

GENETIC ANALYSIS FOR IN VITRO EMBRYO PRODUCTION TRAITS IN GUZERÁ BREED FEMALE DONORS

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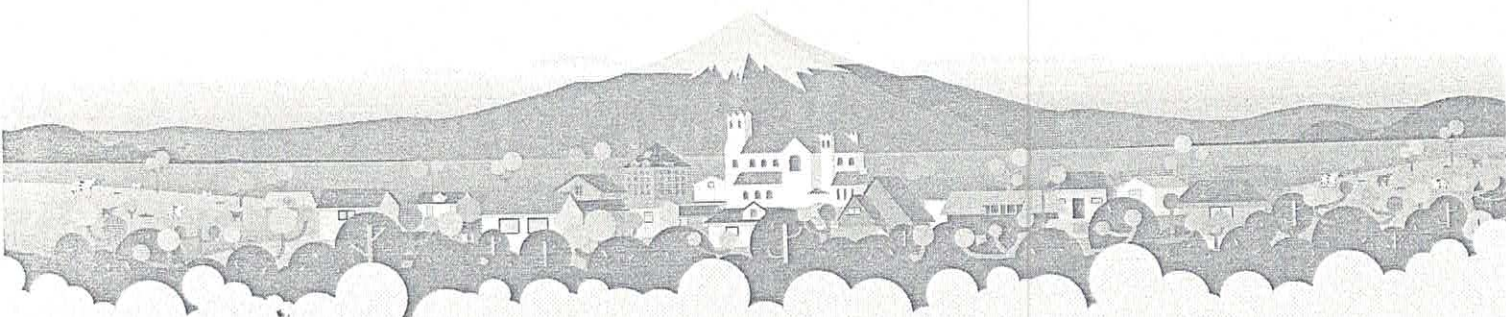
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In zebu cattle, ovary puncture (OPU) followed by in vitro embryo production (IVP) biotechnologies have assumed the position of main procedure for multiplication of individuals of interest, enhancing the importance of female selection. Not enough attention have been given to genetic components involved in oocyte and embryo production from zebu breed female donors submitted to ovarian puncture and in vitro fertilization. The objective of this study was to estimate variance components for embryo production related traits in Guzerá breed female donors. Analyzed traits were the number of viable oocytes (NOV), number of cleaved embryos (NCLV) and number of viable embryos produced (NEMB), percentages of viable oocytes (POV), grade I oocytes (PGI), cleaved embryos (PCLV) and viable embryos (PEMB). Data were obtained from 4852 ovary puncture (OPU) (followed by in vitro fertilization - IVF) sessions, from 1013 Guzerá female donors in different ages. Variance components were estimated by restricted maximum likelihood, using one and two-trait animal models. For the ovarian puncture related traits (NOC; NOV; NUNV; NGI), the model included the herd-year of OPU session; donor's herd of birth; interval between OPU sessions; veterinary responsible for the OPU and season as fixed effects. For embryo production related traits (NCLV e NEMB), in addition to the mentioned fixed effects, the sire whose semen were used for in vitro fertilization was included as a non-correlated random effect. The age of the donor (in months) at the OPU moment was included as a covariate for both models (linear and quadratic effects). Heritability estimated for NOV; NCLV; NEMB; POV; PGI; PCLV e PEMB were, respectively, 0.23; 0.17; 0.15; 0.05; 0.03; 0.02 e 0.07. The effect of the bull mated with the donor (father of the embryos) attended for 2.1%; 3.6%; 6.7%; 8.2% of the total variance found in NCLV, NEMB, PCLV and PEMB respectively. This suggests the importance of male fertility for in vitro embryo production. Results reported in this study suggest the existence of important additive genetic variation for oocyte and embryo production related traits in Guzerá cattle. Selection for NOV seems to be, potentially, more adequate for inclusion in breeding programs due to its favorable genetic correlation (0.63) with NEMB and for demanding reduced cost and time for data acquisition when compared to direct selection for NEMB.

Keywords: bivariate analysis, genetic parameters, in-vitro fertilization, zebu cattle



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PUERTO VARAS CHILE 2015
9-13 NOV. HOTEL PATAGÓNICO



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