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ASSOCIATION BETWEEN AGE AT FIRST CALVING AND LIFE TIME PRODUCTION TRAITS AND AMONG LIFE TIME PRODUCTION TRAITS IN MURRAH BUFFALOES

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ABSTRACT

A study on life time production traits of Murrah buffaloes maintained at Central Institute for Research on Buffaloes carried by utilizing 674 production records over a period of 10 years 1998 to 2007. The overall means along with their standard errors for longevity, productive herd life, life time milk production, daily milk yield of longevity and productive herd life and life time calf yield of Murrah buffaloes were observed as 4198±46.31, 2720.7±46.2 days, 8471.6±206.0 kg, 2.43±0.04 kg, 3.89±0.05 kg and 5.00±0.08 calf, respectively. The genetic, phenotypic correlations between the age at first calving and most of the life time production traits were found to be negative and among all the life time production traits were found to be positive and high in magnitude. Therefore selection of buffaloes for reducing the age at first calving and providing proper nutritional manage mental prances would result in profitability by increasing in life time milk production and reducing the replacement rate of buffaloes.

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

Buffalo rearing as a dairy animal is one of the important subsidiary income generating activates in rural India. Murrah breed is the best genetic maternal of milk producing buffalo in the world. The national buffalo breeding policy envisages selective breeding for conservation and improvement of buffalo breeds in their home tract and grading up of non- descript buffaloes with recognised buffalo breeds viz. Murrah, Nili-Ravi and Surati. Murrah buffaloes are originated from Haryana, Punjab and Delhi and have been used extensively throughout the country and world to upgrade non-descript buffalo stock to improve the milk production. A large increase in share of buffalo milk to total milk production suggest the efficacy of grading up of non-descript stock. Age at first calving is an important criteria for the selection of an animal to use as replacement and to use in selective breeding programme. Age at first calving have appreciable effect on most of the economically important production and reproduction traits in dairy cattle and buffaloes. Therefore the breeders and farmers both would have their interest to use the relationship between age at first calving and life time milk production and other traits. Therefore, present investigation has been carried out to estimate the relationship between age at first calving and life time milk production traits and relationship among life time milk production and reproduction traits.

MATERIALS AND METHODS

The information on 674 Murrah buffaloes related to milk production and reproduction over a period of 10 years from 1988 to 2007 were collected from central institute for Research on Buffalo, Hissar, Haryana and grouped into six classes on the basis of age at first calving of buffalo cows. The classification was made as = 1250,>1250 to 1400, >1400 to 1550, >1550 to 1700, >1700 to 1850 and > 1850 days of age at first calving. The life time production traits were recorded as longevity (number of days from birth to disposal of animal due to death or culling), production herd life (number of days from first calving to disposal of animal due to death or culling), life time milk production (Total milk production by animal during its productive herd life), daily milk yield of productive herd life and longevity and life time calf yield (total number of calves born during whole life or till disposal of animal). The following fixed effect model was used for the analysis of life time production traits :

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

Where, Yij observation on traits of the buffalo cow, calved related to jth group of age at first calving.

μ = over all mean of performance.

Pi = effect of ith group.

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

The genetic parameters (heritability), genetic correlation, phenotypic correlation and environment

Table-1: Estimates of genetic (rG), phenotypic (rP) and environmental (rE) correlations among different traits.

Character	Correlation		
	$r_G \pm SE$	$r_p \pm SE$	r_E
Age at first calving with			
Longevity	0.253 ± 0.648	0.099 ± 0.043	0.094
Productive herd life	-0.503 ± 0.705	-0.119 ± 0.043	-0.069
Lifetime milk production	0.181 ± 0.937	-0.070 ± 0.049	-0.140
Milk yield per day of longevity	-0.706 ± 0.766	-0.215 ± 0.049	0.138
Milk yield per day of productive herd life	-0.454 ± 0.363	-0.087 ± 0.049	0.074
Number of calf produced	-0.456 ± 0.286	-0.164 ± 0.040	-0.017
Longevity with	1.024 ± 0.225	0.999 ± 0.002	0.9998
Productive herd life	-	0.930 ± 0.019	-
Lifetime milk production	-	0.849 ± 0.027	-
Milk yield per day of longevity	-	0.434 ± 0.046	-
Milk yield per day of productive herd life	0.675 ± 1.426	0.920 ± 0.017	0.923
Number of calf crop			
Productive herd life with	-	0.930 ± 0.019	-
Lifetime milk production	-	0.851 ± 0.027	-
Milk yield per day of longevity	-	0.432 ± 0.046	-
Milk yield per day of productive herd life	0.692 ± 1.651	0.920 ± 0.017	0.923
Number of calf crop			
Lifetime milk production with	-	0.935 ± 0.018	-
Milk yield per day of longevity	-	0.630 ± 0.039	-
Milk yield per day of productive herd life	-	0.926 ± 0.019	-
Number of calf crop	1.439 ± 2.502	0.781 ± 0.031	0.776
Milk yield per day of longevity with	-	0.881 ± 0.024	-
Milk yield per day of productive herd life			
Number of calf crop	-	0.539 ± 0.043	-
Milk yield per day of productive herd life with			
Number of calf crop			

correlation were estimated by REML method using DFREML (Derivation free Restricted maximum likelihood) soft were package of (3).

RESULTS AND DISCUSSION

The least square means for different life time production traits of Murrah buffaloes were observed as 4198±46.3 days, 2720±46.2 days, 8471.6±206.0 kg, 2.48±0.04 kg, 3.89±0.05 kg and 5.00±0.08 calf for longevity, productive herd life, life time milk production, daily milk yield of longevity, daily milk yield of productive life and life time calf yield, respectively. The estimated phenotypic and environment correlations are presented in table no 1. The table revealed that age at first calving had a medium to high negative genetic correlation with life time production traits except with longevity and life time milk yield, where the association were positive and low in magnitude which is not desirable for the improvement of both traits. The negative association with daily milk yield of longevity and production herd life was in desired manner but both correlations have high standard errors. It showed that decreased age at firsts calving resulted in to improved daily milk yield of longevity and productive herd life.

The high estimates of the genetic and phenotypic correlation among different life time production traits indicated that there was some pleatropy or the expression of all the traits were controlled by similar sets of genes and therefore selection for one trait would be resulted in to improvement of associated traits.

CONCLUSION

In the present investigation it is revealed that the age at first calving in Murrah buffaloes had influence on most of the economically important traits and it should be given due weight in selection and breeding strategies to improve the life time production traits in Murrah

buffaloes. The heritability estimates observed for the different traits were lower in comparison to reported by (4, 5).

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