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## EFFECT OF NON-GENETIC FACTORS ON STANDARD LACTATION MILK PERFORMANCE TRAITS IN SIMMENTAL COWS\*

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### Abstract

The effect of systematic and continuous environmental factors on milk performance traits over standard lactations in 2805 Simmental cows was evaluated using the general linear model. The systematic factors included the effect of farm or breeding area, calving season, year of birth, season of birth, lactation group and their interactions. The continuous factor analysed was the effect of age at first conception. The effect of farm, lactation group and calving season on standard lactation milk performance was found to be highly significant ( $P < 0.01$ ), excepting the effect of calving season on milk fat percent in standard lactations which showed statistical significance ( $P < 0.05$ ). The interactions between year and season of birth, farm and calving season, and farm and lactation group had a highly significant effect ( $P < 0.01$ ) on all performance traits studied. Age at first conception, as a continuous factor, had a highly significant effect ( $P < 0.01$ ) on milk yield and milk fat percent, and a non-significant effect on milk fat yield. The model used to correct the performance traits over standard lactations for the effect of systematic factors was highly significant ( $P < 0.01$ ). The variance of the model accounted for 20.06 and 37.31% of the total variance of milk fat yield and milk fat percent, respectively. The resulting coefficients of determination ( $R^2$ ) ranged from 0.20 for milk fat yield to 0.37 for milk fat percent.

**Key words:** coefficient of determination, milk performance, Simmental breed, systematic effects

Given the fact that milk performance is a polygenic trait dependent upon genetic and non-genetic factors, its variability is extremely high. Knowledge of genetic and phenotypic parameters is of great importance in the evaluation of the additive genetic value of milk traits in cattle population (Pantelić et al., 2011). Studies on phenotypic

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