EFFECT OF CALVING SEASON ON MILK PRODUCTION IN BUFFALOES

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The records of buffaloes maintained at the Dairy Farm, University of Agriculture, Lyallpur during years 1937 to 1964 were utilized. The information on date of freshening, date of calving and total milk yield during each lactation was collected to find out the breeding season, calving season and its effect on milk yield. The breeding season in buffaloes is from August to November and 55.2 per cent of the total animals were served during these months. Similarly 55.2 per cent of the buffaloes calved from June to September which is the calving season in buffaloes. The month of calving had no significant effect on milk yield but the season of calving has significantly affected the milk yield. Those animals which calved during months of November to February gave significant better milk than those calving during months of February to August.

INTRODUCTION

Buffalo is largely kept in Indo Pakistan subcontinent as a dairy animal. It gives enough milk with fairly high percentage of butter fat. Except for a few herds of buffaloes owned by the Government or by some private owners, the bulk of the buffalo population in Pakistan has low performance in-spite of good milk producing ability. Milk production is greatly influenced by breeding season, calving season, dry period, milking procedure, feeding and other managemental practices. The climate and housing has a major effect on milk yield. The production of milk is naturally associated with reproduction. Good dairy animal must breed at uniform intervals i.e. once a year. Some buffaloes may not conform to this pattern due to various reasons and they may freshen late and have long dry periods. Majeed *et al.*, (1965) reported buffalo as polyoestrus animal which show regularly oestrus cycle throughout the productive life but their genital organs have been shown to exhibit some special activity during certain months of the year. Environmental factors such as food, light, ambient temperature and humidity are said to influence the reproductive functions. Asdell (1946) reported that in Bison-the

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American buffalo, the breeding season ranges from July to September. Sidky (1951) observed that Egyptian buffaloes were usually mated in November, December and January and they calve in winter while Badrel-Din (1952) noticed maximum conception rate during these months as compared to other seasons. Ashfaq and Mason (1954) reported an increase in the rate of fertile services in July with the advent of rainy season in Nili-Ravi buffaloes. The main objectives of this study were to find out breeding season, calving season and the effect of calving season on milk yield.

MATERIALS AND METHODS

The records of buffaloes maintained at the Dairy Farm, University of Agriculture, Lyallpur during the years 1937 to 1964 were utilized. The information on date of freshening, date of calving and total milk yield during each lactation was collected. There were 250 records on date of freshening out of which 241 calved and 184 completed their lactations in this herd. The data on milk yield was grouped separately according to the month of freshening, and months of calving to study their effects on milk yield. Then the data on milk yield was further sorted into four seasons of freshening and calving. These were season A (16th November to 15th February) B (16th February to 15th May) C (16th May to 15th August) and D (16th August to 15th November).

RESULTS AND DISCUSSION

The monthwise number of buffaloes freshening and calving throughout the year has been given in Table 1. It was observed that maximum number of animals freshened during the months of September and October (15.2 per cent each) while it was minimum during the month of April (2.0 per cent). It was further observed that 55.2 per cent of the total matings took place in season D (August to November) which seems to be the breeding season in Pakistani buffaloes. In Pakistan the season during these months remains neither too hot nor too cold. The rains start, atmospheric temperature comes down, humidity increases and good quantity of green fodder and vitamin A is available to livestock. So the environments become favourable and sexual activity is increased during the months of September and October. It seems that the animals which calved in July, August and September can be re-bred easily in September, October and November. These findings are quite in agreement with Manzoor *et al.*, (1964) and Ishaq (1964), who observed marked seasonal variation in sexual behaviour of buffaloes and reported increased frequency of oestrus during October, November and December. Haider and Yusaf (1964) found that the maximum number of buffaloes were served during

the months from September to November. Majeed *et. al.*, (1965) reported that in Pakistan maximum number of oestrus cycle were noted in the last four months of calender year i.e. September to December when the day length shorthens.

TABLE 1. *Monthwise freshening and calving frequencies with average milk yield per lactation in buffaloes.*

Month	No. of matings	Percentage	No. of calvings	Percentage	No. of complete lactations	Average milk yield/ lactation
January	11	4.4	11	4.56	7	6505.1
February	16	6.4	7	2.91	6	5829.0
March	8	3.2	9	3.73	9	4759.5
April	5	2.0	19	7.88	13	5131.8
May	12	4.8	20	8.30	16	4605.3
June	14	5.6	26	10.79	19	4878.7
July	25	10.6	41	17.02	31	5281.1
August	30	12.0	36	14.94	29	4793.5
September	38	15.2	30	12.45	19	4985.2
October	38	15.2	19	7.88	16	5600.6
November	32	12.8	9	3.73	7	6495.0
December	21	8.4	14	5.81	12	5698.2
Total	250		241		184	

The idea about the calving frequency can also be had from table 1. Maximum percentage of 17.02 took place during the month of July while the months of August, September and June ranged close to it. Minimum number of buffaloes calved during February (2.91 per cent). As the gestation period in buffaloes is about 10 months, it was observed that 55.2 per cent buffaloes calved between months of June to September and 44.8 per cent during the rest of the months. These findings are similar to those reported by Rife (1959) Haider and Yusaf (1964) and Maymone and Pilla (1961) who reported maximum number of calvings from July to September. These results are also similar to those reported by Ashfaq and Mason (1954).

The effect of month of calving on milk yield was assessed by analysing the data on milk production between various months. There was no significant

difference between mean milk yield of buffaloes calving in different months (Table 2).

TABLE 2. *Effect of month of calving on milk yield.*

Variation due to	D.F.	S.S.	M.S.	F. Ratio	Remarks
Month	11	46879690.71	4261790.06	1.416	NS
Error	172	517503867.10	3008743.41		

NS — Non-significent.

This is because the milk yield is Influenced more by variable environmental conditions, i.e. feeding, care and management throughout the lactation length than the month of calving. On the other hand the number of calving frequencies observed in each month are very low to show any definite behaviour. In spite of this reason, our findings that month of calving have non-significant effect on milk yield are in agreement to Tomar and Tomar (1960), Nambiar and Raja (1962) and Arora, *et al.*, (1962). They all reported that the month of calving had non-significant effect on milk yield.

The mean milk yield however differed significantly among buffaloes calving in different seasons under study (Table 3). On further analysis it was revealed that buffaloes calving during season "A" (November to February) yield (6125 lbs) significantly more milk than those calving during seasons B (February to May) and C (May to August), which yielded 5118 and 4839 lbs respectively. However no significant differences occurred between mean milk yield of buffaloes calving during seasons A and D (6125 vs 5322 lbs).

The buffaloes that calved in season "A" showed a high milk production because of the availability of the sufficient amount of green feed and also the winter season which have shown a better results than summer season in which the yield was minimum as in season "C". Because in summer season the feed efficiency especially of this species is lowered due to the fact that heat regulation mechanism is not well developed and most of the feed consumed is being utilized for temperature maintenance. Moreover, there is a scarcity of green fodder in this season of the year. The season "A" is also significant better than season "B", because in the last half of season "B" there is scarcity of green fodder and temperature is quite high, although in the beginning of this season, there is a good amount of green feed available. Season "A"

and "D" do not differ significantly. Because from August the rainy season starts and young grasses and herbages becomes available in abundance. On the other hand the temperature is lowered in the beginning due to rains and towards the end of this season i.e. in November the temperature is low and the environments in this season are favourable for milk production.

TABLE 3. *Effect of season of calving on milk yield.*

Variation due to	D.F.	S.S.	M.S.	F. Ratio	Remarks
Season	3	31944808.67	10648267.89	3.599	*
Error	180	532438754.14	2957993.07		

* = Significant

As the season "B" and "C", and "B" and "D", and "C" and "D" do not differ significantly because in environment there is not much difference among these seasons. On the average a little increase in milk production in season "B" might be due to the low temperature and availability of green feed. The results of the present study conforms with Ashfaq and Mason (1954) who found that the milk yield was conspicuously higher for lactations starting in winter, the cool season than for those starting in summer. Tomar and Tomar (1960) and Desai and Kumar (1964) also reported the significant effect of season of calving on milk production.

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