RESPONSE SURFACE AND FIXED EFFECTS MODELS OF NON-GENETIC FACTORS FOR DAIRY COWS IN SAUDI ARABIA

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SUMMARY

Response surface model of statistical analysis was used to quantify the relationship between non-genetic factors (NGF) such as days open (DO), days in milk (DIM), age at calving and milk production. Data included 103.776 records, each one had cow identification, non genetic traits and production traits such as total milk production, 305-milk yield and peak yield. Least square means of three farms were 10467, 11047 and 10697 liters of milk respectively. Cows calved on fall-winter season produced 10839 liters, compared with 10636 liters for cows calved in spring-summer season. Second lactation cows gave the highest production (11, 105 liters), and sixth lactation cows produced the lowest production (10, 283 liters). Significant parameters (p<.01) supported the linear and quadratic relationship between age at calving and total yield, 305-dyield and peak milk production. respectively. The DIM had a significant linear effect on milk production (p<.01). Also, quadratic representation of DIM was observed along the whole milk curve. Days open showed no linear significant effect on milk production. However, significant quadratic effect (p<.05) was found between DO and 305-d yield. The ANOVA of fixed model showed a significant effect of NGF on production traits.

INTRODUCTION

Systematic non-genetic factors have great impact on milk production. Factors such as days open (DO), age at calving (AM) and days in milk (DIM) can be accounted for, and milk production can be corrected to remove much of the variations in production associated with these factors. Therefore, studying the relationship between milk