

“DAIRY PERFORMANCE OF HOLSTEIN-FRIESIAN CATTLE AND  
THEIR CROSSES UNDER SEMI-ARID ENVIRONMENT OF EASTERN  
KENYA”

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## ABSTRACT

A total of 1,338 records made by Kenya Holstein-Friesian (K-HF) and crossbred (CB) cattle during 1972 to 2000 were used to evaluate 305-day adjusted lactation milk yield, milk yield per day of calving interval, calving interval, age at first calving and the lactation curves. Effects of genetic group, parity, season, years and their interactions, on the dairy traits were evaluated by the least-squares and maximum likelihood method. The gamma function,  $Y_n = a n^b e^{-c n}$ , was used to study the lactation curve parameters: starting yield, rate of increase to peak yield, time taken to attain peak yield, rate of decline from peak yield and persistency. K-HF cows performed better than CB cows in 305-day adjusted milk yield ( $P < 0.001$ ), milk yield per day of calving interval ( $P < 0.001$ ) and in persistency ( $P < 0.01$ ), but were not significantly different ( $P > 0.05$ ) from the CB cows in starting yield, time taken to attain peak yield, age at first calving and in calving interval. The rates of increase and of decline were highest for CB cattle ( $P < 0.05$  and  $P < 0.001$ , respectively).

The least square means for 305-day milk yield, milk yield per day of calving interval, rate of increase to peak yield, rate of decline from peak yield and persistency for K-HF cattle were  $1714.80 \pm 40.13$  liters,  $3.93 \pm 0.24$  liters per day,  $1.08 \pm 0.07$  liters per month,  $0.35 \pm 0.02$  liters per month and  $12.28 \pm 0.62$  liters per month, respectively, compared to  $1107.15 \pm 57.68$  liters,  $2.46 \pm 0.28$  liters per day,  $1.40 \pm 0.09$  liters per month,  $0.50 \pm 0.03$  liters per month and  $8.76 \pm 0.89$  liters per month, respectively for the CB cattle. Milk yields increased from first parity to peak at third and fourth parities and declined thereafter. Interaction between genetic group and parity were not significant for 305-day yield and milk yield per day of calving interval. Milk yields were lowest during the dry seasons followed by the long rains season. The milk yields of CB cattle were not significantly different from those of the K-HF cattle during the long rains.

There was no significant effect of parity on any of the parameters of the lactation curves. The rates of increase and decline from peak milk yields were highest during the dry season. For both genetic groups of cattle, persistency was found to be lowest during dry season and highest in the short rain season. The age at first calving (AFC) was higher for animals that were born in the earlier year classes but was not significantly affected by other factors. Calving intervals (CI) to subsequent calving were shorter for cows at third and fourth parities but higher intervals in earlier and later parities. CI was neither affected by season nor by the interaction between season and genetic group. It was concluded that under the ASAL ecosystem studied, K-HF cows can produce more milk than crosses under good pastures and supplementation CB cows were faster in attaining peak yield and also decline from peak, while K-HF had better persistency.