MORTALITY PATTERN IN BUFFALO CALVES IN ORGANIZED FARMS OF TAMIL NADU

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ABSTRACT

The mortality pattern in Murrah and Surti buffalo calves was studied for a period of 11 years (1991-2001) from the available records in certain organized farms of Tamil Nadu for four seasons viz. hot, south west monsoon, northeast monsoon and cold seasons. Data pertaining to 471 death records of buffalo calves were collected and analyzed. High ($P<0.05$) percentage of mortality occurred in male (18.58 ± 0.82, 20.20 ± 0.58) than the female (14.31 ± 0.53, 19.65 ± 0.59) calves in both Murrah and Surti graded respectively. The Surti graded showed heavier ($P<0.01$) losses than the Murrah calves. High ($P<0.01$) calf losses during cold season (11.37 ± 2.01), followed by northeast monsoon (9.50 ± 1.11) for Murrah and cold (14.27 ± 1.66) and northeast monsoon (9.80 ± 1.20) for Surti graded buffalo were noticed. The incidence of pneumonia and enteritis was 39.19 and 24.91 in cold season, 32.17 and 16.79 per cent in hot, 30.67 and 25.33 per cent in northeast monsoon, 27.17 and 21.00 per cent in southwest monsoon which caused maximum mortality in buffalo calves.

KEY WORDS: Mortality pattern, Buffalo calves, seasons.

INTRODUCTION

India ranks first with 199.08 million cattle and 105.38 million buffaloes (Anon, 2011). Buffaloes are the backbone of India's dairy Industry and considered as India's Milking machine, contributing about 56% of the total milk produced in the country despite the fact that buffalo population is less than half of the country's total cattle population. It sustains under harsh climatic conditions, has resistance to disease and produces high quality milk rich in fat percentage. The climate has direct and indirect effect on the buffalo calf performance. The proportion of the calf mortality is taken as an index of the general health and management of the herd. The survivability of calf is important leading to better replacement opportunities. The studies on information about the buffalo calf loss are inadequate. Hence a comprehensive study has been planned to find out the various factors influencing calf survivability and mortality.

MATERIALS AND METHODS

The data pertaining to calf mortality in buffaloes viz. Murrah and Surti graded were collected in selected organized farms of Tamil Nadu viz., Livestock Research Station - Kattupakkam, District Livestock Farm Orathannad, Exotic Cattle Breeding Farm - Echengottai and Central Cattle Breeding Farm - Alamadhi by perusal of the available records for a period of 11 years from 1991 - 2001. During the study period 741 death records of buffalo calves were collected and analyzed for the four seasons namely hot (March, April, May) south west monsoon (June, July, August), north east monsoon (September, October, November) and Cold (December, January, February). The percentage data were transferred into Arscin value prior to analysis and subjected to statistical analysis as per the methods suggested by Snedecor and Cochran (1996).

RESULTS AND DISCUSSION

The calf mortality percentage in buffalo calves had revealed significant difference between sex

(P<0.05) and between breeds and seasons (P<0.01) (Table 1 & 1a). Highest (P<0.05) percentage of mortality occurred in male (18.58 ± 0.82, 20.18 ± 0.58) than the female (14.31 ± 0.53, 19.65 ± 0.59) in both Murrah and Surti graded buffaloes respectively. In agreement with the present finding Arya and George (1998), and Vanan *et al.* (2000) reported heavier mortality in male calves. This might be due to the tendency of management to neglect male calves as they are not efficient draught animal (Sastry and Varma, 1988 and Vannan *et al*., 2000).

Table 1. Mean ± SE of mortality percentage in buffalo calves in different seasons

Buffalo breed	Season							
	Hot			South west monsoon			North east	
	M	F	Overall	M	F	Overall	M	F
Murrah	3.72 ± 0.64 (73)	2.74 ± 0.55 (53)	6.46 ± 1.19 (126)	3.21 ± 0.64 (42)	2.38 ± 0.40 (38)	5.59 ± 1.08 (80)	5.00 ± 0.58 (103)	4.50 ± 0.53 (91)
Surti graded	3.78 ± 0.43 (9)	4.45 ± 0.68 (8)	8.23 ± 1.11 (17)	3.78 ± 0.41 (9)	3.77 ± 0.51 (11)	7.55 ± 0.92 (20)	5.40 ± 0.63 (18)	4.40 ± 0.62 (13)

Figures in parenthesis indicate the number of observations

Table 1a. Analysis of variance of mortality in buffalo calves in different seasons

Source	Degrees of freedom	Mean square	F value
Between sex	1	42.6597	4.22*
Between breed	1	87.2744	8.64**
Between season	3	144.8118	14.34**
Error	125	10.1013	

*Significant at five per cent level (P < 0.05) **Significant at one per cent level (P < 0.01)

The Surti graded showed heavier (P<0.01) losses than Murrah calves throughout the year (8.23± 1.11 Vs 6.46 ± 1.19, 7.55 ± 0.92 Vs 5.59 ± 1.08, 9.80±1.20 Vs 9.50 ± 1.11, 14.27 ± 1.66 Vs 11.37 ±2.01) for four seasons respectively. In Murrah buffaloes heavier (P<0.01) calf losses occurred during cold (11.07 ± 2.01), followed by northeast monsoon (9.50 ± 1.11) season. In surti graded buffaloes heaviest (P<0.01) losses occurred during cold (14.27 ± 1.66) and northeast monsoon (9.80± 1.20) season. In agreement with above findings Sastry and Varma (1988) and Vannan *et al.* (2000) reported similar observations. Patil *et al*. (1992) stated one of the problems for the calf mortality in cold season might be the higher number of young calves being exposed to inclement weather when compared to summer and rainy season because peak calving occur in northeast monsoon and cold seasons and the lower temperature and low resistance in animals due to various external and internal infectious agents during cold season may also predispose the calves.

In both breeds highest percentage of calf mortality occurred (Table 2) from birth to 1 month, followed by 2 to 3 month, 4 to 6 month and 7 to 12 months (Murrah 32.58, 26.19, 23.16 and 18.07 and Surti graded 41.74, 25.21, 19.13 and 13.92). The heavy mortality from birth to 1 month might be due to hygienic problem involved in hand feeding of milk. (Sastry and Varma 1988).

Table 2. Age wise mortality (%) in buffalo calves

	Age group			
Breed	**Birth to 1 month**	**2 to 3 months**	**4 to 6 months**	**7 to 12 months**
Murrah	32.58(204)	26.19(164)	23.16(145)	18.07(113)
Surti graded	41.74(48)	25.21(29)	19.13(22)	13.92(16)

Table 3. Disease wise mortality (%) in buffalo calves

Season	Disease					
	Pneumonia	**Enteritis**	**Hepatitis**	**Tympany**	**Verminous infestation**	**Others**
Hot	32.17 (46)	16.79 (24)	18.18 (26)	11.89 (17)	9.79 (14)	11.18 (16)
South west monsoon	27.00 (27)	21.00 (21)	15.00 (15)	14.00 (14)	11.00 (11)	12.00 (12)
North east monsoon	30.16 (69)	25.33 (57)	13.33 (30)	9.33 (21)	9.78 (22)	11.56 (26)
Cold	39.19 (107)	24.91 (68)	12.45 (34)	9.53 (26)	5.86 (16)	8.06 (22)

Figures in parenthesis indicate the number of observations

Highest calf mortality (39.19 %) was occurred (Table 3) due to pneumonia in cold season, followed by 32.17 in hot season, 30.67 in northeast monsoon, 27.00 in southwest monsoon, enteritis (25.33) in northeast monsoon, hepatitis (18.18) in hot season, enteritis (16.79) in hot season and hepatitis (15.00) south west monsoon. It was observed that pneumonia and enteritis were the two most common diseases in all the buffalo calves responsible for calf mortality. Similar findings were reported by Varma *et al*. (1988) and Arya and George (1988). One of the possible causes could be the existing cold weather and dampness which act as predisposing factor is bringing down the body resistance. Moreover the exposure of young calves in cold months problems leads to pneumonia. Also during these months the buffaloes were in their early stage of lactation, producing more milk, consequently resulting in higher milk consumption by calves which coupled with infectious would have resulted in enteritis.

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