

ESTIMATION OF GENETIC AND ENVIRONMENTAL PARAMETERS FOR PRODUCTION TRAITS USING HOLSTEIN CATTLE'S TEST DAY RECORDS AND RANDOM REGRESSION MODEL IN THE MEDITERRANEAN CLIMATE OF IRAN

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INTRODUCTION

In the present study used 105118 Test Day milk yield records of first lactation Holstein Cattle calving between 2003 to 2013 in the Mediterranean climate that collected by Animal Breeding Center of Iran. Records were analyzed using Random Regression Model and AIREML algorithm. The aim of the present study was to estimate the genetic parameters and trends for milk yield, fat and protein percentage in east-north zone of Iranian Holstein population. Heritability Estimates for milk yield were found to be lowest during early lactation and the amount of this parameter increased to mid lactation, then increased slowly to the end of lactation. Estimates of heritability for fat percentage were almost fixed during thorough of lactation. The maximum amount of this parameter occurred in the 5th day of lactation for fat percentage and 305th day of lactation for milk yield, and protein percentage were lowest during mid-lactation, then the amount of this parameter increased to the end of lactation. The maximum amount of this parameter Related to 6th day of lactation.

MATERIALS AND METHODS

Records were designated using Fox Pro 8.0 and Access 2010 software, and the wrong and unusual records were removed from the dataset. All analyses were performed using the RRM (random regression model) of the WOMBAT software package (Meyer, 2006) using AIREML algorithm on Linux operation system.

Test day records were analyzed with the following random regression model (RRM):

$$Y_{iklmnptv} = P_k + YS_l + HTD_m + \sum_{f=0}^2 cf(\text{age}_n)^f + \sum_{r=0}^k \beta_r \phi_r(\text{dim}_t) + \sum_{r=0}^{k_a-1} \alpha_{pr} \phi_r(\text{dim}_t) + \sum_{r=0}^{k_p-1} \gamma_{pr} \phi_r(\text{dim}_t) + e_{iklmnptv}$$

RESULTS AND DISCUSSION

The Heritability of milk yield, fat and protein percentage during 5 to 305 days of lactation were 0.073 to 0.207, 0.019 to 0.041, and 0.019 to 0.217 respectively. The Repeatability these three traits during this period (5–305 days) of lactation were 0.65, 0.09 and 0.16 respectively. The genetic trend was positive for milk yield (10.36) and negative for fat percentage (-0.13) and protein percentage (-0.036). Estimates of Permanent Environmental variance for these traits were 0.011 for fat percentage, 0.52 for milk yield and 0.107 for protein percentage.

Keywords: Production traits, Mediterranean climate, AIREML

REFERENCES

- 1- Khanzadeh, H., N, Ghavi Hossein-zadeh., M, Naserani and B, Mohammad Nazari.2013. Calculating daughter yield deviations for production traits in Holstein cattle using repeatability animal and random regression test day models. *Livestock Science* 157 408–413.
- 2- Meyer, K., 2006. In: WOMBAT – A Program for Mixed Model Analyses by Restricted Maximum Likelihood. User Notes Animal Genetics and Breeding Unit, University of New England, Arm dale, Australia.



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