Indian J. Anim. Prod. Mgmt. Vol. 29 (1-2) 1-4 (2013)

EFFECT OF SEASON ON FIRST LACTATION PRODUCTION PERFORMANCE OF MURRAH BUFFALOES

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(Received : 18.03.2013, Accepted : 21.08.2013)

ABSTRACT

The present investigation was conducted on 301 Murrah buffaloes maintained at Buffalo Research center, Department of Livestock Production and Management, CCS Haryana Agriculture University, Hisar (India) with the main objective to study the Effect of season on first lactation production performance of Murrah buffaloes. The overall least-squares means first lactation milk yield, first lactation length, first peak yield and first dry period were obtained as 1991.46 ± 26.37 kg, 381.67 ± 3.82 days, 9.58 ±0.99 kg and 188.39 ± 5.05 respectively. The period of calving had significant effect on first peak yield and first dry period. Season of calving had significant effect on first lactation milk yield, first dry period and first lactation length. Each year was divided in to four season i.e. Summer, Rainy, Autumn and Winter. The least squares means for FLMY indicated that summer (April to June) calvers produced highest milk (2152.17±57.74) yield followed by winter (December to March) calvers but there was no significant difference in summer and winter calvers.

Key words : First lactation, Production, Buffaloes, Season

Murrah a famous breed of buffalo habitats in Haryana. Climate affects animals, both directly with expression on their systematic function and indirectly by governing the availability of nutrients. Changes in climatic situation prevailing in different season, particularly high ambient temperature and humidity affect all productive and reproductive function of animal through their heat regulation mechanism. Hisar is a district of Haryana state characterized by hot dry summer and cool winter. The maximum temperature ranges between 40 to 48 ^{0}C in summer and minimum temperature ranges between 1.5 to 4.4 ^{0}C along with relative humidity between 60-65%. Present study was conducted to know the effect of season on production performance of Murrah buffaloes[16]. The main objective to study the effect of season on first lactation production performance in Murrah buffaloes.

MATERIALS AND METHODS

The data pertaining to the present study were collected from the lactation records of 301 Murrah buffaloes maintained at Buffalo Research Center, Department of Livestock Production and Management, College of Animal Sciences, CCSHAU, Hisar for a period of 20 years from 1989 to 2008. The data was processed for to study the effect of season on production traits viz (FLMY, FLL, FPY & FDP).

Each year was divided into four seasons according to the ambient temperature and relative humidity according to previous worker[17] i.e. Summer (April to June) no.of observation-79, Rainy (July to September) no. of observation-92, Autumn (October to November) no.of observation-58, Winter

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(December to March) no. of observation -72. according to the ambient temperature and relative humidity. Season was made on the basis of month of first calving of the animal.

The data was analyzed as per procedure recommended by[13]

RESULTS AND DISCUSSION

Result obtained in present study are discussed as means of first lactation production traits and effect of season on them in Murrah buffaloes .

First lactation milk yield (FLMY) : The average for FLMY was estimated as 1991.46 ± 26.37 kg. (Table1). The present value is comparable with previous worker[15] in Murrah buffaloes. However, it is higher than those reported by previous worker[7] but lesser than the value reported by previous worker[4].

The analysis of variance revealed highly significant (P<0.010) effect of season of calving on FLMY. The least squares means for FLMY (Table 1) indicated that summer (April to June) calvers produced highest milk (2152.17±57.74) yield followed by winter (December to March) calvers but there was no significant difference in summer and winter calvers. Probably, the favorable condition of milk production in term of feed and fodder might be available to summer calver during their peak yield period. Similar results were also reported by previous worker[6, 5] in Murrah buffaloes and previous worker[9] in Surti buffaloes. Contrarily, previous worker[4,14] reported non-significant effect of season of calving on first lactation milk yield.

First lactation length (FLL) : The least squares means for first lactation length averaged as 381.67 ± 3.82 days (Table 1). The present result is comparable with those reported by previous worker [11].

Season of calving had significant (P<0.05) effect on first lactation length. The summer (April to june) calver had highest lactation length (338.11±8.36) followed by winter (December to March) calver (336.12±8.91). Significant effect has also been reported by previous worker[6] in Murrah buffaloes and previous worker[9] in Surti buffaloes.

First peak yield (FPY) : The overall least squares means for first peak yield has been estimated as 9.58 ± 0.99 kg (Table 1). The present result is also comparable with those reported by previous worker[12]. However, the present estimate is much higher than reported by previous worker[1].

The analysis of variance showed non-significant effect of season of calving on first peak yield, which is similar to findings of previous worker[14]. Whereas, significant effect of season of calving was reported by previous worker[5].

First dry period (FDP) : The least squares mean for first dry period is obtained as 188.39 ± 5.05 days (Table 1). The present findings are comparable with previous worker[2]. The estimates of dry period obtained in present study is lower than the estimates reported by previous worker[3,10].

Season of calving had highly significant (P<0.01) effect on first dry period. It was observed that there was highest first dry period in winter calver (231.62±11.71) and lowest first dry period in summer summer calver (170.89±10.96). The dry period can be kept within normal limits by adopting proper feeding and management practices particularly detection of heat in order to minimize the dry period. Significant effect has also been reported by previous worker [14,8] in Murrah buffaloes and previous worker[9] in Surti buffaloes. In this context, past worker 18,19 pointed out that the Berari buffaloes were regular breeder, maintaining a dry period between 105.05±5.12 to 150.09±2.59 days. Their observations also support the contention that the dry period could be controlled with proper management approach. The difference in phenotypic values in different seasons may be attributed to variation in feed and fodder availability, climatic conditions and varying nutritional requirement of animals in different seasons.

Table 1: Least-squares mean along with their standard errors (S.E.) for various production traits of first lactation in Murrah buffaloes

	No. of obs.	FLMY (kg)	FLL (days)	FPY (kg)	No. of obs.	FDP (days)
Population	301	1991.46 ± 26.37	381.67 ± 3.82	9.58 ± 0.99	279	188.39 ± 5.05
Season-1(Summer)	79	2152.17^{a} ± 57.74	338.11^{a} ± 8.36	9.894 ± 2.16	71	170.89^{c} ± 10.96
Season-2(Rainy)	92	1968.52^{b} ± 57.23	313.44^{ab} ± 8.29	9.555 ± 2.14	86	181.83^{bc} ± 11.00
Season-3(Autumn)	58	1968.99^{ab} ± 68.92	306.06^{b} ± 9.98	9.655 ± 2.58	54	202.29^{ab} ± 13.34
Season-4(winter)	72	2142.61^{a} ± 61.55	336.12^{a} ± 8.91	9.647 ± 2.31	68	231.62^{a} ± 11.71

FLMY - First lactation milk yield, FLL - First lactation length, FPY – First lactation peak yield, FDP - First dry period.
Note – Means with different superscripts differ significantly.

CONCLUSION

The season of calving affected significantly all the first lactation traits FLMY, FLL, FDD, except FPY. Summer calvers showed highest milk yield followed by winter calvers but there was no significant difference in summer and winter calvers.

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