

## CALVING PATTERN IN KANKREJ CATTLE AND MEHSANA BUFFALO AT AN ORGANIZED FARM IN NORTH GUJARAT

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### ABSTRACT

The seasonality in calving pattern at an organized farm in North Gujarat was recorded to present statistics on regional trends for calving pattern. For assessing the seasonality of calving patterns, the data on 821 Kankrej cattle and 486 Mehsana buffalo (calving between 2006 and 2015) maintained at Livestock Research Station, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat was considered. The month and season had impact ( $p < 0.05$ ) on calving pattern in Mehsana buffalo and Kankrej cattle. The highest calving for Kankrej and Mehsana was in summer (33.99%) and rainy (38.69%) season, respectively. The lowest calving for Kankrej and Mehsana was in autumn (18.03%) and summer (5.34%) season, respectively. The seasonality of calving was 0.63 and 0.95 for Kankrej cattle and Mehsana buffalo, respectively. In brief, Mehsana buffalo had distinct seasonal variation in calving pattern as compared to Kankrej cattle at an organized farm in North Gujarat.

**Keywords:** Calving Index, Calving pattern, Kankrej cattle, Mehsana buffalo, Seasonality

Buffalo is having tendency for seasonal pattern of breeding in India, while cattle show perennial breeding and calving pattern. The association of reproductive efficiency of dairy animals with the profitability warrants comprehensive study on reproductive traits of indigenous breeds for improving their breeding efficiency and to formulate selection and breeding strategy. Kankrej cattle is hardy and best adopted breed of tropical region of India due to endurance to hot climate of tropics, maintenance of productive and reproductive capabilities under tropics. A continuous supply of milk is required at consumer level but buffalo fails to meet such demands as they have tendency to calve more in autumn than the summer season while the demand of milk is more in summer season. One option to bridge this demand is rearing of Kankrej cattle with buffalo because they produce more milk in lean summer season due to lower seasonality of calving. Considering this issue, the objective of study was to establish a pattern for the seasonality of calving in Kankrej cattle and Mehsana buffalo at an organized

farm.

The study was conducted at Livestock Research Station, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat (23.81° 24.70' N, 71.10° 73.00' E). The animals were kept under semi-intensive housing system. Calves were grouped according to their age or live body weight while the adults were divided into lactating, advance pregnant and dry group according to their reproductive physiological status. Feed requirement was calculated as per the milk yield, pregnancy status and body weight of animal. Breeding was done through natural or artificial method up to year 2014 after which only artificial insemination was followed at the station.

The data of 821 Kankrej cattle and 486 Mehsana buffalo calving between 2006 and 2015 was included. The year of calving was divided into summer (March-May), rainy (June-August), autumn (September-November) and winter (December-February) season on the basis of geo-climatic conditions prevailing in the region.

The seasonality of calving =  $1 - (\text{number of calving})$

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Table 1: Calving pattern in Kankrej cattle and Mehsana buffalo at an organised dairy farm

Season	Month	Kankrej cattle		Mehsana buffalo	
		Number	%	Number	%
Summer	March	92	11.21	16	3.29
	April	103	12.55	4	0.82
	May	84	10.23	6	1.23
	Total	279 <sup>a</sup>	33.99	26 <sup>c</sup>	5.34
Rainy	June	59	7.19	36	7.41
	July	55	6.70	66	13.58
	August	49	5.97	86	17.70
	Total	163 <sup>bc</sup>	19.86	188 <sup>a</sup>	38.69
Autumn	September	62	7.55	73	15.02
	October	48	5.85	59	12.14
	November	38	4.63	43	8.85
	Total	148 <sup>c</sup>	18.03	175 <sup>ab</sup>	36.01
Winter	December	61	7.43	42	8.64
	January	104	12.67	34	7.00
	February	66	8.04	21	4.32
	Total	231 <sup>ab</sup>	28.14	97 <sup>bc</sup>	19.96
Seasonality of calving		0.63		0.95	

<sup>a,b,c</sup> Means with the similar superscripts are not significantly different ( $p < 0.05$ )

in the month with lowest calvings / number of calving in the month with highest calvings) was calculated (Oseni *et al.*, 2003). The data were analysed by Randomised Block Design (RBD) procedure of SPSS. The pattern of calving was analysed and the comparisons were drawn between Kankrej cattle and Mehsana buffalo.

The effect of season of calving was present ( $p < 0.05$ ) in Kankrej cattle and Mehsana buffalo; however, the seasonality of calving was more pronounced in Mehsana buffalo (0.95) than the Kankrej cattle (0.63, Table 1). The high environmental stress together with under nutrition during the summer season might be responsible for long period of seasonal anestrus in buffalo (Shah *et al.*, 1989).

In Kankrej cattle, the number of calving were highest in summer and were lowest in autumn season, whereas, in case of Mehsana buffalo, the calving were

highest in rainy and were lowest in summer season ( $p < 0.05$ , Table 1). More precisely, Kankrej cattle had highest frequency of calving in January (12.67%) followed by April (12.55%) with minimum frequency in October (5.85%) and November (4.63%, Table 1), In Mehsana buffalo, maximum calving was observed in August (17.70%) and minimum frequency was observed in April (0.82%, Table 1). These results indicated clear variation in calving pattern of buffalo as compared to cattle.

In fact, almost opposite calving pattern was observed in cattle and buffalo with summer and winter as the main calving season for Kankrej cattle and rainy and autumn for Mehsana buffalo. The present findings of calving pattern closely collaborated with earlier observations in cattle and buffalo breeds of India (Dhami *et al.*, 1993, Mandali *et al.*, 2002 and Hassan *et al.*, 2007).

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