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To record disease incidence, mortality and morbidity of non-descript buffaloes in Konkan region

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Abstract
The present study was carried out to analyse disease incidence, morbidity and mortality of buffaloes in Raigad district of Maharashtra state. Three stages stratified random sampling design was implemented and the data of total 400 non-descript buffaloes were selected by 200 buffalo owners. The data were analysed by using suitable statistical techniques i.e., least square method. Overall higher 68.03 per cent buffaloes has no any incidence of disease followed by H.S. and F.M.D. in 17.78 and 14.19 per cent, respectively. The mortality percentage was 100.00 per cent zero (0), no one buffaloes found to die with any disease. Because of these non-descript buffaloes was in native place and feeding in all over field. Hence resistance to diseases but percentage of morbidity were 31.77 per cent, the period of suffering from any disease was much more but no one could be died. Morbidity was recorded higher in Poladpur tahsil as compared to other tahsils. This study provides the important tool for determining the health status of buffaloes and has special importance in planning of prevention and control strategies designed to reduce the incidences of diseases in livestock and therefore economic status of farmers.

Keywords: Disease incidence, mortality, morbidity, Raigad district, non-descript, buffaloes

Introduction
India has the largest buffalo population in the world, with every household in rural India owning buffaloes depending upon daily milk requirement-dairy farmers can own between 10 to 70 buffaloes. (Kant *et al*., 2018) [3]. Domestic buffalo is known for its rusticity and great adaptability to different topographies, soils and climatic factors. However, they can still be afflicted with various infectious diseases that greatly affect their milk and production performance.

Many livestock diseases have different morbidity and mortality pattern in respect to species, time and place, hence to understand their behaviour and to identify factors responsible for the same, specific intervention could be introduced at proper time for minimizing the economic losses due to diseases. (Bangar *et al*., 2014) [1].

The viral disease and bacterial disease are major cause of the highest morbidity and mortality in buffaloes. The Foot-and-mouth disease (FMD) is a highly contagious and economically important disease caused by foot-and-mouth disease virus (FMDV). Animals that can be affected include cattle, buffaloes, sheep, goats, pigs and wild ruminants. (Klein *et al*., 2008) [4]. The FMD (genus *Aphthovirus*, family *Picornaviridae*) spread by direct or indirectly through infected water, manure and pastures, and by the buffalo attendants. Which is more severe in the crossbreed and imported than indigenous/non-descript breeds. Indigenous/non-descript animals suffer resulting in high morbidity, but low mortality.

The majority of commercial dairy farmers are vaccinating their animals against FMD, either with imported trivalent vaccine, e.g., Aftovax (Merial, France), or with a locally produced monovalent vaccine (serotype O). (Klein *et al*., 2008) [4].

Haemorrhagic Septicaemia (HS) is widely prevalent in India, among cattle and buffaloes and occur in mostly in acute Septicemia forms. It occurs in low lying humid areas i.e., Konkan region and it is often seasonal. Outbreak occurs during the period of highest humidity like Mansoon. Recovery from true Haemorrhagic Septicaemia is rare, particular in buffaloes but in Indigenous/non-descript buffaloes there are rare cases to die animals due to causes of HS. (Taneja, 2002) [5].

In view of increasing demand for milk and meat, more and more emphasis is being placed on the improvement of health and productive potentials of buffaloes.

In the present paper an attempt is made to study the disease incidence, mortality and morbidity in non-descript buffaloes in Raigad district of Maharashtra state.

Material and Methods

Sampling Design

This study was carried out in Raigad district of Maharashtra state for 2021 year on the basis of farmer's interview. Total 200 non-descript buffalo owners were selected by stratified three stages random sampling and total sample size was two hundred (200 hundred) buffalo owners and 400 non-descript buffaloes belonging to different age groups was enumerated completely to collect the required information regarding morbidity and mortality in buffaloes due to various disorders.

Data Variables

Data on age of non-descript buffaloes were later categorized in five tahsils such as Mahad, Mangoan, Roha, Poladpur and Tala. The diseases observed during the study period were classified as No disease, F.M.D. and H.S and other diseases categories.

Statistical Analysis

Disease incidence, mortality rates and Morbidity rates were calculated on the basis of total prevalence during the period. The data collected were properly arranged, grouped and were analysed by using suitable statistical techniques i.e., least square method to avoid non-orthogonally of the data.

Results and Discussion

Disease incidence, mortality and morbidity

Diseases

The results indicated in Table No. 1 that in non-descript buffaloes, disease incidence recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils were No disease, F.M.D. and H.S. in proportion of 81.93, 10.84 and 7.23 per cent, 65.88, 12.94 and 21.18 per cent, 64.95, 17.53 and 17.53 per cent, 62.69, 16.42 and 20.90 per cent and 64.71, 13.24 and 22.06 per cent, respectively. The average of disease incidence was No disease, F.M.D. and H.S. in proportion of 68.03, 14.19 and 17.78 per cent, respectively in Raigad district. The higher animals of non-descript buffaloes was recorded as no disease (68.03%) in Raigad district. Because of these non-descript buffaloes was in native place and feed in all over field, hence resistance to diseases. The similar result showed by Klein *et al.* (2008) [4] studied that on epidemiology of foot-and-mouth disease in Landi Dairy Colony, Pakistan, the world largest Buffalo colony. Fosgate and Diptee (2011) [2] reported that Brucellosis in domestic water buffalo (*bubalus bubalis*) of Trinidad and Tobago with comparative epidemiology to cattle. Kant *et al.* (2018) [3] observed that brucellosis disease was spread in Delhi and they searching for the practices of buffalo keepers.

Table 1: Tahsil wise disease incidence of non-descript buffaloes in Raigad district

Tahsils	No. of animals	Disease observed (%)		
		No Disease (%)	F. M. D (%)	H. S (%)
Mahad	83	81.93 (68)	10.84 (9)	7.23 (6)
Mangoan	85	65.88 (56)	12.94 (11)	21.18 (18)
Roha	97	64.95 (63)	17.53 (17)	17.53 (17)
Poladpur	67	62.69 (42)	16.42 (11)	20.90 (14)
Tala	68	64.71 (44)	13.24 (9)	22.06 (15)
Total no. of animals	400	273	57	70
Average (%)	100	68.03	14.19	17.78

Mortality

The mortality observed in non-descript buffaloes in Mahad, Mangoan, Roha, Poladpur and Tala tahsils as zero per cent. Overall mortality of non-descript buffaloes in Raigad district was also zero per cent i.e. No - one animals, it was died from the diseases, it was observed in Table No. 2. The result was slightly different than Bangar *et al.* (2014) [1] noticed that mortality (7.98%) rates were recorded in study area. Digestive diseases and respiratory diseases are major cause of the mortality in buffaloes in Pune division of Maharashtra state in India. Because, the non-descript buffalo in Raigad district was much resistant against diseases and buffalo farmers which was regularly carried out defective management practices and regular vaccinated the animals in Raigad district.

Morbidity

The mortality observed in non-descript buffaloes in Poladpur followed by Tala, Mangoan, Rola and Mahad tahsils as 37.31, 35.29, 34.12, 34.02, 18.07 per cent, respectively. The higher percentage of morbidity in Poladpur tahsil because of Poladpur tahsils was nearly situated from Arabian Sea, so the humidity percentage was high level due to this morbidity was higher as compared to other tahsil. The average morbidity in non-descript buffaloes was 31.77 per cent have been indicated in Table No. 2. The overall morbidity rates are in agreement with Uttam *et al.* (2015) [6] observed that morbidity rate in bovine under village conditions of Uttar Pradesh. A total of 480 bovine owners were randomly selected from Allahabad division of Uttar Pradesh. Morbidity data was collected from all selected bovine owners for period of one year (January 2013 to December 2013). Overall morbidity rate was 32.46% in bovine, higher in buffalo 33.17% than 30.35% in cattle and the diseases were classified into seven categories of which reproductive diseases were more prominent in incidence having highest morbidity rate 8.75 per cent followed by specific diseases 5.59 per cent. Bangar *et al.* (2014) [1] revealed that overall morbidity rate was 28.01 per cent in buffaloes in Pune division of Maharashtra state in India.

Table 2: Tahsil wise mortality and morbidity of non-descript buffaloes in Raigad district

Tahsils	No. of animals	Mortality (%)	Morbidity (%)
Mahad	83	0 (0)	18.07 (15)
Mangoan	85	0 (0)	34.12 (29)
Roha	97	0 (0)	34.02 (33)
Poladpur	67	0 (0)	37.31 (25)
Tala	68	0 (0)	35.29 (24)
Total no. of animals	400	0	126
Average (%)	100	0	31.77

Conclusion

The non-descript buffaloes are resistance to diseases but percentage of morbidity were 31.77 per cent, the period of suffering from any disease was much more but no one could be died and well survive on locally available feeds and fodder in Raigad district. Because of these non-descript buffaloes

was in native place and feeding in all over field. This study provides the important tool for determining and there after improving the health status of non-descript buffaloes in the study area. Further study on disease incidence, morbidity and mortality with respect to managemental aspects is recommended.

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