

Productivity of Sahiwal and Friesian –Sahiwal crossbreds in marginal grasslands of Kenya

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Introduction Dual-purpose cattle can be used to exploit the production potential of semi-arid grasslands of Kenya for milk and meat production. Although the Sahiwal is adapted to these grasslands, its productivity is low. In order to increase milk and meat productivity, the Sahiwal has been crossed with the Friesian to produce Friesian-Sahiwal crossbreds (McDowell *et al.*, 1996) adapted to the tropical environment. The objective of this study was to evaluate the productivity of Sahiwal and Friesian-Sahiwal crossbreds.

Materials and methods Data were obtained from Sahiwal and Friesian-Sahiwal crossbred cattle at Naivasha Research Centre, situated in agro-ecological zone IV. The average rainfall is 680mm per annum. Cattle grazed on natural pastures. The herd consisted of young and breeding cattle. Data on performance traits were analysed using a fixed effect model (Harvey, 1990) to obtain mean estimates. Measures of productivity were production efficiency (milk yield in kg/d of calving interval) and the Pry productivity index (total output value in Kenya Shillings per kg dry matter intake), derived using the Pry productivity model (Baptist, 1988).

Results Age at first calving was significantly different ($P < 0.01$) between the two genotypes, with mean values (\pm standard deviation) of 35.0 ± 4.05 and 41.2 ± 5.42 months for the Friesian-Sahiwal crossbreds and Sahiwal, respectively. The decrease in this parameter is similar to that reported in India (Bhat *et al.*, 1978). Similarly the calving interval was significantly lower ($P < 0.01$) among the crossbreds (400 ± 61 days) compared to the Sahiwal cattle (446 ± 105 days). Mean milk yield was $2,210 \pm 808.9$ kg and $1,500 \pm 551.7$ kg for the crossbred and Sahiwal cattle, respectively ($P < 0.01$) and the values for the crossbred are similar to those reported by McDowell *et al.* (1996). Productivity indices were different with the Friesian-Sahiwal crossbreds superior to the Sahiwal (Table 1).

Table 1 Productivity indices of the Sahiwal and Friesian-Sahiwal crossbreds

Productivity Index	Sahiwal	Friesian-Sahiwal
Production efficiency (kg/dci ¹)	3.46	5.54
Pry Productivity index (Ksh*./kg DMI ²)	5.71	6.47

¹Milk yield in kg/d of calving interval, ² Total output value in Kenya shillings per kg of dry matter intake, *1 US\$ = 75 Kenya Shillings.

Conclusion The crossbred genotype gave improved productivity for all the measured parameters. The Friesian - Sahiwal crossbreds, which combine the high production of the Friesian and hardiness of the Sahiwal, have high overall productivity. The utilisation of crossbreds is of economic importance for smallholder farmers, since the Friesian - Sahiwal is well suited to multiple uses in marginal areas.

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