

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## HETEROISIS IN THE COMPONENTS OF LACTATION CURVE OF GIROLANDO COWS

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The knowledge of the level of heterosis on the components of lactation curve can contribute to the improvement of the production system. Consequently, it may help the farmers in the decision making. Thus, the objective of this study was to use the Wood's nonlinear model to describe the lactation curve in order to evaluate the effect of heterosis on the components of the lactation curve of Girolando cows. Data consisted of 258,891 test day milk yield records of the first lactation from 37,965 cows of Minas Gerais State (Brazil) between 1998 and 2014. Those cows were from Holstein breed (H), Gyr breed (G), and six genetic crossbreedings of Holstein x Gyr, (1/4H a 3/4G (1/4H), 3/8H a 5/8G (3/8H), 1/2H a 1/2G (1/2H), 5/8H a 3/8G (5/8H), 3/4H x 1/4G (3/4H) e 7/8H x 1/8G (7/8H)). The Wood's nonlinear model ( $WD_{nl}$ ) were used for estimating the peak milk yield (PY), time to peak yield (PT), 305-day milk yield (TMY) and four different persistency measures ( $P$ ,  $P_{2:1}$ ,  $P_{3:1}$ , and  $P_{3:2}$ ). The heterosis effect of the components of lactation curve in Girolando cattle was estimated by MIXED procedure in SAS. The heterosis effect was significant ( $P < 0.001$ ) for TMY and all components of lactation curve, except for  $P_{2:1}$ . The Girolando cattle presented heterosis effect of 12.30% and 13.03% for PY and TMY, respectively. The magnitude of heterosis effect was larger for PT (24.18%) while the different persistency measures presented the smallest magnitude of heterosis values. The lactation curves of the different genetic groups of Girolando cattle were 2.79% more persistent than the average of persistency of parental breeds. The heterosis of 305-day milk yield is more associated to the heterosis of components of the initial stage of the lactation curve (initial milk yield, peak yield and time to peak). Thus, the producers may use the different genetic groups to benefit from the heterosis mainly for the time to peak, peak yield and 305-day milk yield.

**Keywords:** daily milk yield, mathematical model, peak yield, persistency and time to peak

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