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## Disease wise mortality pattern in Marwari sheep at central sheep and wool research institute, Bikaner

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### Abstract

A study was carried out to analyze the mortality pattern in Marwari sheep at CSWRI, Bikaner farm for the period of 09 years (2005-06 to 2013-14). The overall mortality rate was 1.95% and the male and female population showed an overall mortality rate of 2.10 and 2.22%, respectively. The mortality rate was higher in the weaned age group and adult group. Sex and age showed highly significant effect on the trait. The seasonal mortality rate was 2.5 and 1.3 during season 1st and 2nd, respectively. Overall mortality rates due to diseases of the respiratory system (MTR-I=1.24%) was observed to be maximum followed by the diseases of blood (MTR-I=0.49%), disease of other group (MTR-I=0.49%), diseases of digestive system (MTR-I=0.26%), tetanus MTR-I= 0.13%.

**Keywords:** Marwari, disease, mortality pattern, sheep

### Introduction

Profitable sheep production requires good management practices to ensure the overall wellbeing of the flock. The adaptability of different exotic breeds under the prevailing environmental conditions is judged by the production potential and mortality rate at different stages of growth. The productivity of sheep is directly influenced by the mortality rate in the flock. Death of lambs during pre-natal, neonatal and peri-natal stages of life due to several specific and non-specific diseases affect the production potential and economy of sheep production. The mortality pattern also varied among different age group and season.

Keeping in view a study was conducted to record the sex, age and season-wise mortality pattern of sheep maintained at an organized farm in the tropical region of Rajasthan. The main objectives of the study were to identify the risk periods and effect of genetic and non-genetic factors of mortality for improve effective health management at farm.

### Materials and methods source of data

The data for the present investigation were obtained from health records of Sheep Research Project entitled "Improvement of Marwari sheep for carpet wool production through selection" located at the Arid Region campus of the Central Sheep and Wool research institute, Bikaner.

The research project "Improvement of Marwari sheep for carpet wool production through selection" was initiated in 1981 with transfer of 364 sheep of Marwari breed from an ad hoc Research project of Indian Council of Agriculture Research entitled "Studies on optimum breeding season of Marwari sheep"

### Description of data

The present investigation includes the data of Marwari sheep from 2005 to 2014 (year of birth) on the mortality, morbidity percentage and economic losses at different age group of lambs. The different age groups were birth to three (suckling), three to six (weaning), six to twelve (hogget) and above twelve months (adult) of age.

In the present investigation observations were recorded on the organized government farm, where vaccination schedule against infectious diseases and deworming schedule against ecto- and endo parasites were strictly followed. The chances of incidence of infectious and parasitic diseases were therefore, very low. The incidences of the commonly occurring following diseases were recorded during 0-3, 3-6, 6-12 and above twelve months of age in Marwari breed of sheep.

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The diseases recorded from the farm were classified on the basis of body systems, to which these diseases affect.

1. Blood Related Cause: Anemia, debility, septicemia, toxemia
2. Digestive Cause: Diarrhea, Gastroenteritis, abdominal pain, indigestion, colic, constipation, anorexia, stomatitis, tympany etc.
3. Reptile Cause
4. Respiratory Cause: Pneumonia, Rhinitis, pharyngitis etc.
5. Tetanus Cause
6. Others: Abortion, arthritis, ascites, bottle jaw, circling disease, dermatitis, dog bite, dystocia, foot rot, gid, heatstroke, hypothermia, mineral and vitamin deficiency, urinary tract infection, reptile bite, keratitis, mange, retention of urine, prolapse, sprain, stiffness etc.

**Mortality rate**

The numbers of living and dead lambs were recorded in the different age groups i.e. 0-3, 3-6, 6-12 and above twelve months of age. The possible cause of death of lambs was recorded and confirmed on the basis of post-mortem findings.

**Lamb mortality percentage**

Mortality percentage in lambs due to diseases during 0-3, 3-6, 6-12 and above twelve months of age, were calculated on the basis of total lambs available using the following formula:

$$(i) \text{ MTR-I} = (\text{ND} / \text{TNA}) \times 100$$

Here,  
 MTR-I= Mortality percentage on basis of total lamb  
 ND= total number of died lambs  
 TNA= total number of lambs available.

**Result and discussion**

Mortality rates due to different diseases were calculated separately. It was observed that Occurrence of different diseases affect the mortality rates of Marwari sheep.

In the present study, the mortality rate was studied as the percentage of dead lambs to total number of lambs available (Table: 1, Figure: 1) Taneja *et al.* (1991) [11] reported higher mortality rate in Magra sheep maintained under farm conditions. Reddy and Choudhury (2000) [6] reported mortality rates of 16.59, 13.95 and 8.82% in different sheep

farms maintained in Andhra Pradesh. T.K. Sarkar *et al.* (2008) [12]. Among the different causes, respiratory and gastrointestinal disorders were the predominant cause of mortality in all season accounting for 40.9 and 30.9% death, respectively.

Sharma (2006) [10] reported that overall mortality rates in Marwari sheep in suckling, weaner, hogget and adult age group was 3.58, 3.32, 2.37 and 14.37 percent, respectively.

**Table 1: Disease Wise Mortality Rate**

Cause of mortality	Age Group			
	S (0-3)	W (3-6)	H (6-12)	A (12 Above)
Blood Related Cause	0.85	0.07	0.07	0.56
Digestive Cause	0.38	0.07	0.04	0.38
Reptile Cause	0	0.14	0.15	0.38
Respiratory Cause	1.77	0.47	0.15	0.38
Tetanus Cause	0.32	0	0.04	0
Others Cause	0.41	0.17	0.22	1
Total	0.037	1.082	0.659	3.938

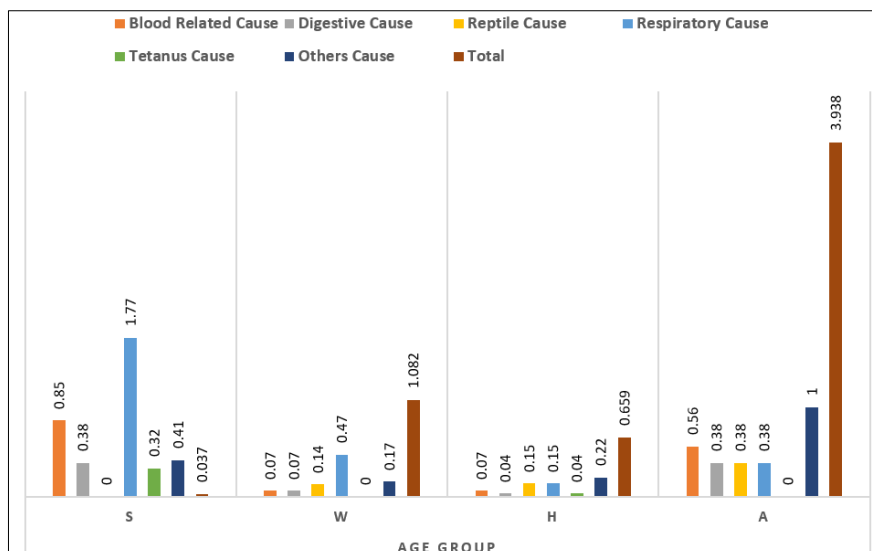
**Suckling lambs (0-3 months)**

The overall mortality of this group was 3.73 percent. Narayan swami and Yadav (1980) reported higher mortality rate than the present study (54.75%) and Mukasa-Mugerwa *et al.* (2000) [5] during pre-weaning period. Mauna (1994) reported that pre-weaning mortality was higher in lambs than in goats and average post-weaning mortality was 10 and 6 percent, respectively. Segura *et al.* (1996) [7] reported that lamb mortality until weaning was 23.8 and 15.1 percent in Blackbelly and Pelibuey sheep breed, respectively.

Mortality rates due to diseases of the respiratory system (MTR-I=1.77%) was observed to be maximum followed by the diseases of blood (MTR-I=0.85%), disease of other group (MTR-I=0.41%), diseases of digestive system (MTR-I=0.38%), tetanus MTR-I=0.32%). (Table: 1 and figure: 1).

**Weaning lambs (3-6 months)**

The overall mortality of this age group was 0.91 percent. Mortality rates due to diseases of the respiratory system (MTR - I =0.47%) were observed to be maximum followed by diseases of other group (MTR-I=0.17%), reptile bite (MTR-I= 0.14%), diseases of blood & digestive system (MTR-I= 0.07%). (Table: 1 and figure:1).



**Fig 1: Mortality due to different diseases**

### Hogget lambs (6-12 months)

As the animal matured, the mortality rate due to different diseases was comparatively reduced because the lambs got adopted with the prevailing pasture management and environmental conditions. Hence, the mortality rate, which was 3.73 percent in pre-weaning period, reduced to 0.66 percent during this period due to all diseases. Gognet *et al.* (1994)<sup>[1]</sup> reported that mortality from birth to 6 months of age was 20.12 and 56.09 percent in lambs and kids respectively, after 6 months mortality rates were 5.67 and 12.79 percent, respectively in sheep and goats' flock. Rana *et al.* (2002)<sup>[9]</sup> observed that the effect of age on mortality was higher after the age of 6 months and above in Beetal goats. T.K. Sarkar *et al.* (2008)<sup>[12]</sup>. It was also observed that, different respiratory, gastrointestinal diseases affect the young population more than the adults.

Mortality rates due to diseases of other group (MTR-I=0.22%) was maximum, followed by reptile bite & diseases of respiratory system (MTR-I=0.15%), diseases of blood (MTR-I=0.07%), diseases of digestive system & tetanus (MTR-I=0.04%, MTR-II=0.53%). (Table 1 and figure 1).

### Adult lambs (above 12 months)

The mortality due to all diseases, which was reduced from pre-weaning to hogget group, showed the increased rate (3.94%) in this group. The higher rate of mortality in this group seems to be due to old age. As the age advanced, the resistance power/immunity against diseases decreased; hence, the mortality rate was the highest in this group. Hughes *et al.* (1971)<sup>[3]</sup> also reported that in adult sheep the mortality showed a declining trend up to four years of age and subsequently it increased to a maximum of 33.97 percent for the age group of six years and above. T.K. Sarkar *et al.* (2008)<sup>[12]</sup> Pneumonia, lung abscess and enteritis were the major causes of mortality in lambs and adults. It was due to less adaptability of the young animals to extreme climatic stress in this region

Mortality rates due to diseases of the respiratory system (MTR-I=1.62%) was observed to be maximum, followed by diseases of other group (MTR-I=1.00%), diseases of blood (MTR-I=0.56%), diseases of digestive system & reptile bite (MTR-I=0.38%) and tetanus (MTR-I=0.00%). (Table: 1 and Figure: 1).

Howlader *et al.* (2004)<sup>[1]</sup> observed that incidence of foot and mouth disease in sheep was 56.02 percent in an outbreak in the Baghabari milk shed area. Molina (1988)<sup>[4]</sup> reported similar results of disease mortality in sheep raised on small holder coconut plantations, they were mainly affected by respiratory diseases (1.1%), parasitic diarrhoea (0.5%), wound infections (0.4%), weak lambs (nutritional) (1.4%), malnutrition (0.2%) and trauma 1.1 percent.

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