

For the last 10 d in each period diet digestibility measurements were undertaken. TFC was carried out at 08.00 h, with AIA fecal sampling carried out simultaneously. For the AIA method, fecal grab samples (200 g) were obtained per rectum and pooled for each animal at the end of the measurement period. All feed and fecal samples were assayed for DM, NDF, ADF, CP, and starch. The 2 methods were compared using graphical representation on an agreement plot and by computing a total deviation index (TDI_{0.9}) and coverage probability (CP_{0.06}). Computation was carried out using the SAS macro of Lin et al. (2002), available at <http://www.uic.edu/>. The TDI_{0.9}, which is an estimate of the deviation that covers 90% of the digestibility measurements, was 0.08 for apparent DM digestibility, with a CP_{0.06} estimate of 0.75, indicating that 75% of the observations fell within the previously specified error limit of 0.06. Upon removal of GS from the analysis, the strength of the agreement between the 2 methods was increased (TDI_{0.9} = 0.06 and CP_{0.06} = 0.89). Thus, it may be concluded that the AIA method is a useful method to determine diet digestibility given the proportion of measurements that fell within the pre-specified range of acceptability.

Key Words: acid insoluble ash, total fecal collection, beef cattle

M266 Feedlot performance and carcass traits of Nellore cattle as affected by sex condition and frame size. S. L. Silva^{*1}, R. C. Gomes², M. N. Bonin¹, L. S. Martello¹, P. L. Alvarez¹, L. S. Oliveira¹, M. R. Mazon¹, J. C. M. Nogueira Filho¹, J. B. S. Ferraz¹, and P. R. Leme¹, ¹Universidade de São Paulo, Faculdade de Zootecnia e Engenharia de Alimentos, Pirassununga, SP, Brazil, ²Dep. Zootecnia, Universidade Estadual de Londrina, Londrina, PR, Brazil.

Use of non-castrated (NC) males for red meat production has been a common practice in Brazil because they grow fast, utilize feed more efficiently and show high-yielding and leaner carcasses when compared with castrated males (CM). The objective of this work was to investigate the effects of sex condition and frame size (FS) on feedlot performance and carcass traits of finishing *Bos indicus* steers and bulls. Nellore bulls (n = 119; 372 ± 32kg LW) and steers (n = 122; 351 ± 36 kg LW) averaging 20-mo old, were tested for feedlot performance, being fed high-grain diets (85% of concentrate) for 56 to 140 d. Individual DMI, ADG and G:F were recorded. At the beginning of each test, animals were weighed (LW) and hip height was measured to calculate FS. In 28-d intervals, animals were weighed and ultrasound scanned for determinations of LM area (LMA) and backfat thickness (BFT) between 12th/13th ribs. At the end of test period, animals were slaughtered and hot carcass weight (HCW) and kidney, pelvic and inguinal fat (KPIF) were registered. Animal FS ranged from 4 to 9. Data was analyzed by ANOVA with year (block), FS and sex as fixed effects and time on feed (test length) as covariate. At the beginning of feedlot period, NC were heavier (369 vs 351 kg), had greater LMA (61.6 vs 59.9 cm²) and lower BFT (0.5 vs 1.4 mm) than CM (P < 0.0001), respectively. Also had higher ADG (1.86 vs 1.58 kg/day), DMI (10.7 vs 10.3 kg/day) and G:F (0.176 vs 0.155 kg ADG/kg DMI) than CM (P < 0.0001). Steers had smaller HCW than NC (292.7 vs 320 kg, respectively) but they did not differ in dressing percentage (59.3%). Steers had higher KPIF (3.6 vs 2.8%) and BFT at slaughter (5.6 vs 4.4 mm) than NC, respectively, but they had greater final LMA than CM (79.8 vs 74.1 cm², respectively). FS was positively and linearly associated to initial and final LW, G:F and HCW (P < 0.0001) but did not affect other traits. Non-castrated and large FS finishing animals may be more profitable due to their greater weight gain and G:F. When fed high concentrate diets, NC Nellore males present carcass with adequate BFT to the meat industry.

Key Words: beef cattle, *Bos indicus*, feedlot

M267 Evaluation of a rapid determination of heat production and respiratory quotient in Holstein steers using the washed rumen technique. D. H. Kim^{*1}, K. R. McLeod¹, J. L. Klotz², A. F. Koontz¹, A. P. Foote¹, and D. L. Harmon¹, ¹University of Kentucky, Lexington, ²USDA-ARS, Forage-Animal Production Research Unit, Lexington, KY.

The objective of this study was to validate use of the washed rumen technique for rapid measurement of fasting heat production (FHP) and respiratory quotient (RQ), and compare this with heart rate (HR) and core temperature (CT). The experiment used 8 Holstein steers (322 ± 30 kg) under controlled temperature (21°C) as follows: 10 d diet adaptation, 1 d measurement of respiratory gases at 1.5 × NE_m (Unwashed rumen), 1 d measurement of respiratory gases at fasting (Washed rumen), and 7 d for re-establishing intake. Steers were offered alfalfa cubes top-dressed with a mineral pre-mix at 1.5 × NE_m. At the day of measurement the reticulorumen was washed and refilled with ruminal buffer (NaCl = 96; NaHCO₃ = 24; KHCO₃ = 30; K₂HPO₄ = 2; CaCl₂ = 1.5; MgCl₂ = 1.5 mmol/kg of buffer) that was gassed with a mixture of 75% N₂ and 25% CO₂ before incubation in the rumen. Mean daily CT between unwashed and washed rumen were not different (Table 1). Mean daily HR and HP were lower for washed rumen than for unwashed rumen (P < 0.001). RQ was lower for washed rumen and there was an interaction (P < 0.001) with sampling hour. To define the plateau of RQ, dependence of RQ rate and hour on unwashed and washed rumen was fitted by a one-phase decay equation. The plateau of RQ values were calculated at 0.87 ± 0.01 and 0.72 ± 0.01 for unwashed and washed rumen, respectively. The RQ decreased to approximately 0.7, by 8 h after washing the rumen. This approach may provide an alternative to the traditional 48 h fasting time, or measurements made during the third and fourth day after starvation. Applying the washed rumen technique may be more rapid and less stressful means to predict energy required for maintenance in cattle.

Table 1. Comparison of washed and unwashed rumen models

Item	Unwashed	Washed	SEM	P-value		
				Treatment (T)	Hour (H)	T × H
CT, °C	36.91	36.91	0.07	ns	ns	ns
HR, beats/min	57.62	45.30	1.01	<0.001	ns	ns
HP, kJ/kg BW ^{0.75}	237.15	167.01	3.67	<0.001	ns	ns
RQ	0.85	0.73	0.01	<0.001	<0.001	<0.001

Key Words: fasting heat production, respiratory quotient, washed rumen

M268 Effects of lipid sources on intake and digestibility of beef cattle finished at pasture. I. P. C. Carvalho^{*1,3}, T. T. Berchielli^{1,2}, G. Fiorentini^{1,3}, J. F. Lage^{1,3}, Y. T. G. Salcedo¹, H. V. Brandt Filho¹, L. G. Rossi¹, C. S. Ribeiro Junior^{1,3}, and L. M. Delevatti¹, ¹Universidade Estadual Paulista Julio de Mesquita Filho, Jaboticabal, Brazil, ²INCT/CA member, Brazil, ³FAPESP Fundação de Amparo a Pesquisa do Estado de São Paulo, São Paulo, Brazil.

This study was carried out to evaluate the effects of lipid sources in supplements on intake and apparent digestibility of finishing beef steers kept at pasture. Forty-five Nellore steers (initial average body weight of 440kg) were assigned to 5 treatments on a completely randomized design. The animals were divided in to 10 paddocks (2 paddocks per treatment) of *Brachiaria brizantha* 'Xaraés'. Different lipid sources (linseed oil, palm oil, soybean grain and calcium salts; Lactoplus) was added to the supplements (100 g/kg DM) and offered at 1.0% body weight. The control treatment was composed of a corn and soybean meal supplement with no additional fat. All the concentrate contain 200 g/kg crude protein (CP) and 100 g/kg ether extract (EE) (except