

Study on incidence and economics of clinical mastitis

Mastitis and Repeat breeding are the two major economic problems in dairy industry. Most studies on economic loss due to mastitis are normative (using simulation model) and only few studies are positive (analysis using data from organized farms) as observed by Hogeveen, 2005. Economic calculations of mastitis depends on breed of animal, lactation, stage of lactation, season, management (feeding and hygiene), educational status of dairy farmers along with incidence and duration of mastitis.

Economic loss due to clinical mastitis can be categorized into milk production loss, treatment loss, man power loss (Veterinarian and Labour) and animal value depreciation. In the present study, incidence of mastitis and economic loss due to mastitis, in Kolar district of Karnataka are estimated based on the data from field conditions.

Data on 305 clinical mastitis cases (88 fresh cases and 217 repeat cases) recorded over a period of one year from April 2006 to March 2007 at Veterinary dispensary, Somenahalli, Kolar district, Karnataka, was considered for the present study. Milch animal population of the area during the period of study was 679, 373 and 207 for cross bred cows, indigenous cows and buffaloes respectively. Average daily milk yield (kg/day) is 5.8, 2.13 and 3.14 for cross bred cows, indigenous cows and buffaloes respectively (Anon., 2006).

Farm gate price of milk based on market survey was Rs. 10 and Rs. 13.50 for cow and buffalo milk respectively. The data collected separately for cross bred cows, indeginous cows and buffaloes were classified based on seasons of milking, lactation number and stage of lactation. Further data was classified according to type of case (fresh and repeat), cost of drugs used and prognosis (complete recovery, partial recovery and fibrosis). Economic loss due to mastitis was earlier reported in India by Singh and Singh (1994), here certain modified formulae were used in the estimation of economic loss due to clinical mastitis. Loss due to

$$\text{Clinical Mastitis} = \text{Production loss} + \text{Treatment loss} + \text{Depreciation loss}$$

$$\text{Production loss} = \text{Animal mastitis days} \times \text{Average milk yield per day} \times \text{Average price of milk per liter}$$

$$\text{Animal mastitis days} = \text{Milch animal population} \times \text{Incidence of clinical mastitis} \times \text{Average days of infection}$$

$$\text{Treatment loss} = \text{Average cost of treatment per day} \times \text{Animal mastitis days}$$

$$\text{Average cost of treatment per day} = \frac{\text{Total price of medicines used for treating mastitis}}{\text{Animal mastitis days}}$$

$$\text{Depreciation loss} = \text{Total infected quarters in the population} \times \text{Fibrosis rate} \times \text{Decrease market value dueto loss of each quarter}$$

$$\text{Total infected in the population} = \text{Incidence in the population} \times \text{Average no. of quarters infected per animal} \times \text{Milch animal population}$$

$$\text{Fibrosis rate} = \frac{\text{No. of quarters resulted in fibrosis}}{\text{No. of quarters affected}}$$

The incidence of clinical mastitis cases distributed over season, number, stage of lactation and type of animal are presented in table 1. Incidence was 9.28%, 3.59% and 4.10% for crossbred cows, indigenous cows and buffaloes respectively. The findings were similar to those reported by Sachin and Gokhale (2006). Number of clinical mastitis cases differed significantly ($\alpha=0.05$) over different seasons, lactation and stage of lactation (based on χ^2 test for multiple proportions). Incidence was high during rainy season, followed by winter and summer. Animals in 30 to 90 days of lactation had higher incidence, may be due to production pressure. Incidence was highest in III & IV lactations and was almost same for I & II and V & above lactations.

Average number of treatment days per clinical mastitis case was obtained by dividing total cases by fresh cases, which was 3.64 Days per clinical mastitis case. Production loss included decrease in milk production during infection and discarding of the milk during and few days post-infection based on the antibiotics used, but discarding of milk post infection is not being practiced (even though it is advocated), hence was not considered here. Various antibiotics, analgesics, anti-inflammatory drugs and intramammary infusions were used for treating

Table 1. Clinical mastitis cases distributed over season, lactation number, stage of lactation in Kolar district

Season	No. of mastitis affected animals	Lactation number	No. of mastitis affected animals	Stage of lactation	No. of mastitis affected animals	Animal	Incidence (%)
Monsoon-I (June–September)	39	I&II	26	Upto 30 days	29	Crossbred cows	9.28
Winter-II (October-January)	27	III&IV	36	31 to 90 days	37	Indigenous cows	3.59
Summer-III (February-May)	22	V & above	26	91 days and above	25	Buffaloes	4.1

Table 2. Economic loss due to clinical mastitis in Kolar district, Karnataka

Animal	Production Loss (Rs.)	Treatment loss(Rs.)	Depreciation loss(Rs.)	Total(Rs.)	Totoal loss(Rs.)
Crossbred cows	2872356	3553932	5121760	1158040	
Indigenous cows	187270	641816	462560	1291646	14787889
Buffaloes	455905	785115	707175	1948195	

clinical mastitis cases. Average per day cost of treating clinical mastitis worked out to be Rs. 73.00. Veterinarian and labour charges were excluded as cases were treated by government doctors, and farmers themselves were both the owners and laborers for the animals. On an average 1.3 quarters were affected in mastitis infected animals and 7% of the mastitis affected quarters ended up in complete fibrosis. Culling of mastitis animals is rarely practiced, but animal with fibrosis udder is

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, Rs. 2000, and Rs. 2500 for cross bred, indigenous cows and buffaloes respectively.

Based on population statistics as per 17th livestock census (2003) and incidence of clinical mastitis obtained by field survey, the economic loss per annum due to clinical mastitis in Kolar district was estimated to be 1.48 crores (table-2).

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