364 Effect of breed and finishing system on meat quality from beef cattle. J. A. Torrecilhas*[1], O. R. Machado Neto[2], M. G. Ornaghi[3], E. San Vito[1], L. O. Lima[1], T. Adriano Simioni[1], E. E. Dallantonia[1], and T. T. Berchielli[1], *[1]São Paulo State University (UNESP) School of Agricultural and Veterinarian Sciences, Jaboticabal, Brazil, [2]São Paulo State University, Botucatu, Brazil, [3]Maringá State University, Maringá, Brazil.*

This study evaluated the meat quality of 3 cattle breeds finished in 2 feeding systems. Bulls of 3 genetic groups (n = 113)—Nellore (NL), one-half Angus × one-half Nellore (AN), and one-half Senepol × one-half Nellore (SN)—were randomly assigned to 2 feeding systems groups: pasture (PA; n = 57) and feedlot (FE; n = 56). Bulls from both systems were supplemented (2% BW) daily with a high-concentrate diet (16% CP and 78% TDN). After 110 d, the bulls were slaughtered at a commercial beef plant. The carcasses were stored in a chilling chamber at 4°C. Three steaks from LM (2.5-cm thick) were cut between the 11th to 13th ribs, individually vacuum-packaged, and assigned to 1-, 7-, and 14-d ageing periods. Muscle pH, thawing loss (TL), cooking loss (CL), water holding capacity (WHC), color, and Warner–Bratzler shear force (WBSF) were analyzed. The results were analyzed by ANOVA using GLM procedures in SAS 9.0, with a 3 × 2 factorial arrangement, and the averages were compared at 5% level of significance. The muscle pH (1-, 7-, and 14-d ageing time) was not influenced by feeding system or breed. The feeding system affected some quality parameters: TL was lower for the PA group compared with the FE group at 1 d ageing time (7.86 and 10.18%, respectively; P = 0.006), CL was greater on d 7 for the FE group (26.16 and 24.31%; P = 0.047), and WHC was greater on d 1 for the PA group (68.13 and 64.34%; P < 0.001) and on d 14 as well (69.37 and 67.75%; P = 0.004). The meat color of the FE group was greater compared with the PA group, lightness (L*) was greater on all days examined (d 1, 7, and 14; P < 0.001), redness (a*) was greater on d 1 (P = 0.020) in the FE group but was lower on d 7 and 14 (P = 0.026 and P = 0.002, respectively) compared with the PA group, and yellowness (b*) was greater on d 1 and 14 in the FE group (P < 0.001 and P = 0.047). The WBSF was better in the FE group during all ageing times. The breed influenced L*: on 7 d ageing time, the SN group was greater compared with NE group; however, the SN and AN groups did not differ from each other. On 14 d ageing time, the AN and SN groups were similar, but both were greater than the NL group. In this study, the meat quality parameters were more affected by feeding systems than by breed.

Key Words: feedlot, longissimus muscle, pasture
doi:10.2527/asasann.2017.364

365 Effect of growth rate on beef fatty acid profile from Hereford steers finished either on pasture or in feedlot. A. M. Ferrinho*[1], E. Peripolli[2], G. Banchero[3], A. S. C. Pereira[4], G. Brito[3], A. F. La Manna[3], E. Fernandez[3], F. Montossi[3], and F. Baldi[5], *[1]School of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Brazil, [2]Sao Paulo State University (UNESP), School of Agricultural and Veterinarian Sciences (FCAV), Department of Animal Science, Jaboticabal, Brazil, [3]INIA, Colonia, Uruguay, [4]Universidade de São Paulo, Pirassununga, Brazil, [5]School of Agricultural and Veterinarian Sciences, Sao Paulo State University – FCAV/UNESP, Jaboticabal, Brazil.*

Different nutritional management during the rearing and finishing periods can determine changes on beef fatty acid profile. Beef lipid composition was quantified in 224 male Hereford calves weaned at 8 wk of age with an average initial live weight (LW) of 170 ± 17 kg. After weaning, 4 nutritional treatments were imposed to obtain different daily LW gains (LWG; kg/d) during the first winter. Nutritional management groups were high LWG in feedlot (HF), low LWG in feedlot (LF), high LWG in pasture (HP), and low LWG in pasture (LP). The finishing phase began when each group reached a mean LW of 350 ± 28 kg. During the finishing phase, one-half of the HF, LF, HP and LP animals were finished on pasture and the other half in a feedlot. The animals were slaughtered when calves in each treatment attained a mean LW of 500 kg. Analysis of beef fatty acids was performed by extraction and methylation from LM, and the fatty acids were quantified using a gas chromatography. The statistical model included the groups at growing phase (HF, LF, HP, and LP) and the groups at finishing phase (feedlot or pasture) and the interaction between growing and finishing phase as fixed effects and LW at the beginning of the finishing phase as a covariable. Tukey's test was applied to compare the means (P < 0.05). There was interaction between the growing and finishing phases for myristic acid and CLA *cis* 9, *trans* 11. Animals from HF finished on pasture presented the highest concentration of myristic acid (2.54%) when compared with the other treatments. The LP and HP groups finished on pasture had more CLA *cis* 9, *trans* 11 in their beef composition (0.60 and 0.58%, respectively), whereas animals finished in the feedlot presented the lowest concentrations (average of 0.28%). Finishing phase affected the fatty acid profile (P < 0.05). Higher concentrations of palmitic, oleic, and linoleic acids were observed in beef from animals finished in the feedlot than in beef from those finished on pasture. However, the beef from animals finished on pasture presented high concentrations of stearic, docosapentaenoic, and docosaexaenoic acids. Animals finished on pasture had higher concentrations of linolenic, arachidonic, and eicosapentaenoic acids compared with those finished in feedlot. Interestingly, the LP group presented higher concentrations of

linolenic and eicosapentaenoic acids, regardless of the finishing phase. The same results were observed in the LF group for arachidonic acid. In general, the LP and HP groups finished on pasture resulted in healthy beefs, with the greatest CLA and omega-3 concentrations.

Key Words: finishing system, growth out, lipid composition
doi:10.2527/asasann.2017.365

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366 Gender status effects on beef fatty acid profile of Angus × Nellore cattle. L. F. Mueller[1], J. C. D. C. Balieiro[2], A. M. Ferrinho[*3], J. D. J. M. Furlan[4], M. L. N. Furlan[2], M. Zanata[2], T. R. Amorin[2], I. H. S. Fuzikawa[2], T. S. Martins[2], F. Baldi[5], and A. S. C. Pereira[2], *[1]University of Sao Paulo (USP), School of Animal Science and Food Engineering (FZEA), Department of Animal Science (ZAZ), Pirassununga, Brazil, [2]Universidade de São Paulo, Pirassununga, Brazil, [3]School of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Brazil, [4]University of Sao Paulo (USP), School of Veterinary Medicine and Animal Science (FMVZ), Department of Animal Science (VNP), Pirassununga, Brazil, [5]School of Agricultural and Veterinarian Sciences, Sao Paulo State University– FCAV/UNESP, Jaboticabal, Brazil.*

Beef fatty acid profile can be modified by the sex of the animals. Therefore, the goal of this study was to evaluate the influence of gender status on beef fatty acid profile of feedlot Angus × Nellore cattle. A total of 176 cattle, 20 wk of age, from the Brazilian Certified Angus Beef Program were assigned to 4 sex classes: 32 bulls, 48 steers, 48 immunocastrates, and 48 heifers, presenting initial mean weights of 251.4 ± 3.62 kg for bulls, 266.6 ± 2.95 kg for immunocastrates, 226.4 ± 2.95 kg for steers, and 255.4 ± 2.95 kg for heifers. Cattle were fed during 190 d an ad libitum high-grain diet containing 80% concentrate. At the end of the experimental period, cattle were slaughtered. Steaks were collected from the LM and stored at −80°C pending analysis for fatty acid profile. Beef fatty acid was extracted and then the methyl esters were formed. Fatty acids were quantified using a gas chromatography. Statistical analyzes were performed using PROC MIXED of SAS, including the fixed effect of gender status and the random effect of cattle within gender groups. The gender status had no effect on the total SFA, but significant differences were observed for MUFA, PUFA, CLA, *n*-6, the *n*-6:*n*-3 ratio, and the PUFA:SFA ratio ($P < 0.05$). Beef from heifers had greater levels of MUFA (45.77%; $P < 0.01$) and CLA (0.42%; $P = 0.0006$) when compared with bulls (41.56 and 0.30%, respectively), steers (44.21 and 0.30%, respectively), and immunocastrates (43.95 and 0.36%, respectively). The highest levels of MUFA in the heifers' beef was mainly related to the higher levels of the major single fatty acids in this group, namely C18:1 *n*-9 (35.65%; $P < 0.01$) and C16:1 *n*-9 (2.94%; $P < 0.01$). On the other hand, the levels of PUFA and *n*-6 and the PUFA:SFA and *n*-6:*n*-3 ratios were greater ($P < 0.01$) in beef from bulls (9.76, 8.36, 0.22, and 4.83%, respectively) compared with the other gender statuses. In conclusion, beef from heifers can be considered healthier to humans because it presented lower levels of *n*-6 and myristic acid and higher levels of CLA, MUFA, and oleic acid.

Key Words: beef cattle, fatty acid composition, sexual condition
doi:10.2527/asasann.2017.366

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367 Chemical treatment of poultry litter does not affect the chicken meat quality. J. D. J. M. Furlan[1], L. F. Mueller[2], A. M. Ferrinho[*3], M. L. N. Furlan[4], M. Zanata[4], M. C. Izeppi[4], T. R. Amorin[4], I. H. S. Fuzikawa[4], T. S. Martins[4], F. Baldi[5], and A. S. C. Pereira[4], *[1]University of Sao Paulo (USP), School of Veterinary Medicine and Animal Science (FMVZ), Department of Animal Science (VNP), Pirassununga, Brazil, [2]University of Sao Paulo (USP), School of Animal Science and Food Engineering (FZEA), Department of Animal Science (ZAZ), Pirassununga, Brazil, [3]School of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Brazil, [4]Universidade de São Paulo, Pirassununga, Brazil, [5]School of Agricultural and Veterinarian Sciences, Sao Paulo State University – FCAV/UNESP, Jaboticabal, Brazil.*

Many studies have demonstrated the damaging effect of gases such as ammonia in the production of broilers chickens, especially on the performance and blood parameters. However, few studies have evaluated the effect of using additives to treat poultry litter on the chicken meat quality. Therefore, the goal of this study was to evaluate the effects of aluminum sulfate doses ($Al_2(SO_4)_3 \cdot 18H_2O$; 0, 200, 400, and 600 g/m^2) to treat poultry litter and stocking density (12 and 14 birds/m^2) on chicken meat quality traits. A total of 532 broiler male Cobb 500 chicks presenting an initial mean weight of 46 g ± 2.3 were used and housed in a completely randomized experimental design, with 4 × 2 factorial arrangement, totaling 8 treatments with 7 replicates each. Standard industry diets were used throughout the study, including starter (0 to 21 d), grower (21 to 35 d), and finisher (35 to 42 d) diets. At the end of the experimental period (42 d), 2 birds per replicate were randomly chosen and harvested. The traits analyzed in chicken meat were pH (24 h postmortem), color (L*, a*, and b*), cooking loss, and shear force. Statistical analyses were performed using PROC MIXED of SAS, including the fixed effect of factors (aluminum sulfate and stocking density) and interactions. No interaction was detected between treatments for any meat quality trait evaluated ($P > 0.05$). The treatments with a highest sulfate levels and density presented the lowest