

PRODUCTIVITY OF RATHI CATTLE AT AN ORGANISED FARM UNDER ARID ZONE OF RAJASTHAN

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ABSTRACT

The 267 production and reproduction records of 97 Rathi cows was evaluated from 1976-1999 at Livestock Research Station, College of Veterinary and Animal Science, Bikaner. Animals were classified in the two groups i.e. Low and High yielder. Data were analyzed by least square analysis technique with a simple linear model containing fixed effect of group, period, season and parity and age at first calving as co-variance. The effect of group was significant on all the traits except DP and AFC. Period of calving and parity of calving had a significant ($P < 0.05$) effect on all the traits except LL. The period 1990 to 1994 was the best in terms of production and reproduction performance, whereas the 1995 to 1999 period was the poorest in terms of production characteristics but best in term of reproduction performance. The performance of cows was best in the comfort season and worst in the hot-humid season. The milk yield was highest (1880.19±83.23 litres) in fifth parity and lowest (1568.99±99.59 litres) in seventh parity. The phenotypic correlations of FLY with LY300, LL, SP and CI were high in magnitude and positive. The correlation among LL, SP and CI were positive and high in magnitude whereas, the correlation among PY, SP and CI were positive but very low in magnitude. Rathi cows could be grouped on the basis of their milk yield and more attention should be paid on the managerial practices for overall improvement of the herd. If selection is practiced to lower down the age at first calving, it also reduces the dry period of the animals which in term increase the production performance of Rathi cows.

Key words: Economic traits, low and higher yielder, non-genetic factors, phenotypic correlation.

Introduction

The northwestern region of Rajasthan, which is seasonally very hot and arid, has meager rainfall and recurrent failure of rain has made this area highly unsuitable for agriculture. Due to the severe agro climatic conditions, the people of the area survive mainly on animal husbandry, especially on dairy cattle and sheep/goat rearing. In arid zone of Rajasthan, the most important milch breeds of cattle are Rathi and Tharparkar. Among these two breed, Rathi has been found suitable for the north western arid region of Rajasthan. Rathi cattle are native of Bikaner district. This breed is a milch type, brown in colour and of large size. The animals are traditionally reared in Bikaner, Ganganagar and Hanumangarh districts by the Rathi is a local tribe in the region. The cows are good milkers and have a standard lactation yield of 2500. The heifers mature at the average age of 3 years and attain weight between 208 to 302 kg. The lactating cows have pendulous udder which make them prone to physical injuries. The animals have also been observed to suffer from the pre and post-partum uterine prolapse and resultant secondary uterine infections. Rearing these animals on the ranges is a concern for farmers of Bikaner district as most ranges are severely degraded in edible biomass and feeding in intensive system is not cost effective (Patil *et al.*, 2009).

By virtue of its good milk production potential and adaptability in the desert and drought prone area, the Rathi cows has drawn attention of breeders for exploitation of its production potential. Maximum returns from dairy cattle depends upon the traits like age at puberty, age at first calving, lactation length, dry period, calving interval and lactation yield. The milk yield at different stages of lactation is affected by non-

genetic factors like period of calving, season of calving, parity and managerial practices, being followed. Therefore, it is necessary to study the influence of various factors affecting the performance of Rathi cows.

Materials and Methods

The 267 performance records of 97 Rathi cows collected at Livestock Research Station, College of Veterinary and Animal Science, Bikaner from 1976-1999 were analyzed. Cows were milked twice a day and calves were allowed to suckle their dams till cows were dry. Each calf received approximately 315 litres of milk during the 300 days of lactation period. Rathi cows were classified in the two groups i.e. Low yielders that produced less than 1500 litres of milk, and High yielders that produced more than 1500 litres of milk in 300 days.

The total duration of 24 years were sub-divided into four periods i.e. first (1976 to 1984), second (1985 to 1989), third (1990 to 1994) and fourth (1995 to 1999) period on the basis of calving. Each year was further divided into four seasons on the basis of variation in temperature, humidity and rainfall as comfort (1st March to 15th April and 1st October to 31st October), hot dry (16th April to 15th July), hot humid (6th July to 30th September) and winter (1st November to 28/29th February). In order to study the effect of parity on various economic traits, the data were grouped according to parity i.e. from I to VII parity. The animals producing milk in more than VII parity were fewer in number, therefore, these animals were included in VII parity. The least-squares analysis was carried out to study the effect of various factors on the economic trait by using LSMLWM PC-2 (Harvey, 1990). A simple linear model with fixed effect of group, period of calving, season of calving and parity, and age

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