

518 Carcass evaluation of Nellore and Nellore x Angus females recreated in two production system with and without crop-livestock integration.

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New technologies that aim to potentiate the productive capacity of the areas currently exploited have been introduced in Brazilian beef cattle. The cross between breeds and the use of integrated production systems are strategies with potential to increase production with an increase in the quality of the final product, the meat. The aim of this research was to evaluate the traits of carcass and meat of Nellore (N) and Nellore x Angus (F1) heifers, recreated in two forage production systems with and without crop-livestock integration (CLI). The experiment was carried out in an area of 9 ha, where were evaluated 36 calves, with initial age of approximately 7 months and live weight of 180 kg, being 18 Nellore and 18 Nellore x Angus, divided into high-investment treatments (HI), pasture of *Urochloa brizantha* cv. Paiaguás, reformed with the maize consortium, *Urochloa* and guandu (CLI), and low investment (LI), pasture of *Urochloa decumbens*. The animals were slaughtered at approximately 19 months. The data collected at slaughter were submitted to analysis of variance, considering the effect of genetic groups and treatments (different pastures), as well as the interaction between them. Correlation analysis was also performed to verify the relationship between meat and carcass variables measured. The F1 animals showed higher carcass weight, round thickness, carcass length and rib eye area (REA) than the Nellore animals. It was observed superiority for REA, fat thickness, marbling, carcass length and hot carcass weight. The interaction between genetic group and treatment was significant only for REA, being that the animals of the treatment HI differed from those LI treatments (72.94 vs 66.89 cm²). The measure of carcass length and REA showed high and positive correlation with carcass weight, as expected. The shear force showed high and negative correlation with the coloration parameters (L, a, b). It was observed superiority of F1 animals considering the traits of carcass and

meat quality. Can be perceived that the CLI system provided increase in the quantity and quality of the meat produced.

Key Words: Crossing, Genetic resources, *Urochloa*
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519 Effects of different pen lighting Sources on growth, feed efficiency and gene expression in blood and liver of broiler chickens. L. K. Hirtz^{*1},

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Several reports suggest use of light-emitting diode (LED) lights of various colors may improve efficiency of broiler production. The objective was to compare effects of different light sources on growth and gene expression of broilers. In a subset of a larger experiment, 48 Cobb 500 strain chicks were assigned to one of six lighting treatments with 8 birds per treatment: 1) incandescent, INC); 2) fluorescent (FL); 3) white LED (WL); 4) green LED (GL); 5) blue LED (BL); or 6) green LED on days 1-9 followed by blue LED on days 10-17 (GB). Treatments were administered by using bulbs that met the above specifications. Feed and water were available ad libitum. At termination on day 17, body weight and feed intake were determined and blood and liver samples were obtained for RNA analysis. Blood RNA was used for RNAseq analysis on a subset of samples (n = 4/treatment for WL, GL and BL) to identify target genes for further analysis. Treatment effects were analyzed by orthogonal contrasts and genes were considered differentially expressed (DE) when $P \leq 0.001$ and $FDR \leq 0.10$. Comparing white and colored LED light (WL vs the average of GL and BL) revealed 63 DE genes. Comparing GL to BL identified 107 DE genes. Integrative analysis using DAVID software indicated: Functions including signal, secreted, blood microparticles, extracellular exosomes and plasma membrane; KEGG pathways, including PPAR signaling; and Tissue specificity, indicating liver. Based on those analyses, we selected 12 DE genes for analysis in liver RNA by qPCR. Target genes included AvBD9, APOA4, CAT, CHAC1, FOXN2, HMGCS1, IL15, SCD, SPINK5, TTR, UBAP2, XPA. Target gene expression was normalized to that of a reference gene, RPL4, and data were log₂ transformed before analysis using Proc GLM of SAS. Genes were considered DE at $P < 0.05$. There was no effect ($P > 0.05$) of any lighting treatment on expression of the selected genes of interest in liver. Similar to liver gene expression, light treatments had no effect on broiler growth, feed intake or feed efficiency to day 17 ($P > 0.05$). In summary, different light treatments altered gene expression in blood cells but not liver and had no effect on broiler performance. Conflicting gene expression in blood and liver suggests cell type specificity in response to lighting. Similarity of broiler performance under different

lighting suggests LED lights of various colors can be used to reducing operating costs without penalizing performance.

Key Words: broiler performance, LED light, RNA-sequencing
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520 Order of loading of ingredients and mixing time on the quality of the diet in bovine's feedlot.

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The aim of this research was to evaluate the homogeneity of total diet, through the order of loading of the ingredients in wagon mixer and the mixing time of the diet used in a commercial feedlot of cattle. The treatments corresponded to two loading orders and two mixing times, being: treatment 1 - initiated with forage loading with 5 minutes mixing (FOR5); treatment 2 - initiated with forage loading with 4 minutes mixing (FOR4); treatment 3 - initiated with loading of concentrate with 5 minutes mixing (CON5) and treatment 4 - initiated with concentrate loading with 4 minutes mixing (CON4). The statistical model used was the completely randomized design in factorial scheme 2x2, with four repetitions. Ten diet samples from the trough line were collected after each treatment, being dry matter (DM), crude protein (CP), ether extract (EE) and neutral detergent fiber (NDF) the variables of interest analyzed by portable NIR. A second analysis was performed to evaluate if there was an effect of the sample collection order on the nutrient concentration studied. The results showed that for DM, CP and NDF, there was no evidence of differences in the variability between treatments. For EE, a significant effect was observed in FOR5 and CON5 for the loading time factor. For the effect of the order of sampling on the composition of the diet, there were no indications of changes in the composition of the analyzed variables along the trough lines. Considering the results obtained, it was observed that for the treatments FOR5 and CON5 there was a better mix for the variable EE.

Key Words: Wagon mixer, Homogeneity, Total diet
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521 Pen-shade and morning versus afternoon feeding on feedlot-performance and respiratory rate of growing calves under hot weather.

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Sixty four Brahman cross calves (223 ± 18.67 kg) were used to evaluate the effect of pen-shade and morning versus afternoon feeding on feedlot-performance and respiratory rate of growing calves under hot weather. Calves were individually weighed and using initial weight as blocking criteria, in a completely randomized block design, in groups of four calves were assigned to treatments as follows: 1) Placed in ground pen (6 x 12 m) without shade and morning feeding (0700 and 0900); 2) Ground pen without shade and afternoon feeding (1700); 3) Ground pen fitted with central roof (4 m² of shade/calf) and morning feeding (0700 and 0900); and 4) Ground pen fitted with central roof and afternoon feeding (1700). Calves were fed ad libitum with a diet (15% CP and 1.34 Mcal NE_m/kg DM) formulated with corn silage, steam flaked corn, soybean meal and mineral premix. Calves were weighed in days 1 and 28. Data was analyzed by ANOVA for a completely randomized block design with a 2 x 2 factorial arrangement. Mean air temperature from 0800 to 1800 was lower ($P < 0.01$) in pen-shade 33.8 vs. 36.7 °C; relative humidity was higher ($P < 0.01$) 62.1 vs. 58.2%; and THI values were lower 85.1 vs. 88.1 ($P < 0.01$). Pen-shade and afternoon feeding increased ($P < 0.01$) average daily gain. An interaction ($P = 0.02$) in ADG was observed, where morning fed calves (shaded and unshaded pens) exhibits similar ADG, but calves allotted in shaded pens fed afternoon have highest gain than calves fed afternoon but placed in unshaded pens (1.56 vs 1.19 kg). Pen-shade increased DMI ($P = 0.02$). Gain/feed ratio was increased both for Pen-shade ($P = 0.05$) as by feeding time ($P < 0.01$). A tendency for interaction ($P = 0.09$) was observed where the lower values were found in calves fed during morning (shaded and Unshaded pens), but inner afternoon fed calves those were provided with pen-shade had higher response ($P = 0.02$) than placed in unshaded pens (0.255 vs 0.220 kg/kg). Serum cortisol values were lower ($P < 0.01$) in shaded pens calves (1.02 vs 3.10 µg/dL). At 0800 h respiratory rate was similar across treatments ($P > 0.15$), but from 1000 to 1800 respiratory rate was lower ($P < 0.01$) in shaded pens calves (56.4 vs 84.9 breaths/minute). Results suggest

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