

Enteric methane emissions from beef cattle of different genetic groups in confinement in Brazil

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At present the need to intensify meat production systems is increasing due to less area available and increasing demand for food. An alternative is to rear animals in confinement considering the environmental impact caused by methane emissions. The objective of this study was to measure the enteric methane emissions from cross-bred cattle belonging to different genetic groups, using GreenFeed. Steers offspring of Brangus, Canchim (synthetic breed 5/8 Charolais) or Bonsmara bulls and Nellore, 1/2 Angus + 1/2 Nellore or 1/2 Senepol + 1/2 Nellore cows, reared on pasture and finished in the feedlot were evaluated. The animals were confined in collective stalls equipped with GrowSafe troughs, according to weight. The diet was based on maize silage, ground maize, soybean bran and wheat bran with 51.8% of DM, 13.1% of CP, 71.0% of TDN and 3.2% of EE, provided twice daily, ensuring *ad libitum* consumption. Methane emissions were measured using GreenFeed equipment, developed by the company C-Lock, an online or real-time system to quantitatively measure CH₄ and CO₂ emissions en masse, from moment to moment, individually, while animals are attracted to the trough to receive a small amount of feed. Methane emissions were measured from two stalls with 28 animals, however it was only possible to obtain results for emissions calculations from 19 animals as a result of insufficient visits to the trough or visits of insufficient duration. Data was analyzed using the MIXED procedure of SAS and averages were compared using Tukey's test with significant differences at P<0.05. Statistical differences between genetic groups were not found for the enteric methane emission variable in grams per day (CH₄ g/d) or for methane yield (YM %), with average values of 166.6±30.7 gCH₄/day and 4.45±0.89% presented respectively.

Session 09**Theatre 1****Multifunctionality of the farm animal genetic resources seen through ecosystem services approach**

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It is widely agreed that the Ecosystem Services (ES) approach provides a perspective for the conservation of biodiversity. Compared with previous approaches, it has been suggested that ES expands the focus from individual resources to the full array of contributions which ecosystems make to human well-being and better recognises the interconnectedness of ecosystems across the broad temporal and spatial scales over which ecosystems and humans interact. The genetic resources of farm animals are resulted from co-evolution of nature and human and nature and they are dependent on cultural values and practices. ES approach, which integrates both ecological and cultural aspects of conservation of biodiversity, can be seen as an opportunity for promoting the multifunctionality of genetic resources in rural livelihoods and in policy making. By using examples from different empirical research, the paper will discuss the potential of ES framework to value and discuss the multifunctionality of farm animal genetic resources. The paper reveals that ES approach broadens the scope of conservation and preservation from provisioning services (genes, embryos, food, other products) and maintaining services (biodiversity of landscape) to human values that they entail. It also provides a tool to make a link to the (rural) livelihoods. The examples also reveal the challenges (for example to name and measure cultural ecosystem services) and criticism (anthropocentrism), which the ES approach has met more generally. Yet, despite of these shortcomings, it is concluded that the ES approach is a step ahead in the conservation of biodiversity, and also an opportunity for widening the scope of conservation policies of farm animal genetic resources towards multifunctionality.

Performance of cross-bred cattle in confinement in BrazilA. Berndt¹, L.S. Sakamoto¹, F.B. Ferrari², H. Borba², E.D.M. Mendes¹, R.R. Tullio¹ and M.M. Alencar¹¹Embrapa Southeast Livestock, Rod. Washington Luiz, km 234, PB 339, 13560970 Sao Carlos, SP, Brazil,²University of Sao Paulo State, Via Paulo Donato Castellane s/n, 14884900 Jaboticabal, SP, Brazil; alexandre.berndt@embrapa.br

With the trend towards reducing the length of the productive cycle and increasing demand for higher quality meat, there is a need to adjust some points within the growth curve to produce an animal which meets weight and finishing requirements for slaughter at a younger age. Cattle production relies on a combination of good management, good feed and above all, the use of animals with a genetic makeup which allows a rapid development with major weight gain and good feed efficiency. The objective of this study was to assess different genetic groups of cross-bred cattle and their influence on the performance of these animals in confinement. Recorded variables were daily weight gain (DWG), feed conversion (FC), feed efficiency (FE) and daily consumption of dry matter (DCDM). Steers offspring of Brangus, Canchim (synthetic breed 5/8 Charolais) or Bonsmara bulls and Nellore, 1/2 Angus + 1/2 Nellore or 1/2 Senepol + 1/2 Nellore cows, reared on pasture and finished in feedlot were evaluated. The animals were confined in collective stalls equipped with GrowSafe troughs, grouped according to weight and the genetic group of the mother and father. The diet was based on maize (corn) silage, ground maize (corn), soybean bran and wheat bran with 51.8% of DM, 13.1% of CP, 71.0% of TDN and 3.2% of EE, provided twice daily, ensuring free consumption. The duration of the confinement period for each animal was variable to allow for a similar finished carcass amongst the animals. Data was analyzed using the PROC MEANS and MIXED procedure of SAS and averages were compared using Tukey's test with significant differences at $P < 0.05$. Statistical differences were not found between the genetic groups assessed for the variables DWG, FC, FE and DCDM. The average values obtained were 1.79 ± 0.30 , 6.67 ± 0.75 , 15.17 ± 1.66 and 11.80 ± 1.29 kg/d, respectively.

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Effects of seam (kernel) fat on carcass unit price in Japanese Black cattle

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In Japan, beef carcasses are cut and graded at the level of the 6th and 7th rib section. Seam (kernel) fat (SF) is the intermuscular fat surrounded by M. semispinalis capitis, M. semispinalis dorsi and M. longissimus dorsi. According to the Japanese grading rules, if a carcass has over 12 cm² SF area then the yield grade is downgraded. Thus, purchasers of carcasses and consumers tend not to favor and subsequently discount carcasses with higher SF. The objective of this study was to investigate the effect of SF on carcass grading traits, image analysis traits and carcass unit price in Japanese Black cattle. Carcass data were collected from carcasses marketed between April 2009 and March 2013 in Hokkaido, Japan. The numbers of records of steer and heifer carcasses were 5,889 and 2,068, respectively. The image analysis traits were calculated from images taken at the 6th and 7th rib section. Correlation coefficients were calculated in order to investigate the relationship between SF and each trait. Analysis of variance was performed by each marbling score (BMS: 2 to 12) to investigate the effect of SF on carcass unit price. The average SF for steer and heifer carcasses was 5.64 ± 2.39 cm² and 9.16 ± 3.04 cm² respectively. This difference between SF for steer and heifer carcasses is statistically significant ($P < 0.01$). The correlation coefficient of each sex between SF and Coarseness index of marbling was 0.25 and 0.27 respectively. However, the correlation coefficients between SF and subcutaneous fat thickness was low for each sex (0.09–0.14). The analysis of variance revealed that carcass unit price was reduced significantly when the SF was higher than 12 cm² ($P < 0.05$: ex: marbling score BMS 6, small SF 1,582 JPY/kg, middle SF 1,571 JPY/kg, large SF 1,540 JPY/kg). This result indicates that SF has an undesirable effect on the carcass unit price and also leads to coarser (larger) marbling particle size.