

Assessment of economic losses due to *Peste Des Petits Ruminants* (PPR) disease in goats in Indore Division of Madhya Pradesh

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Abstract

Peste des petits ruminants (PPR) is an acute febrile viral disease of small ruminants in India. The paper has reported the study based on primary data collected from 240 livestock farmers of 12 villages selected from two districts of Indore division affected by PPR disease to assess the economic losses in goats. The incidence and mortality rate in goats was found slightly higher in Indore district as compare to Barwani district. The overall incidence rate in goat of Indore division was 8.7 per cent and mortality rate 3.2 per cent. The total economic losses due to PPR disease have been found to Rs.523 per affected animal. The production loss due to reduced body weight had maximum proportion and it was about Rs.278 accounted for 53.2 per cent of total loss. The economic loss in market price of goat due to poor physical appearance was Rs. 137 had the share of nearly 26 per cent. The treatment cost which include medicine cost, registration or consultancy fee, miscellaneous expenses was Rs.108 per goats. The study has suggested that the timely vaccination could be the best and low-cost preventive measure to control the deadly PPR outbreaks and minimize the economic losses to the goat farmers.

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Introduction

Goat rearing is gaining importance due to increased demand for meat thus contributing for the poor man's economy. Migration of goats from one region to another due to seasonal variations, availability of grazing land, fairs etc. may lead to dissemination of various diseases from affected animals to other healthy animals in disease free region. The goats are resistant to several viral diseases under normal conditions. However, in stress condition goat population is threatened by number of viral disease of which *Peste des petits ruminants* (PPR) are the most important and emerging and have been considered as major constraint in the small ruminant development and production in recent years. *Peste des petits ruminants* (PPR) is an acute febrile viral disease of small ruminants, characterized by mucopurulent nasal and ocular discharges, necrotising and erosive stomatitis, enteritis and pneumonia (Singh *et al.*, 2004).

It occurs in epizootic form, may cause morbidity up to 80-90 per cent and mortality 50-80 per cent. The virus causes PPR closely related to the Rinderpest virus. Therefore, PPR is considered as an important disease of small ruminants due to its similarity to Rinderpest (Lefevre and Diallo, 1990).

Material and Methods

The study was conducted in the Indore Division of Madhya Pradesh. The study based on primary data collected from field condition of the goat producers. The multi-stage random sampling technique was applied for selection of districts, blocks, villages and finally the respondents. The PPR incidences was analysed and its nature, extent of economic losses and its impact on income and employment opportunities of the respondents. Two districts were selected randomly from 8 districts of Indore division and from each

selected districts two blocks and three villages from each selected blocks for selection of goat farmers. To study the nature of the PPR disease in different spatial locations, the list of all the goat rearing farmers of selected villages was prepared and arranged in aliphatic order to select a sample of 20 respondents/farmers from each selected villages for the study. Therefore, a total sample of 240 goat households constituted the sample from whom the data were collected with the help of survey schedule especially design for this purpose. The data was collected through personal interview with the help of survey schedule. The data collected on various aspects of goat rearing such as the flock size and its structure, sources of income and costs, disease outbreaks and impacts on farm productivity income, and ultimate economic losses. The data on movement of the animals and farm products, persons employed in the farm, feeding and watering habits, and source of grazing were also collected. The data collected for the production year 2011-12. The collected data were tabulated, and further categorized for systematic statistical analysis. The simple tabular analysis and chi-square test was used to analyse the data and draw the conclusions.

Results and Discussion

Socio-economic profile: Study area mainly dominated by the ST. The farm animals are mainly managed by this population. They have remained backward economically and socially. Majority of the selected respondents (more than 85 per cent) had agriculture as main occupation and dairy as secondary occupation. It was noted that the majority of respondents (84.17 per cent) belong to middle age group, followed by old age group (10.0 per cent). It was also noted that the majority of respondents were Primary (37.9 per cent), followed by High school (30.0 per cent) level education.

Incidence rate: It is the number of new cases of a disease occurring in a specified population, divided by the average number of individuals in that population during that specified time period. It could be observed from Table 1 that infection rate in district A was (13.19 per cent), in district B (5.1 per cent) and overall in Indore division (8.7 per cent). The study conducted by Thombare and Sinha (2009) reported that the incidence of PPR was 53 per cent in sheep that was slightly higher than the goat (51.5 per cent) in Pune district of Maharashtra.

Mortality rate: It measures the proportion of animals dying in a population. As the result shown in Table 2,

the mortality rate due to *peste des petits ruminants*'s disease was higher in Indore A (5.2 per cent) than district B (1.6 per cent). The overall mortality was 3.2 per cent in study area. The PPR mortality rate reported by Thombare and Sinha (2009) was 13.50 per cent in sheep and 8.53 per cent in goat in Pune district of Maharashtra. The incidence of mortality as reported by Hossain et al. (1996) was much higher at 46 per cent in Bangladesh.

Table 1: Incidence of PPR in goat

Particulars	No. of animals	Infected animals	Incidence rate (%)
District A	442	58	13.1
District B	551	28	5.1
Pooled	993	86	8.7

$\chi^2_{cal} = 12.00$

Table 2: Mortality rate due to PPR in goat

Particulars	Total No. of animals in farm	Total no. of animals died in the farm	Mortality rate (%)
District A	442	23	5.2
District B	551	9	1.6
Pooled	993	32	3.2

Economic losses due to Peste des petits ruminants' disease: For estimating the production losses due to disease, average meat price, weight reduction during the outbreak, number of days of illness, reduction in the market value, and Loss due to physical appearance of were analyzed. Loss due to the production yield was estimated by multiplying the reduction in weight (chevan and mutton) during the outbreak by the average price of the chevan and mutton.

Table 3: Total economic loss due to PPR in goat in Indore division

Particulars	(In Rs. /animal)
	Indore division
Production loss due to reduced Body wt	278(53.2)
Loss due to physical appearance	137(26.2)
Treatment cost	108(20.6)
Economic loss/animal	523(100.0)

Note: Figures in parentheses indicate the percentage of total economic loss due to PPR

Table 4: Treatment cost incurred in PPR in Goat

Particulars	(In Rs. /animal)			
	Medicine cost	Registration fee of vet. hospit	Misc. expenses	Total cost
District A	76 (67.3)	7 (6.2)	30 (26.5)	113 (100.0)
District B	70 (71.4)	7 (6.5)	21 (21.9)	98 (100.0)
Pooled	74 (68.3)	7 (6.5)	27 (25.2)	108 (100.0)

Note: Figures in parentheses indicate the percentage of total economic loss due to PPR

The overall economic loss (Table 3) in Indore division was Rs. 523 per animal basis, out of which production loss due to reduced body weight had maximum proportion and it was about Rs.278 accounted for 53.2 per cent and loss due to physical appearance of animal was Rs. 137 had the share of nearly 26 per cent and treatment cost was Rs.108 per goat. Thombare and Sinha (2009) reported that the total losses due to disease had been found to range between Rs. 918 in sheep to Rs. 945 in goats. Reduction in the market value of animals has been recorded as the major loss component as appearance of the animal changes drastically after the illness, costing Rs. 404 (44 per cent) in sheep and Rs.408 (43 per cent) in goat under field condition.

Treatment expenditure in Peste des petits ruminants disease: Results of Table 4 show that the major portion of cost was on the medicines, followed by miscellaneous expenses/charges in goats. These two components alone had caused more than 90 per cent of the cost in goats. The cost on medicine was Rs. 76 in district A and Rs. 70 in district B on per goat basis. Next to medicine cost, miscellaneous expenses were found to be other major cost item in both Indore (Rs. 30) and Barwani district (Rs. 21). Registration fee of veterinary hospital was Rs. 7 same in both districts of Indore division. The second major part included miscellaneous expenses such as extra labour charge,

disinfectant cost and transportation cost for the diseased animals. The charges on veterinary services, labour, and registration fee of veterinary hospital were low and ranged from 6 per cent to 7 per cent. The total cost incurred to treat PPR disease was found to be Rs. 108 for goat in Indore.

Conclusion

The study has estimated the economic loss due to the *peste des peste ruminants* PPR disease in goats in the study area. Though the goat farmer was very small in the study area, but the goat population reared by them was in sizable number. The major component of total economic loss has been found due meat production loss followed by the reduction in the market value of animal due to poor physical appearance after the disease in goat flock. The study concluded that the PPR disease not only causes animal death but also leads to loss due to reduction body weight and loss due to ill physical appearance which reflected the huge liability on farmers and their farm income and employment in the study area.

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