

RESEARCH PAPER

Effect of non-genetic factors on production traits of Gir halfbreds

S.S. JADHAV, A.R. DESHMUKH, D.K. DEOKAR AND Y.G. FULPAGARE

Accepted : February, 2010

ABSTRACT

The data of normal 343 lactation records of Gir halfbred cattle maintained at RCDP on Cattle, MPKV, Rahuri were collected. To study the effect of management practices and other environmental factors, the sources of variation considered were period of calving, season of calving and order of lactation. The data were analyzed by least-squares technique of fitting constants. The significance of the differences among subclass means were tested by DMRT. The overall least-squares means for lactation milk yield and lactation length were 2971.94 ± 101.84 kg and 333.59 ± 6.34 day, respectively. The analysis of variance indicated that the period of calving and order of lactation had significant influence on lactation milk yield while period of calving, season of calving and order of lactation had non-significant effect on LL in Gir halfbreds. From these results, it is concluded that the cows calved during different periods and lactation order differed significantly from each other for the lactation milk yield only.

See end of the article for authors' affiliations

D.K. DEOKAR

Department of Animal Science and Dairy Science, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

Key words : Production performance, Gir halfbred

The Research-Cum-Development Project on Cattle, MPKV, Rahuri, maintain Gir halfbred *i.e.* 50% HF x 50% Gir. There is huge demand from the farmers of Maharashtra state, because of its well adaptability and good milk yield and fat per cent. However, the literature on Gir halfbred cattle is scanty. Therefore, the present investigation was undertaken.

MATERIALS AND METHODS

The production performance data of 343 normal lactations of half-bred cattle maintained at Research Cum Development Project on Cattle, MPKV, Rahuri, Dist. Ahmednagar, Maharashtra state were collected. Data of 14 years (1995-96 to 2008-09) were grouped into 6 periods of calving. The data were further classified into 9 orders of lactation and 3 seasons of calving *viz.*, rainy (June-Sept.) winter (Oct.-Jan.) and summer (Feb.-May). Data were analyzed by least-squares technique of fitting constants (Harvey, 1991). For study of effects of non-genetic factors following model was used.

$$Y_{ijkl} = \mu + A_i + B_j + C_k + e_{ijkl}$$

where, Y_{ijkl} is the observation for i^{th} cow of i^{th} order of lactation, calving in j^{th} period and k^{th} season.

A_i - is the fixed effect of i^{th} order of lactation

B_j - is the fixed effect of j^{th} period of calving

C_k - is the fixed effect of k^{th} season of calving.

e_{ijkl} is the random error associated with each observation and assumed to be normally and independently distributed with mean zero and variance. Wherever the

effects were found to be significant, the means were tested by DMRT (Kramer 1957).

RESULTS AND DISCUSSION

The overall least squares mean for LMY and LL were observed to be 2971.94 ± 101.84 kg and 333.59 ± 6.34 days, respectively (Table 1).

The analysis of variance (Table 2) indicates that the period of calving and order of lactation had significant ($P < 0.01$) influence while season of calving had non-significant effect on LMY in halfbreds. Though the period of calving had significant effect on LMY in halfbreds however, not showing specific trend. The LMY showed increasing trend up to 5th lactation however, after that the trend was erratic. This might be due to attainment of physical maturity by the animal up to the 5th lactation. Mudgal *et al.* (1990) and Singh and Tomar (1991) reported significant effect of period of calving on total lactational milk yield.

Lactation order had significant effect on lactation milk yield as reported by several authors (Gill and Balaine 1971 and Choudhay and Barhat, 1979). Reddy *et al.* (1987) in ongole triple crosses and Dhumal *et al.* (1989) in Jersey x Red Kandhari halfbred cows observed non-significant effect of season of calving on LMY.

The lactation length was non-significantly affected by period of calving, season of calving and order of lactation in halfbreds. Similar findings were also reported by Mandakmale and Kale (1990) in Gir triple crosses .

From these results it is concluded that over a period of time and within different lactations though the variations