

Full Length Research Paper

Status of specific diseases in Bovine of Himachal Pradesh

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The present study was carried out to find out the morbidity and mortality rates of specific diseases in bovine under the village condition in Himachal Pradesh state. A total of 540 livestock owners constitute the ultimate sample from twelve veterinary hospitals and thirty six villages for the study. The sampling scheme followed in the present study was Stratified three-stage random sampling. The result showed that mastitis has highest morbidity rate 4.18% followed by EBH 0.68%, FMD 0.63%, and warts 0.57% and Actinomycosis 0.26%. The mortality rate was maximum for HS and rabies each 0.104% followed by EBH 0.05%. Mastitis has highest number of cases in zone (I) and zone (II) (each 1.18%) and EBH (0.68%) were only recorded in zone IV. Warts cases (0.36%) were maximum in zone (III) and Actinomycosis (0.21%) were maximum in zone (I) HS and Rabies (each 0.1%) were only found in zone.

Key words: Morbidity rate, mortality rate, chi square, significant, bovine, livestock,

INTRODUCTION

The livestock industry success depends on health of the livestock, good health increases productivity and any compromise on health ground will shatter the hope of livestock sector. Total bovine population of Himachal Pradesh was 3.03 million, which was approximately 1% of India's bovine population (304.42 million). India is the highest milk producer in the world (121.85 million tons of milk, 2010-11) out of which bovine milk production was- 117.253 million tons). Himachal Pradesh contributes 0.90% (1.053 million tons) of bovine milk of India (Basic Animal Husbandry Statistics 2012). Total meat production of India was 4.87 million during 2010-2011, (cattle-0.81 million & buffalo-0.211 million of meat) but Himachal Pradesh has no record of cattle and buffalo (Bovine) meat production. Contribution of livestock in total GDP is 3.37%, Livestock in agricultural GDP is 27.28% and agriculture in total GDP is 12.34% (Basic Animal Husbandry Statistics 2012), Delhi Department of Animal Husbandry and Dairying, Ministry of Agriculture, Government of India.

Singh and Prasad (2008), reported on the basis of average figures of last 15 years (1991-2005) from annual reports of the Department of Animal Husbandry and Dairying, Ministry of Agriculture, Government of India, reported that four diseases (FMD, HS, BQ and Anthrax) accounted about 56.6% incidence and 84.4% deaths to total incidence and deaths due to all diseases in cattle. FMD had high morbidity (45.3% incidence) but low mortality (16.6% deaths) and was highly contagious. HS accounted for 9% incidence and 44% of the aggregate of deaths. Meena et al., (2006) reported that in Nanital district Uttarakhand, the data on morbidity and mortality form infectious (Diarrohea, Mastitis, HS, FMD, Pox, PPR etc.) and parasitic diseases accounted to more than 60% and it contributed to significant economic loss to the livestock farmers, and similar observations were also made by Jithendran and Bhat (1999) in Himachal Pradesh.

The knowledge of occurrence and pattern of animal diseases becomes vital in the management, as the main objective of the good management is to reduce the disease incidence and increase the productivities and reproduction. Estimation of morbidity and mortality rate in the population is an important tool for determining the disease status.

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Table 1. Morbidity & mortality rate due to specific diseases in bovine.

| Disease | No. of cases | % | No. of died | % | Morbidity rate (%) | Mortality rate (%) |
|----------------------------|-------------------------------------|-------|-------------|-----|--------------------|--------------------|
| Mastitis | 60.00 | 57.14 | 0 | 0 | 4.18 | 0 |
| EBH | 13.00 | 12.38 | 1 | 20 | 0.68 | 0.05 |
| FMD | 12.00 | 11.43 | 0 | 0 | 0.63 | 0 |
| Warts | 11.00 | 10.48 | 0 | 0 | 0.57 | 0 |
| Actinomycosis | 5.00 | 4.76 | 0 | 0 | 0.26 | 0 |
| HS | 2.00 | 1.90 | 2 | 40 | 0.104 | 0.104 |
| Rabies | 2.00 | 1.90 | 2 | 40 | 0.104 | 0.104 |
| Total | 105 | 100 | 5 | 100 | 5.37 | 0.26 |
| Total animals (No.) | 1918 (Male-483, Female-1435) | | | | | |

For the calculation of Mastitis only total number of females has been considered.

MATERIALS AND METHODS

Sampling Design

Himachal Pradesh has twelve districts that were divided into four agro-climatic zones. Zone 1 comprised of five districts, zone 2 and zone 3 each comprises of two districts and zone 4 comprises of three districts. By taking four agro-climatic zones as strata, five veterinary hospitals from zone 1, two veterinary hospitals each from zone 2 & zone 3 and three veterinary hospitals from zone 4, were selected randomly. Three villages were selected from the villages covered by each veterinary hospital by simple random sampling without replacement scheme.

A total of 15 livestock owners were selected from each selected village and thus a total 540 livestock owners constitute the ultimate sample from thirty six villages and twelve veterinary hospitals for the study. The sampling scheme followed in the present study is Stratified three-stage random sampling. Cause wise morbidity and mortality data were collected from all selected bovine owners in the state for period of one year (January 2011 to December 2011). The specific diseases observed during the study period were 1) Foot and Mouth Disease (FMD), 2) Mastitis, 3) Haemorrhagic Septicemia (HS), 4) Enzootic Bovine Hematuria (EBH) 5) Actinomycosis, 6) Warts and 7) Rabies.

METHODOLOGY

Morbidity / Mortality rate

Among various diseases the morbidity/mortality rate due to each disease was calculated by the formula:

Morbidity/mortality rate = Number of cases (deaths)/ Population (mid-year) observed during period × 100

CHI-SQUARE ANALYSIS

This test is suitable for analyzing the categorical data. It compares the observed frequencies with expected frequencies under null hypothesis. Test statistic is based on counts that represent the number of items falling in each category. It is used for testing significance of patterns in qualitative data. Test statistics measures the agreement between actual counts and expected counts assuming the null hypothesis. The chi-square distribution can be used to see whether or not the observed counts agree with an expected counts. The chi square analysis done by using following formula

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

O = Observed count and E = Expected count.

RESULTS AND DISCUSSION

A total of 1918 livestock of different age and breeds were maintained by 540 livestock owners selected for the study during period of 1st January 2011 to 31st December 2011.

Mastitis has highest morbidity rate 4.18% followed by EBH 0.68%, FMD 0.63%, warts 0.57% and Actinomycosis 0.26%. The mortality rate was maximum for HS and rabies each 0.104% followed by EBH 0.05%.

For the calculation of Mastitis only total number of females has been considered (Table 1).

Overall χ^2 analysis showed highly significant (**) difference ($p < 0.001$) among zones and diseases. Mastitis has highest number of cases in zone I and zone II (each 1.18%) and EBH (0.68%) were only recorded in zone IV. Warts cases (0.36%) were maximum in zone III and Actinomycosis (0.21%) were maximum in zone I. HS and Rabies (each 0.1%) were only found in zone I (Table 2). The morbidity due to various infectious diseases was found to be higher. The inadequate knowledge about

Table 2. Zone wise disease percentage due to Specific diseases in bovine.

| Disease | ZONE I | | ZONE II | | ZONE III | | ZONE IV | |
|----------------------------|-------------------------------------|------|-------------|------|-------------|------|-------------|------|
| | Total cases | % | Total cases | % | Total cases | % | Total cases | % |
| Mastitis | 12 | 0.84 | 17 | 1.18 | 14 | 0.98 | 17 | 1.18 |
| EBH | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 13 | 0.68 |
| FMD | 7 | 0.36 | 1 | 0.05 | 0 | 0.00 | 4 | 0.21 |
| Warts | 2 | 0.10 | 1 | 0.05 | 7 | 0.36 | 1 | 0.05 |
| Actinomycosis | 4 | 0.21 | 0 | 0.00 | 1 | 0.05 | 0 | 0.00 |
| HS | 2 | 0.10 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Rabies | 2 | 0.10 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Total | 29 | 1.51 | 19 | 0.99 | 22 | 1.15 | 35 | 1.82 |
| Total animals (No.) | 1918 (Male-483, Female-1435) | | | | | | | |

deworming, vaccination, lack of knowledge about importance of proper ventilation, reluctance of farmers of getting deworming & vaccination done in their livestock etc. are major problems that lead to recurrent outbreaks of infectious diseases. The mortality due to the specific diseases were high in the rural areas as there is no timely treatment available for these highly infectious diseases which leads to death of animal and further timely preventive measures were not taken by livestock owners lead to rapid spread of disease in the villages. The results match with reports given by Jindal et al. (2002), recorded outbreaks of Hemorrhagic Septicemia (HS) in bovine in various districts of Haryana, the morbidity and cumulative mortality rates were 2.44 % and 0.68%. Thirunavukkarasu (1998) reported 13.01% and 7.37% incidence of mastitis in cows and buffaloes.

CONCLUSION

Mastitis has highest morbidity rate 4.18% followed by EBH 0.68% and FMD 0.63%. The mortality rate was maximum for HS and rabies each 0.104% followed by EBH 0.05%. Mastitis has highest number of cases in zone I and zone II (each 1.18%) and EBH (0.68%) were only recorded in zone IV. Warts cases (0.36%) were maximum in zone III and Actinomycosis (0.21%) were maximum in zone I. HS and Rabies (each 0.1%) were only found in zone I.

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