



Effect of season on the incidence of infectious diseases of bovine in Tamilnadu

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ABSTRACT

Disease causing pathogens have a strong relationship with the environment wherein the animal as well as the microorganisms lives. The present study was conducted to evaluate the relationship between the meteorological data and the disease prevalence in cattle in Tamilnadu. The data revealed a closer relationship between the climatic factors (temperature, rainfall and relative humidity) and infectious diseases (Anthrax, Black Quarter, Hemorrhagic Septicemia and Foot and Mouth Disease). Hence, the incidence of infectious diseases were found to be significantly ($P < 0.05$) associated with the season and microclimatic factors.

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Introduction

Animal – Disease relationship mainly depend on the environment. The disease causing organisms get multiplied in the favorable environmental condition and it affects susceptible animals. During the favorable weather conditions, organisms are transmitted to other animals through aerosol or other means. The disease like Foot and Mouth Disease, Anthrax, Black Quarter and Hemorrhagic Septicemia are associated with the meteorological conditions.

The Foot and Mouth Disease affecting bovine causes high morbidity and low mortality and transmitted through an aerosol pathway, one of the major route for spread of disease and the incidences are more under favorable climatic conditions (Bhattachaya et al 2005). Hemorrhagic Septicemia is caused by *Pasteurella multocida* and is manifested by an acute and highly fatal septicemia in cattle and is influenced by the season of the year. Anthrax is a dramatic, rapidly fatal infectious disease that affects the bovine. This disease is caused by *Bacillus anthracis*, a bacterium that forms long lasting, highly resistant spores that can, under favourable conditions, persist for decades in the environment before infecting new host. The occurrences of the above diseases are seasonally influenced. Hence, the present study was carried out to evaluate the relationship between seasonal influences on the incidence of infectious diseases of bovine.

Materials and methods

The month wise data on the incidence of infectious diseases (Anthrax, Black Quarter, Hemorrhagic Septicemia and Foot and Mouth Disease) of bovines were collected from the Tamilnadu Animal Husbandry Department for the period from April 2001 to March 2006. The mean value of incidence of these diseases for different seasons viz., summer, Pre monsoon, Monsoon and winter were analyzed using standard statistical procedures.

Results and discussion

The result indicated that the incidence of Anthrax was highest during pre-monsoon season (38.10 per cent) (Table 1) (Fig 1b). This may probably be due to increase in temperature

along with high relative humidity prior to premonsoon season, which act as predisposing factor for the outbreak of Anthrax. The findings of the present study were in close agreement with Turner et al (1999) who revealed that prolonged period of hot, dry and humid weather conditions was associated with outbreak of the disease. The incidence of Foot and Mouth Disease (70.06 per cent) was highest during monsoon season (Fig 1c). Moderate relative humidity during pre monsoon season induced rapid propagation of the viral disease among susceptible animal population. The present study revealed that favorable climatic conditions in pre monsoon season encourages the propagation of virus that led to increase in the incidence during monsoon season. This was in agreement with the findings of Bhattacharya et al (2005).

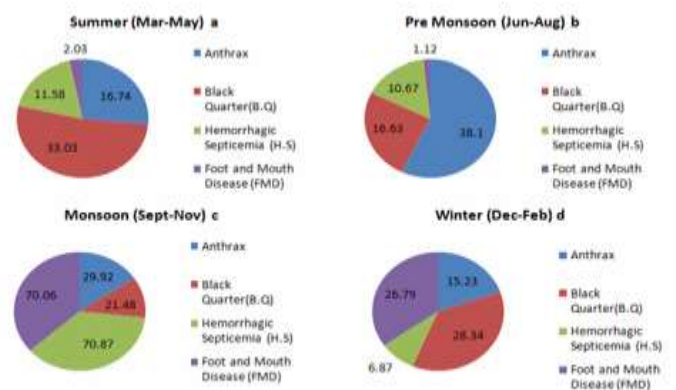


Fig 1 Incidence of infectious disease of bovine in Tamilnadu

(April 2001 to March 2006)

The incidence of Hemorrhagic Septicemia was also highest during monsoon season (70.87 per cent) and very rare incidence occurred during summer, premonsoon and winter (Fig 1c). Wet conditions contributing to the spread of the disease and poor food supply prior to monsoon season may also increase the susceptibility to infection.

Bisht et al (2006) studied relationship between the seasonal variations and mortality pattern of Hemorrhagic Septicemia and found that the mean Hemorrhagic Septicemia mortalities increased with increase in rainfall.

The incidence of Black Quarter was highest during summer season (33.03 percent) (Fig 1a), followed by winter season (28.34 per cent) (Fig 1d). This may be due to the exposure of animals to stress condition due to non-availability of food resources. On the contrary Hussain et al (2005) reported that the occurrence of Black Quarter was minimal (3.4 per cent) in summer season with no incidence in other seasons.

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Table 1. Seasonal incidence of infectious disease of bovine in Tamilnadu (April 2001 to March 2006)

Season/Diseases	Anthrax	Black Quarter(B.Q)	Hemorrhagic Septicemia (H.S)	Foot and Mouth Disease (FMD)
Summer (Mar-May)	8.13 (16.74)	14.53 (33.03)	4.27 (11.58)	23.73 (2.03)
Pre Monsoon (Jun-Aug)	18.50 (38.10)	7.2 (16.63)	3.93 (10.67)	13.10 (1.12)
Monsoon (Sept-Nov)	14.53 (29.92)	9.3 (21.48)	26.10 (70.87)	818.93 (70.06)
Winter (Dec-Feb)	7.4 (15.23)	12.27 (28.34)	2.53 (6.87)	313.2 (26.79)
Total	48.56 (100.00)	43.3 (100.00)	36.83 (100.00)	1168.96 (100.00)

Values indicate average number of incidence during different seasons over a period of 5 years; Values in the parenthesis indicates percentage to respective total