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Influence of Birth Weight and Season on Mortality of Surti Buffaloes in an Organized Dairy Farm

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Abstract

The study was conducted utilizing five years data on Surti buffaloes maintained at UAS dairy farm at Dharwad in Karnataka. Buffaloes were maintained under standard managemental practices. The birth weight of newly born calves were recorded and classified into different age groups. The incidence of mortality was recorded and subjected to thorough post-mortem examination. The result revealed that the mortality was more in young Surti female calves with lower birth weight which born in rainy season. Higher percentages of deaths were noticed in winter season followed by summer and rainy season in age group of 0–1 month. But the trend was peculiar in >12 month age group, maximum deaths of 43.75, 31.25 and 25% were observed in summer, rainy and winter seasons respectively. Enteritis is the major cause for more number of deaths. Cases of enteritis were more in winter and followed by summer season. Respiratory system was severely affected after the digestive tract. Proper managemental care for young calves will reduce the mortality rate in Surti buffaloes.

Key words : Buffaloes, Mortality, Causes, Birth weight, Season.

More than 50% of milk produced in India is shared by buffaloes alone. India ranks first in buffalo population in the world (1). Buffalo population is increasing at the rate of 2% per annum from last two decades. Buffalo is more productive than cattle due to its better feed conversion efficiency particularly of low quality feeds. Adequate nutrition is the pre-requisite for proper functioning of the reproductive system in buffaloes. They are also more resistant to diseases. To become an economical dairy the buffalo should perform reproductively well and also it should take care its young ones. Management too plays a crucial role in care of young calves. Percentage of calf losses is taken as criteria for general health and herd management. Many research workers have studied the factors responsible for calf mortality in different seasons and the causes for mortality. Present study was conducted to assess the percentage of mortality in different agro-climatic seasons and various causes for the buffalo death in an organized dairy farm.

Methods

Five years data of Surti buffaloes maintained at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, Karnataka State was utilized for the present study. Surti buffaloes were purchased and maintained under AICRP on buffaloes since 1970. The buffaloes were maintained under standard managemental practices. Herd was under strict veterinary supervision. Vaccination against infectious diseases like foot and mouth disease, black quarter and hemorrhagic septicemia was carried out depending on the incidence of the disease in and around the farm. Regular deworming procedures were carried out to both young ones and adult buffaloes.

The farm area geographically comes under semi-malnad area. Depending on the agro-climatic zone for the present study the season was divided into summer (February to May), rainy (June to September) and winter (October to January). The buffalo calves were classified into five different groups depending on the age as 0–1 month, 1–3 month, 3–6 month, 6–12 month and >12 month age group respectively. The dead buffaloes were subjected to thorough post-mortem examination at college Veterinary hospital headed by Professor of Veterinary Pathology. After obtaining the reports the deaths were classified into enteritis, pneumonia, metritis, toxemia, starvation, cachexia depending on the diagnosis for the cause of death. Birth weight of the every newborn calf was recorded and the dead buffaloes were categorized season-wise and sex-wise. For the study purpose the birth weight of the newly born was grouped as < 15 kg, 16—20 kg, 21—25 kg, 26—30 kg

Table 1. Age-wise percentage of mortality in different seasons.

Season	Age groups (months)					
	0 to 1	1 to 3	4 to 6	7 to 12	> 12	Over all
Summer (Feb—May)	26.67	25	0	50	43.75	35.14
Rainy (Jun—Sep)	33.33	75	0	0	31.25	27.03
Winter (Oct—Jan)	40.00	0	0	50	25.00	37.84
Over all	40.54	10.81	0	5.41	43.24	

and >30 kg.

Data thus obtained was utilized for the analysis and expressed in percentage.

Results and Discussion

Season has got a tremendous influence on mortality of buffaloes (Table 1). Maximum death was observed in winter season followed by summer and rainy seasons. Maximum death in winter may be due to more calving in the season. In the age group of 0–1 month highest death was in winter followed by rainy and summer seasons respectively. In group 2 (1–3 month age) again the mortality was higher in winter season and least in summer season. No mortality was recorded in 3–6 month age group in any season, whereas equal deaths were observed in summer and winter in 6–12 month age group. In > 12 month age group trend was peculiar, highest deaths of 43.75, 31.25 and 25% were observed in summer, rainy and winter seasons respectively. Patil et al. (2) reported that mortality of Surti buffalo calves was higher (38.29%) in winter season. Rathore (3) reported that the mortality rate in calves was 3.61 times more as compared to the young stock whereas the adults had 32% less mortality.

Deaths in winter and summer seasons were higher, this may be because of extreme cold in winter and too hot weather in summer and this may not be tolerated by the buffaloes. Other reason may be due to more number of calving in winter. The results were in accordance with the findings of Patil et al. (2).

In general deaths were higher in > 12 months age group ; 40.54% deaths were recorded in 0 to 1 month age group. Khan et al. (4) reported that highest death was observed in 0—3 month age group (87.5%). Just 9.82% mortality was recorded in 3–6 month age group. The over all calf mortality rate was 24.28% and the average calf mortality for Niliravi and crossbred buffalo was 37.1 and 14.1% (5).

Deaths due to various causes are depicted in Table 2. Maximum deaths were due to enteritis. This may be due to contamination of food and water ; organisms may enter due to unhygienic condition and also may pick up infection during wallowing in con-

Table 2. Percentage of deaths in different seasons due to different causes (age in months). S—Summer, W—Winter, R—Rainy.

Causes	Seasons															
	0 to 1			1 to 3			4 to 6			7 to 12			> 12			
	S	R	W	S	R	W	S	R	W	S	R	W	S	R	W	Over all
Enteritis	25	0	25	12.5	0	25	0	0	0	100	0	0	0	0	0	21.62
Pneumonia	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	10.81
Septic metritis	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	2.7
Pulmonary edema	25	0	0	0	0	0	0	0	0	0	0	0	28.57	20	0	10.81
Toxemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	2.7
Internal hemorrhage	50	0	0	0	0	0	0	0	0	0	0	0	0	20	0	5.41
Starvation	0	80	0	0	0	0	0	0	0	0	0	0	0	0	25	13.51
Cachexia/ weakness	0	20	0	0	0	0	0	0	0	0	0	0	28.57	40	0	13.51
Muconeum aspiration	0	0	100	0	0	0	0	0	0	0	0	0	0	0	25	2.7
Hepatitis	0	0	0	0	0	100	0	0	0	0	0	0	0	0	25	2.7
PM changes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7
TRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7
Diffuse reticulo peritonitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.41
Tetanus	0	0	0	0	0	0	0	0	0	0		100	28.57	0	0	2.7
Over all	10.81	13.51	16.21	2.7	0	8.11	0	0	0	2.7	0	2.7	18.19	13.51	10.81	

Table 3. Percentage of calf mortality in different birth weight groups.

Season and sex		Birth weight (kg) < 15	16 to 20	21 to 25	26 to 30	> 30	Over all
Winter	Male	0	100	0	0	0	4.16
	Female	25	12.5	50	12.5	0	33.33
Summer	Male	0	75	0	25	0	16.66
	Female	66.6	33.3	0	0	0	12.50
Rainy	Mele	0	50	0	0	0	8.33
	Female	0	100	0	0	50	25.00
Over all		16.66	54.16	16.66	8.33	4.16	

taminated ponds. After enteritis the deaths due to starvation and cachexia/weakness stands second. Respiratory organs take later position for cause of death in buffaloes. Deaths due to pneumonia and pulmonary edema stand third. Other causes like toxemia, septic metritis, hepatitis, TRP, diffuse reticuloperitonitis, tetanus are also investigated.

Enteritis cases were more in winter and followed by summer season ; 0–1 month group calves were affected severely with enteritis when compared to all other groups.

Incidence of deaths due to starvation was highest in rainy season and in winter season deaths due to pneumonia was observed more in 0–1 month group age calves. In > 12-month age group equal deaths of cachexia/weakness were observed in summer and rainy seasons but the pulmonary edema was highest in summer season. Pulmonary edema was recorded in > 12 months age group which is highest in summer season. Other causes like septic metritis, toxemia, traumatic reticulo peritonitis, diffuse reticulo peritonitis, advanced post-mortem changes, internal hemorrhage were recorded in adult (in > 12 month age group) buffaloes. In young calves muconeum aspiration, in 1–3 month group hepatitis and in 6–12 month age group tetanus were also observed. According to Patil et al. (2) deaths due to enteritis were more (39.25%) followed by pneumonia (24.94%) and pneumo enteritis (12.59%). The major causes of deaths in digestive system were enteritis and hepatitis, which together accounted for about 80% of death. The present study supports the observations of Rathore (3).

Sex-wise mortality was analyzed, more deaths were noticed in females rather than in males. Khan et al. (4) reported that mortality of male buffalo calves was slightly higher (50.66%) in males than its counter part females (49.33%). Weight-wise buffalo mortality is depicted in Table 3. Brith weight has inverse relation on mortality. As the weight increased the mortality reduced. Losses in birth weight of 16–20 kg were highest. Lowest mortality was observed in higher birth weight group. Equal mortality was observed in < 15 kg and 21–25 kg birth weight group. Nearly 71% losses were observed in females and only 29% losses in male buffaloes. A low as just 11.50 kg birth weight was recorded in female calf which has born during winter season. The data also revealed that the over all mortality in all the body weight groups was lower in summer season followed by rainy and winter season. From 16–20 kg birth weight group onwards mortality trend decreased with increase in body weight.

Coclusion

To conclude mortality was more in young Surti calves in rainy season especially the female calves with lower birth weight. Respiratory tract was affected more. Proper managemental care for young calves will reduce the mortality rate in Surti buffaloes.

References

1. Tomer O. S. 2004. Economic feeding and rearing of buffaloes under different agro-climatic regions. Presid. Add., Nat. Sem. IGFRI, Mar. Jhansi, India, pp. 12—13.
2. Patil N. A., S. Prasannakumar, S. Mallikarjunappa and A. R. S. Bhat. 1992. Calf mortality in Surti buffaloes. Indian Vet. J. 69 : 1018—1022.
3. Rathore B. S. 1998. An epidemiological study on buffalo morbidity and mortality based on 4 year observation on 18,630 buffaloes maintained at 28 livestock forms in India. Indian J. Comp. Microbiol. Immun. and Infect. Dis. 98 : 43—49.
4. Khan Z., S. Khan, N. Ahamed and A. Rafiq. In press. Investigation of mortality incidence and managemental practices in buffalo calves at commercial dairy farms in Peshwar city. J. Agric. and Biol. Sci. 2: (2007).
5. Islam M. A., M. A. Mazed, M. S. Islam and M. K. Uddin. 2004. Some productive performance of Niliravi and crossbred buffaloes at government farm, Bagerhat, Bangladesh. J. Anim.Vet. Advan. 3 : 895—897.