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Effect of pregnancy on the genetic evaluation of dairy cattle

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ABSTRACT. We investigated the effect of stage of pregnancy on estimates of breeding values for milk yield and milk persistency in Gyr and Holstein dairy cattle in Brazil. Test-day milk yield records were analyzed using random regression models with or without the effect of pregnancy. Models were compared using residual variances, heritabilities, rank correlations of estimated breeding values of bulls and cows, and number of nonpregnant cows in the top 200 for milk yield and milk persistency. The estimates of residual variance and heritabilities obtained with the models with or without the effect of pregnancy were similar for the two breeds. Inclusion of the effect of pregnancy in genetic evaluation models for these populations did not affect the ranking of cows and sires based on their predicted breeding values for 305-day cumulative milk yield. In contrast, when we examined persistency of

milk yield, lack of adjustment for the effect of pregnancy overestimated breeding values of nonpregnant cows and cows with a long days open period and underestimated breeding values of cows with a short days open period. We recommend that models include the effect of days of pregnancy for estimation of adjustment factors for the effect of pregnancy in genetic evaluations of Dairy Gyr and Holstein cattle.

Key words: Days open; Lactation curves; Random regression model; Stage of pregnancy

