ABSTRACT

Residual variance is one of the main sources of bias which affecting the accuracy and precission of genetic studies. The residual values decreased when the model used for genetic evaluation get more complete. Variance component ususaly used for measuring and explaining of variations. Considering residual variance is essential to more efficient genetic evaluation of animals. The aim of the present research was determining the effect of heterogeneity of residual variance to genetic evaluation of reproductive traits in Iranian dairy cattels. The registered records of National Livestok Breeding Center (1981 to 2011) were used in the current study.Data preparation was doneusing CFC and Foxpro softwares. Analysis of genetic parameters was done by ASReml 3.1 software, and statistical analysis done with PWR and Agricola packages (R.2.14 software). The studied reproductive traits were the calving interval (CI), calving to first service (CTFS), the interval between first service to conception (FSTC) in the three first parities. Linear model methodology used to evaluation of environmental and genetic effects. Fixed effects affecting the studied traits were herd-year-season, age at calving, Holstein-Frisian percentage, birth type and sex. Factors influencing the heterogeneity of variance in the current study were calving year, herd size and mean of the milk production. Result of Bartlett test indicated that heterogeneity of variance significantly affects on reproductive traits (p<0.001). Log Liklihood ratio test used to determine the most appropriate model in the evaluations. Model included year of birth were best fitted. Spearman correlations figures used for ranking of animals. Spearman correlations between heterogenous model in comparison with the base model were high and near 1, except for the top 10% of male animal in CTFS trait. This study showed that no change may be occurred in ranking of animals using heterogenous model. Also, t-test statisticas were used for access the accuracy of the breeding values. Considering modelin cluded year of birth effect was significantly affected on mean standard error prediction of the accuracy of estimated breeding values. Considering the effect of year of birth was not effecting on estimated genetic process, however.

Key Words: Genetic Evalution, Holstien Cattle, Heterogeneity of Residual Variance.

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