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INCIDENCE AND IMPACTS OF CLINICAL MASTITIS IN DAIRY CATTLE FARMS: CASE OF MAHARASTRA FARMERS

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Abstract

A cross sectional farm sample survey was conducted to assess the consequences of mastitis on farmer's economy. Daily milk records of 187 animals from 28 farms were investigated by personal interview methods. Extra-resources used for the treatment and reduced revenues in terms of production were quantified and aggregated. The overall loss of mastitis from dairy animals was recorded Rs.1390.46 per lactation, in which 48.53 percent was from milk loss followed by veterinary expenses (36.57%), and additional cost of labour. Greater loss in crossbred due to its high production yield affected during the mastitis period. The cost of treating an animal is Rs. 508.52, includes cost of medicine (31.10 %) and services (5.47%). In farmer's perception, inadequate sanitation, hygiene and veterinary services were the major factors responsible for occurrence of the disease. Therefore effective extension strategy suggested to make farmer aware to reduce incidence and improving profit margin of the farmer.

Key words: Economics, Incidence, mastitis, loss, dairy animal.

Introduction

Mastitis in dairy animals is considered one of the costly production diseases. And it causes enormous loss to the dairy industry (Bardhan, 2013; Mathew and Menon, 2008). The losses are the potential revenues not earned, while the control costs are actual expenditures related to treatments, preventive measures, and extra labour used by them (McInerney *et al* 2002). The economic calculations of production losses and knowledge of the cost component are the essentials in farmer decision to develop control mechanism. Many studies has been taken on preventive and microbial aspects of this disease as well simulative form and few study based on field data to estimate production related loss and treatment cost (Hogeveen, 2005; Sinha *et al*, 2012, 2014; Selvaraju, 2013). Factors affecting mastitis highly depends upon type of breed, stage of lactation; managerial practice, awareness and level of education of the dairy farmers. Effect of economic loss found considerate in terms of production loss, treatment cost and skilled labour cost

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(Thombare and Sinha, 2009). The present study analyzing the incidence and economics of mastitis in terms of production effects and profit margin of managed farm in Pune district of Maharashtra. Quantification of such economic loss from a disease not only helps to take preventive measure but also an extent to avoid loss and improving the profit margin to the farm owners.

Materials and Methods:

Farm Sample data of 187 mastitis animals from 28 farms were collected during 2006-07 from villages across Baramati and Daund blocks of Pune district. To assess the incidence and effects of mastitis, extra-resources used and reduced revenues were quantified and aggregated. The costs are the expenditures made as per standard treatment, prevention and extra labour used for the disease. To keep the variation in milk yield minimum 15 day's milk yields before and after the treatment was recorded. For calculating the losses due to mastitis disease data like average daily milk yield, price of the milk per liter, reduction in the milk yield during the affected periods, number of days of illness, discarded milk during affected periods, medicine charges, veterinary charges, labour charges, stall hygiene and milk hygiene were collected from the sample farmers. The loss of milk during treatment period was calculated by the difference between average milk potential of each animal before and after treatment and it was multiplied by the milk price to arrive at value of milk loss due to mastitis. All these factors were converted into monetary terms and the loss due to mastitis disease was calculated by adding all these factors.

Loss due to mastitis = f (Yield loss, discarded milk, veterinary services, medicine charges, Stall hygiene, milk hygiene and labor charges).

Result and discussion

Social attribute of farm owners :

The socio economic characteristics of an individual are very much linked with respondent's maturity to take decision, physical well being, work efficiency and level to tackle the farm adversaries. The farmer status and practices has been recorded and found

that majority (71.83 %) respondents are of middle age groups (30-50 years) and most of them are literate up to high school education. It means working class groups can understand the importance of improved production practices. Grazing was not commonly practiced in the area and 90 percent farm feeding practices are of stall fed category. Still 39.29 percent owner maintain kaccha house for their cattle and 7.14 were unable to affords a shed for their animal reflect owner poor resource base and weak basic infrastructure.

Incidence of mastitis:

The incidence of mastitis cases distributed over season, stage of lactation and type of animal are presented in table 1. Incidence was 9.88% and 6.66% for crossbred cows and buffaloes respectively. The findings were of similar line to those reported by Sachin and Gokhale (2006). Less incidence of mastitis in buffaloes has also been reported by Saini, *et al* (1994), which could be attributed to the thick and compact epithelium, thick keratin layer and thick muscle sphincter in streak canal of buffalo as compared to that of cross bred cows (Kumar, 1988). Number of clinical mastitis cases differed significantly over different seasons and stage of lactation. Incidence was high during rainy season (92 cases), followed by winter (52 cases) and summer (43 cases). Animals in 30 to 90 days of lactation had higher (83) clinical mastitis cases followed up to 39 days lactation, where 63 mastitis cases are reported. This reflects from the sample that as lactation days advances, chances of the disease occurrence is being reduced.

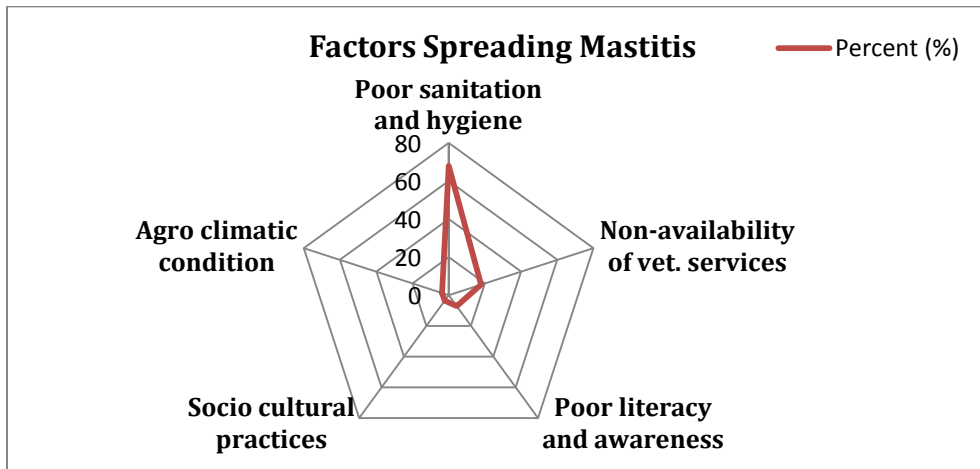
Table 1: Mastitis case distributed over season and stage of lactation

Season	No. of mastitis affected animals	Stage of Lactation	No. of mastitis affected animals	Animal	Incidence (%)
Monsoon (June-Sep)	92	Up to 30 days	63	Cross bred Cows	9.88
Winter (Oct.-Jan)	52	30-90 days	86	Indigenous Cow*	-
Summer (Feb.-May)	43	90 days and above	38	Buffaloes	6.66

*No indigenous cow was reported in the sample having mastitis.

Spread of Mastitis:

Farmer experience and understanding at their farm regarding mastitis is important and recorded accordingly. About 67.86 percent of them feels that poor sanitation and unhygienic condition responsible for this disease followed by non-availability of veterinary services (17.86%) at the door step. Only 7.14 percent farmer believes that poor literacy and un awareness may be the cause for spread of the disease. Agro climate and socio cultural factors are the not the reasons in farmers perception.



Losses due to mastitis in farm animal:

The overall loss due to mastitis from dairy animals was recorded Rs.1390.46 per lactation, in which 48.53 percent was from production loss followed by veterinary expenses (36.57%), and additional labour (6.98%) .In crossbred cows loss due production account to be Rs. 700.18 (43.95%), while in buffaloes it was accounted for Rs 363.75 and share was found out to be 40.75 per cent. Greater loss in crossbred due to its high production yield period affected during mastitis .The veterinary expenses is cross bred cow is also observed more over buffaloes due to the medicine required for cure mastitis is of high price. This was found out to be Rs. 582.15, whose share was 36.54per cent out of the total loss. Additional labour charges along with sanitation and hygiene were the other costly components reported during the investigation. Similar trend was also observed by Thirunavukkarasu and Prabakaran (1999), where, the total loss from affected cow of 536.25 per lactation and 404.73 in buffaloes.

Table 2: Average loss per lactation due to mastitis in farm animals (in Rs.).

Loss sub heads	Crossbred cows	Buffaloes	Overall
Production loss	700.18 (43.95)	363.75 (40.75)	674.74 (48.53)
i. Milk yield loss	503.04 (31.58)	273.75 (30.67)	485.69 (34.93)
ii. Discarded milk	197.14 (12.37)	90.00 (10.08)	189.05 (13.60)
Vet. Expenses	582.15 (36.54)	356.67 (39.97)	508.52 (36.57)
i. Medicine	505.36 (31.72)	290.00 (32.50)	432.50 (31.10)
ii. Services	76.79 (4.82)	66.67 (7.47)	76.02 (05.47)
. Sanitation	66.07(3.45)	53.67 (6.01)	65.09 (4.68)
i. Stall hygiene	47.68 (2.30)	37.50 (4.20)	46.87 (03.37)
ii. Milk hygiene	18.39 (1.15)	16.17 (1.81)	18.22 (01.31)
Miscellaneous	144.47 (9.06)	118.33 (13.26)	142.11 (10.22)
i. Additional labour	98.93 (6.21)	78.33 (8.78)	96.99 (6.98)
ii. Equipments,etc.	45.54 (2.85)	40.00 (4.48)	45.12 (3.24)
Total	1592.87 (100.00)	892.42 (100.00)	1390.46 (100.00)

Figures in parentheses indicates percentage of total loss in farm

Besides, reduction in milk yield, various antibiotics, analgesics, anti-inflammatory drugs and intra mammary infusions were used for treating, indicates a definite loss to the farmers. As per market opinion, a complete fibrosis of one quarter causes on an average decrease in animals market value by Rs. 4000 and Rs. 2500 for cross bred and buffaloes respectively (Kumar *et al*, 2010).Based on population statistics as per 18th livestock census (2007) and incidence of clinical mastitis obtained by field survey, the economic loss per annum due to clinical mastitis was estimated to be 1.48 crores.

Conclusion:

Mastitis is an important production disease in dairy animal. It has economic consequences on small farm holder profit margin and their farm economy. The l loss was estimated in the tune of Rs.1390.46 per lactation, in which 48.53 percent share was from milk loss and 36.57 % share was from cost of medicine and veterinary expenses. Greater loss in crossbred due to its high production yield, affected during the mastitis period

reported. As the cost of treatment is high, inadequate sanitation, hygiene and poor veterinary services were the factors reported responsible for occurrence of the disease. So, effective preventions at the farm to the greater extent may be suggested. Further, having complexity in translating these effects into economic losses, it needs to be done for a specific farm and a specific economic context. Therefore, the results regarding the economic impact of mastitis should rather not be directly compared.

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