were sterilized in the collecting bottle with gamma radiation or ethylene oxide. A total of 76 samples of raw milk were collected from bulk tank milk from a dairy industry in Belo Horizonte, Minas Gerais, Brazil during a period of two months. The efficiency of the tablet azidiol was compared to the traditional azidiol (liquid). The results of individual bacteria count were automatically converted to Colony Forming Units using a curve of linear regression (Bactocount IBC 150®, Bentley Inc.). Seven experimental groups were used: Control

(no azidiol added), Azidiol liquid (130µL/40mL), Azidiol tablet not sterilized, azidiol tablet sterilized by gamma radiation in the levels of 10, 15 and 20 kGy, and azidiol tablet sterilized by ethylene oxide. The results and variance analysis were compared using Duncan's Test. It is concluded that the treatments did not show any statistical difference ($p \geq 0.05$) in the several ranges of bacteria counting tested, concluding that azidiol liquid can safely be replaced by the tablet. The steriliza-

tion using gamma radiation is more feasible with lower levels, such as 10kGy, to reduce exposition of the tablets to high doses of radiation, which could result in the fusion of the crystal components, and less solubility. The tablet sterilization for ethylene oxide is also viable. *Acknowledgements: FUNDEP/UFMG; FAPEMIG; CNPq; CAPES.*

Key Words: azidiol, milk quality, bacteria counting

Nonruminant Nutrition: Feed Additives II

W144 Effect of dietary medicinal plants or an organic acid on ileal nutrient digestibility of Ross broiler chickens. H. Ziaei^{*1}, M. Bashtani², M. A. Karimi Torshizi³, H. Farhangfar², H. Naeemipour², and A. Zeinali², ¹*Agricultural Research Center, Birjand, Iran*, ²*Birjand University, Birjand, Iran*, ³*Tarbiat Modares University, Tehran, Iran*.

An experiment was conducted using 240 one-day old male Ross broiler chickens to evaluate the effect of dietary medicinal plants or an organic acid on ileal nutrient digestibility of Ross broiler chickens. Chicks were allocated to a randomized complete block design with 4 replicate pens (15 birds per pen). The experimental treatments were: T1= control, T2= control + 15 ppm of Virginiamycin, T3= control + 450 mg medicinal plants (digestrom) per kg diet and T4= control diet + 400 mg organic acid (Formycine) per kg diet. At age 21 and 42 d, ileal digestibility of nutrients was measured by Titanium oxide marker. Data was statistically analyzed using the GLM models of SAS. Duncan's multiple range test was used for pair-wise comparisons of treatment means. The results showed that supplemental diets significantly ($P < 0.05$) improved bioavailability of energy and ileal digestibility of protein. At 21 days of age, broiler fed with treatments 3 and 4 had lower bioavailability of energy and ileal digestibility of protein as compared to treatment 2, but their differences were not significant at 42 d of age. The experimental diets had no effect on ileal digestibility of fat. In conclusion, using medicinal plants or an organic acid in broiler diets could improve nutrient digestibility indicating that these compounds may be an alternative to antibiotics.

Key Words: Ross broiler, medicinal plants, organic acid

W145 Effect of a dietary herbal medicine and an organic acid on bone characteristics of Ross broiler chickens. H. Ziaie^{*1}, M. Bashtani², M. A. Karimi Torshizi³, A. Zeinali², H. Naeemipoure², and H. Farhangfar², ¹*South Khorasan Agricultural and Natural Resources Researches Center, Birjand, Khorasan, Iran*, ²*Birjand University, Birjand, Khorasan, Iran*, ³*Tarbiat Modares University, Tehran, Iran*.

An experiment was conducted on 240 one-day old male Ross broiler chickens to evaluate the effect of dietary herbal medicine and or an organic acid on bone characteristic of Ross broiler chickens. Chicks were fed in a completely randomized block design with 4 replicate pens (15 birds per pen) for 42 days. Experimental treatments were: (T1= control, T2= control + 15 ppm of Virginiamycin, T3= control + 450 mg herbal medicine Digestrom /kg diet and T4= control diet + 400 mg organic acid Formycine /kg diet). At the end of the experiment, two birds from each replicate were randomly selected and sacrificed to determine the bone characteristics (modulus of elasticity, yield stress and percentage of ash, calcium and phosphorous). The results of our experiment showed that all parameters increased in supplemental diets ($P < 0.05$). The differences between the antibiotic diet and treatments 3 and 4 were not significant ($P > 0.05$). Therefore, supplementation of broiler diets with

antibiotics and their alternatives such as a herbal medicine or an organic acid resulted in increased resistance of broiler bones.

Key Words: organic acid, herbal medicine, bone characteristic

W146 The effect of ractopamine and ileal digestible lysine levels on growth performance and carcass characteristics of finishing pigs. D. Fontes^{*2}, E. C. Almeida¹, E. T. Fialho¹, M. A Zangeronimo¹, N. O. Amaral¹, L. M. Pereira, Jr.¹, and P. B. Rodrigues¹, ¹*University Federal of Lavras, Lavras, MG, Brazil*, ²*University Federal Minas Gerais, Belo-Horizonte, Brazil*.

A total of 50 hybrid barrows and 50 gilts (TOPIGS; initial and final weight of 90.2 ± 0.90 and 117.8 ± 1.2 kg) were used to evaluate the effects of ractopamine (Paylean[®], PAY) and ileal digestible lysine (IDL) levels on late finishing pig performance and carcass characteristics. Pigs were blocked by weight and sex and randomly allotted to one of ten dietary treatments in a 28d experiment. There were two pigs (one barrow and one gilt) per pen and five pens per treatment. Pigs were fed corn and soybean meal based diets formulated to meet the NRC (1998) requirements, with the exception of ileal digestible lysine, methionine and threonine which were adjusted to satisfy the ideal relationship to lysine. Treatments were arranged as a 2×5 factorial with main effects of PAY (0 or 5 ppm) and ileal digestible lysine (0.68, 0.78, 0.88, 0.98, and 1.08%). There were no PAY \times ileal digestible lysine interactions ($P > 0.36$) observed. For the overall study, ADG and final weight were increased ($P < 0.05$) for pigs fed Paylean[®]. For the carcass measurements, the results showed that barrows fed PAY had better carcass yield ($P < 0.05$) than gilts. Pigs fed PAY had increased ($P < 0.05$) hot carcass weight (HCW), yield and longissimus muscle area at the 10th rib than those fed diets not supplemented with PAY. Average backfat thickness decreased ($P < 0.05$) for pigs fed PAY. Increasing ileal digestible lysine level did not affect ($P > 0.05$) the growth performance or carcass characteristics. In conclusion, pigs fed 5 ppm PAY had improved growth performance and carcass characteristics. The diet containing 0.68% ileal digestible lysine (30 g/day) was enough to meet the requirement for finishing pigs weighing 90 to 117 kg.

Key Words: B-adrenergic, metabolism Assay, performance

W147 Influence of ractopamine on carcass characteristics and economic viability of finishing pigs fed ad libitum or restricted feeding system. E. T. Fialho^{*}, V. S. Cantarelli, E. C. Almeida, M. G. Zangeronimo, N. O. Amaral, and L. V. C. Girão, *University Federal of Lavras, Lavras, MG, Brazil*.

A total of 30 barrows (TOPIGS; initial weight - 107.2 ± 4.2 kg) were used to evaluate the influence of ractopamine (Paylean[®]) and feeding system (restricted vs ad libitum) on late finishing pig carcass characteristics