

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## Genetic parameters for reproductive traits within a Gyr ovum pick-up *in vitro* production program.

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Reproductive technologies are used in the dairy industry to increase the reproductive rate of superior females, thus the aim of this study was to estimate heritability ( $h^2$ ) and repeatability ( $r$ ) of ovum pick-up *in vitro* production (OPU) traits and age at first calving (AFC). The data set used in the present study consisted of 3,094 Gyr cows with 13,160 phenotype records including the number of viable (VIA) and unviable oocytes recovered (INV) and AFC. The genetic parameters were obtained by REML procedures via BLUPF90 programs, in a three traits analyzes. The animal linear mixed model considered contemporary group (i.e., cohort of cows born in the same year and raised together) as a fixed effect, cow's age and OPU interval as a linear covariables (except for AFC) and additive and residual as a random effects. Moderate to high  $h^2$  estimates of  $0.29 \pm 0.04$ ,  $0.30 \pm 0.04$  and  $0.48 \pm 0.06$  were observed for VIA, INV and AFC, respectively. An important drawback of these reproductive methods remains the variability of animal responses to the procedures and as in this population 30% of variability can be explained by genetic effects, selection can be used to improve animal response in OPU traits. Thus, selection for higher VIA and lower INV in Gyr could be an additional tool to Brazilians dairy breeders. The high  $h^2$  estimates for AFC could be explained, in part, by large amount of variability observed for AFC in the present population. The average, maximum and minimum of AFC were 39.0, 14.4 and 60.5 months, respectively. Females that shows failure after the first breeding season should be identified and culled to improve herd fertility. The  $r$  estimates of  $0.22 \pm 0.03$  were obtained for both traits, VIA and INV indicating that the first collection of oocytes is not an efficient indicator of successive production. Thus, a large number of measurement is need to estimate reliably breeding values for OPU traits. The ovum pick-up and *in vitro* production traits would be used as a selection criteria in dairy cattle production systems.

**Keywords:** age at first calving, heritability, oocytes, reproduction, repeatability, selection

**Acknowledgments:** A FAPERGS, CNPq e CAPES for financial support and ABCZ and InVitro for allowing access to their data.

Promoção e Realização:



Apoio Institucional:



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