

Communication N° 02-83

GENETIC CHANGES TO SELECTION FOR YEARLING WEIGHT AND CORRELATED RESPONSES ON BODY MEASUREMENTS IN NELORE CATTLE. J.N.S.G. Cyrillo, A.G. Razook, M.E.Z. Mercadante, L.A. Figueiredo and A.C. Ruggieri. EEZS - CP 63 - Sertãozinho-SP, Brazil.

Records of 5050 Nelore of the selection program of the Experimental Station of Sertãozinho (SP), Brazil, born between 1978 and 2000 were used. The data of the selection lines NeS and NeT, and a control line (NeC), included information on body measurements. The genetic changes, obtained by animal model, for the yearling weight (YW) were 2.67, 37.84 and 46.77 kg for the NeC, NeS and NeT, respectively, for hip height were -0.64, 3.78 and 4.62 cm in the same order. Chest girth, distance between hip bones and body length presented changes of -0.62, -0.20 and -0.10 cm in the NeC. NeT showed the highest values : 1.85, 3.70 and 0.74 cm for the same traits. The heritabilities ranged from 0.20 to 0.48. Selection on YW promoted positive genetic responses for the direct trait, and for the correlated traits.

Communication N° 02-84

ESTIMATING ENVIRONMENTAL AND GENOTYPIC EFFECTS ON PREWEANING WEIGHT GAIN OF ANGUS x NELORE CALVES. F.V. Brito, M.L. Piccoli, J.L.P. Severo, F.S. Schenkel, V.M. Roso and L.A. Fries. GenSys Cons Assoc Ltda, Porto Alegre RS, Brazil.

Data from Natura, a commercial beef-breeding program, were analyzed to estimate environmental and direct and maternal genotypic effects on preweaning average daily gain (ADG) of 68,629 Angus x Nelore calves. Contemporary group (CG), age of dam (AOD) within sex of calf, age at weaning (WAGE), Julian date of calving (JUL), and latitude (LAT) defined the environmental variables. Broad ranges of JUL and LAT allowed the use of spline functions to define a spatiotemporal surface of their joint effects on ADG. Genotypic effects considered were direct and maternal additive, complementarity, dominance (heterotic) and epistatic effects. Due to the confounding between CG and genotypes and incomplete information on heterozygosities of imported sires, only additive and heterotic effects could be definitely identified, but the additive-dominance model showed significant lack-of-fit (lof).

Communication N° 02-85

CONSEQUENCES OF EXTENSIONS TO THE ADDITIVE-DOMINANCE MODEL ON PREWEANING WEIGHT GAIN OF *Bos taurus* x *Bos indicus* CALVES. A REVIEW. J.L.P. Severo, F.V. Brito, F.S. Schenkel, V.M. Roso, M.L. Piccoli and L.A. Fries. GenSys Consultores Associados S/C Ltda, 90680-000 Porto Alegre RS, Brazil.

Heterosis effects are smaller for more complex models than for the traditional additive-dominance (AH) model. Complementarity or additive-taurus*additive-indicus effect may be partly estimated as heterosis under the AH model. Adding epistatic effects to the model helps to identify better breeding values and to do better designs. Large interactions of additive and of complementarity effects with latitude give further support to the general recommendation that different strategies to better exploit different genotypic components are needed at different latitudes. Any small improvement in precision of these evaluation models, especially if they can deal with true biological genetic* environment interactions, and the consideration that decisions will be made across breeds and borders, may affect large populations. Efforts to improve present models are warranted.

Communication N° 02-86

GENETIC PARAMETERS OF GROWTH TRAITS IN NELLORE CATTLE REARED IN NORTH EAST OF BRAZIL. R. Martins Filho, S. Biffani, R.N.B. Lobo, A. Giorgetti and R. Bozzi. Dipartimento Scienze Zootecniche, Via delle Cascine, 5. 50144 Firenze, Italy.

Genetic parameters of weaning weight (W205), yearling weight (W365) and weight at 550 days of age (W550) were estimated in Nelore breed raised on natural pastures in the North-eastern Brazil, using REML methodology applied to a single trait animal model. The linear model used included the fixed effect of contemporary group (herd-year-month-sex) and the random effects for direct, maternal and permanent environmental contributions to observations. Direct genetic variances were of low magnitude whereas temporary environmental variance accounted for 60 to 87 % of the total variation showing the strong influence of the environment. Heritability estimates were 0.06 ± 0.03 , 0.32 ± 0.09 and 0.14 ± 0.07 respectively, for W205, W365 and W550. Phenotypic selection can still be used but it needs a greater diffusion of A.I., a wider pool of selected bulls and their intense use across the herds.

Communication N° 02-87

GENETIC AND PHENOTYPIC PARAMETER ESTIMATES OF PREWEANING GROWTH TRAITS IN N'DAMA CATTLE IN TROPICAL AFRICA. A.R. Abdullah and O. Olutogun. Department of Animal Science, University of Ibadan, Ibadan, Nigeria.

Birthweight (BWT), 205-day adjusted weaning weight (205DWT) and average daily gain till weaning (ADG) data of N'Dama calves were analysed by nested analysis of variance procedure of SAS to derive half-sib estimates of variance and covariance components which allowed to estimate heritability, genetic and phenotypic correlations between the pairs of traits. Heritability estimates increase with age of calves from 0.10 ± 0.052 for BWT to 0.38 ± 0.09 for ADG and 205DWT respectively. The genetic correlation ranges between ADG and BWT, 0.53 between BWT and 205DWT to 0.99 between ADG and 205DWT. Phenotypic correlations between the traits follow the same trend ranging from 0.58 between BWT and 205DWT to 0.99 between ADG and 205DWT.

Communication N° 02-88

GENETIC AND PHENOTYPIC PARAMETERS FOR VARIOUS BODY MEASUREMENT TRAITS IN THE CANCHIM BEEF CATTLE BREED IN BRAZIL. F.M. Talhari, M.M. Alencar and C. Campbell. Embrapa Pecuária Sudeste, C. Postal 339, 13560-970, São Carlos, SP, Brasil.

Genetic and phenotypic parameters of body length (Bl), heights at the withers (Hw) and at the hip (Hh), and thoracic perimeter (Tp) were estimated in 1273 adult females of the Canchim (5/8 Charolais + 3/8 Zebu) breed, using the restricted maximum likelihood method. The heritability estimates were 0.33 (Bl), 0.34 (Hw), 0.36 (Hh) and 0.19 (Tp). The genetic correlations among the body measurement traits were: 0.86 (Bl and Hw), 0.92 (Bl and Hh), 0.62 (Bl and Tp), 0.97 (Hw and Hh), 0.82 (Hw and Tp), and 0.70 (Hh and Tp). The phenotypic correlations were smaller. The results suggest that Bl, Hw and Hh can be modified by selection.