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EFFECT OF AGE AT FIRST CALVING ON LIFE TIME PERFORMANCE TRAITS IN MURRAH BUFFALOES

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ABSTRACT

In the present investigation the data on 674 Murrah buffaloes were utilized to estimate Least square means of the longevity, productive herd life, life time milk production, daily milk yield of longevity, daily milk yield of productive life and life time calf yield. The buffaloes were grouped on the basis of age at first calving. The average estimation of longevity productive herd life, life time milk production on, daily milk yield of longevity, daily milk yield of productive herd life 4198± 46.31, 2720.7±46.2 days, 8471.6±206.0kg, 2.43±0.04kg,3.89±0.05kg and 5.00±0.08 life time crop yield, respectively. The significant effect of age at first calving on life time milk production, daily milk yield as per longevity, productive life and life time crop yield were observed.

Key words : *Longevity, Murrah, milk production life time milk production, crop yield.*

Murrah breed is the best genetic material of milk producing buffalo and the principal dairy animal contributing more then 50 percent of the country's total milk production and significant meat production. The National buffalo breeding policy is selective breeding for conservation and improvement of breeds in their home tract and grading up of non descript buffaloes with recognised breeds and this resulted into increased share of buffalo milk production over time (1). The performance of the most important economic production traits during life time of buffalo is a measure of an animal's contribution and the age of an animal at first calving had appreciable effect on life time production traits in buffaloes (2). Hence the study has been made by utilizing data of Central Institute for Research on Buffalo, Hissar, Haryana.

MATERIALS AND METHODS

The production and reproduction records of 674 Murrah buffaloes maintained at Central Institute for Research on Buffalo were collected over a period of 10 years (1998-2007). Longevity, productive herd life, life time milk production, daily milk yield of longevity and productive herd life and life time crop yield, and age at first calving analysed as a fixed effect. The buffaloes were grouped as = 1250,>1250 to 1400, >1400 to 1550, >1550 to 1700, >1700 to 1850 and > 1850 days at first calving. The following fixed effect model was used for the analysis of life time production traits:

$$Yij = \mu + Pi + eij.$$

Where, Yij is the performance of jth buffalo cow calved in ith age at first calving,

μ = over all mean of performance,

Pi = effect of ith age at first calving group

and eij = random error normally distributed whit mean o and variation ^{2}e.

LSMLMW and MIXMDL PC-2 VERSION Computer programme was used to study the effect of age at first calving on life time production traits.

RESULTS AND DISCUSSION

The table 1 of the least square means with standard error for different life time production traits of Murrah buffaloes revealed the overall longevity was 4198.4 ± 46.3 days and ranged from 3898.1 ± 105.7 days in buffaloes having age at first = 1250 days to 4380.7 ± 124.8 days and in buffaloes having age at first calving >1700 to 1850 days. The average longevity was higher to the values reported by Kuralkar and Raheja,2000.(Sasidhar et al., 2000. EL-Arian and Tripathi (1988) observed value for longevity as 3531.29±109.68 days. The table also revealed that age at first calving had significant effect on longevity and similarly observed by (3). However, (4) reported no significant effect of age at first calving. Higher value of longevity is an indication of fit and healthy animals and it increases the profitability, decreases replacement cost and increases the proportion of productive mature ageed animals. The overall productive herd life was 2720.7 ± 46.2 days with a range from 2172.6 ± 137.0 days to 2926.7 ± 86.2 days, in the groups >1850 days and >1400 to 1550 days age at first calving, respectively. The similar observation were made by (5, 6). The table also revealed that age at first calving had highly significant effect on productive herd life. The Buffaloes with lower age at first calving had an advantage over the freshening on older age throughout all groups. (2) also

Table-1 : Least-squares means (± SE) for different lifetime production traits of Murrah buffaloes.

Effect	Longevity (days)	Productive herd life (days)	Lifetime milk production (kg)	Milk yield per day of longevity (kg)	Milk yield per day of productive herd life (kg)	Life time calf crop
Overall mean	4198 ± 46.3	2720.7 ± 46.28	8471.6 ± 206.0	2.48 ± 0.04	3.89 ± 0.05	5.00 ± 0.08
Age at first calving						
=1250 days	3898.1 ± 105.7^{a}	2921.8 ± 105.5^{b}	9160 ± 454.0^{d}	2.96 ± 0.08^{b}	3.89 ± 0.10	5.56 ± 0.19^{b}
>1250 to 1400 days	3984 ± 90.5^{ac}	2825.4 ± 90.3^{b}	8664.8 ± 383.7^{c}	2.86 ± 0.07^{b}	3.95 ± 0.09	5.27 ± 0.16^{b}
>1400 to 1550 days	4278.2 ± 86.4^{bc}	2926.7 ± 86.2^{b}	9188.9 ± 366.2^{d}	2.81 ± 0.07^{b}	3.96 ± 0.09	5.31 ± 0.15^{b}
right>1550 to 1700	4260.8 ± 125.6^{ab}	2850.8 ± 125.3^{b}	8303.6 ± 553.1^{b}	2.59 ± 0.10^{b}	3.85 ± 0.13	4.93 ± 0.22^{b}
>1700 to 1850 days	4380.7 ± 124.8^{b}	2826.7 ± 124.6^{b}	9253.0 ± 517.9^{d}	2.60 ± 0.10^{b}	3.98 ± 0.13	4.96 ± 0.21^{b}
>1850 days	3990.6 ± 137.3a^{b}	2172.6 ± 137.0^{a}	6139.1 ± 682.8^{a}	2.05 ± 0.13^{a}	3.89 ± 0.16	3.95 ± 0.24^{a}

Means with at least one common superscript within classes do not differ significantly (p=0.05).**P<0.05,**P<0.01

found similar finding and concluded that by reducing the age at calving, the profitability could be improved by increasing life time milk production and daily milk yield of herd-life.

The overall estimated life time milk production was 8741.6 ± 206 kg with averages as 6139.1 ± 682.8kg in group >1850 days to 9160.3 ± 454.0 kg in group = 1250 days of age at first calving. In the present study the values observed was higher than reported by (5, 6). (7) reported 5381.07±66.63 kg life time milk production for Murrah buffaloes. The age at first calving had highly significant effect on average life time milk production.

The overall lest square means for daily milk yield of longevity and daily milk yield of productive life were as 2.48±0.04 and 3.89±0.05 kg , respectively .the daily milk yield of longevity were in range from 2.05 ± 0.13 kg in group>1850 days to 2.96 ± 0.08 kg in group=1250 days of age at first calving and the daily milk yield of productive life were in range of 3.09 ± 0.16 kg to 3.98±0.13 kg in groups >1850 days and>1700 to 1850 days of age at first calving, respectively. (7) also reported similar observation. The table also revealed that the age at first calving had highly significant effect on daily milk yield of longevity and had no significant effect on daily milk yield of productive herd life.

The overall least square means of life time crop yield of the herd was 5.00±0.08 and it was higher to those reported by earlier workers (4). The age at first calving had highly significant effects of life time crop yield as the age at first calving increased and was found least number of calves in group >1850 days and maximum number of calves in group = 1250 days of age at first calving.

CONCLUSION

The analysis of effect of age at first calving on different life time production traits revealed that the optimum age at first calving for higher longevity , productive herd life, and life time milk production, should be given due weightage for improving the life time production traits of Murrah buffaloes. Since the sexual maturity is depend on the body weight in buffaloes, therefore, proper nutritional management and provision of comfortable housing will reduce age at first calving to the optimum level for more profitability.

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