

## **Farmer's Perception on Cause's, Consequences, and Practices of Mastitis in Cow**

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### ***Abstract***

*Mastitis, an inflammation of the mammary gland, causes huge economic losses in the dairy industry because it decreases milk yield and degrades milk quality. Contagious organisms in the farm environment, improper sanitary practices in pre and post-milking time, and poor udder hygiene are the causes of mastitis in dairy cows. Farmer's knowledge and their practices in dairy farm management can play an important role in this aspect. The study aims to know the perception of dairy farmers regarding the causes, effects, and mastitis management practices. Eighty dairy farmers of Cumilla and Sirajgonj districts having at least 5 cows were selected and interviewed purposively with a pretested questionnaire. It was reported that among the dairy breeds, there were 66.53% Holstein Friesian, 19.66% Jersey, 9.66% Sahiwal, and 4% cattle of the indigenous breed. It was found that 95% of farmers know about the cause and consequences of mastitis and are also aware of the predisposing factor of mastitis. However, it is also noted that 91% of study farmers stated that they experienced mastitis infection in one year of study. It means the farmers do not follow what they know or what they are doing is not correct. The farmers (73%) opined that Friesian cows are comparatively more prone to mastitis compared to Jersey and Sahiwal breeds. The farm floor was mainly made of concrete (53%) and brick-soiled floor (47%). It was found that 64% of farmers do not follow milking time, and 87.5% of farmers do not use any sanitizer before and after milking. Dirty floor, milkers hand, bedding mat, incomplete milking, and some unknown factors are responsible for mastitis opined by 50%, 28%, 6%, 4%, and 9% of respondents respectively. After mastitis infection in 47.5% of cases, farmers call quack because of easy access and low cost which leads them to get inappropriate treatment. A total of 97.5% opined that mastitis decreases average milk production by up to 50%. The study found that the farmers are aware of the cause but are less sincere in preventing the cause, especially in hygiene and sanitation. So, it suggests boosting awareness among dairy farmers about hygiene and sanitary practices in dairy farm management to prevent mastitis in dairy cows.*

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**Keywords:** Mastitis, Milk hygiene, Sanitation, Treatment

## **Introduction**

Mastitis is one of the most alarming diseases in the dairy industry, damage mammary gland, caused by various microbial infection and is called the most common and costly health disorder of dairy cows. Mastitis is termed as an economic disease (Halasa et al., 2007). Cow with mastitis has less market value, because it decrease milk production (Gomes et al., 2016). Besides, mastitis degrade milk quality (Barbano et al., 2006), increase cow culling rate, increase treatment and medicinal cost, and also increase risk of antibiotic residues (van Schaik et al., 2002). Antibiotic residue, inappropriate and excessive antibiotic use in dairy farm is increasingly seen as a threat to public health, because it may lead to the emergence of multiple resistant bacteria (Sischo, 2006; Van Rijen et al., 2008). The infection in the mammary tissue damage accounts for 70% of the total losses (Zhao et al., 2008). The disease is characterized by swelling, heat, redness, hardness and pain with abnormalities in milk (Fox, 2009).

There are two forms of Mastitis seen in the field i.e. subclinical mastitis and clinical mastitis (Kader et al., 2003). In subclinical mastitis milk remain apparently normal, can be detected by California Mastitis Test (CMT) and with an increase in somatic cell count (SCC) of milk that is bacteriologically positive (Blowey and Edmondson, 1995; Bradley, 2002). Clinical mastitis can easily be recognized by the visible sign and symptoms while subclinical mastitis is difficult to detect without regular monitoring and test, so, it is considered more severe than clinical mastitis. Cows with subclinical mastitis act as a reservoir of pathogens that could lead to severe udder infection and spreading to other cows (Philpot and Nickerson, 1999). It causes huge economic losses in dairy herds and responsible for much greater loss to the dairy industry in Bangladesh (Kader et al. 2003). In Bangladesh, the prevalence of SCM is recorded from 20 to 44 % at cow level based on California Mastitis Test (CMT) (Rahman et al. 2009; Islam et al. 2010; Rabbani and Samad, 2010).

Pure breed or cross breed of high-yielding cattle, particularly, Holstein-Friesian cattle, are comparatively more vulnerable to mastitis than other breeds giving medium yield (Washburn et al. 2002). Jersey breed were reported to have lower incidence of mastitis than Holstein-Friesian cattle (Rahman et al., 2009).

Several risk factors are associated with the incidence of bovine mastitis that play significant role, including pathogen, host, and environmental factors (Klaas et al., 2018). Dairy farmers in Bangladesh

are not always aware of the best practices to control mastitis (Halasa et al., 2007).

Farm's common practices, milking equipment maintenance, pre and post-milking hygiene and dry cow therapy (DCT) are important to prevent contagious infections in mammary gland (Smith et al., 1993). Farmer's knowledge on dairy farming, disease prevention strategy, biosecurity practices are also important. Moreover, attitude towards udder health, and mastitis can also play role in this regard. Lack of awareness, delay in disease detection, unhygienic milking practices and incomplete treatment of clinical and chronic mastitis (Sharma et al., 2012). Consequently, mastitis prevention is relevant not only for animal welfare, but also for society, the dairy industry, and farmers. Information relating to risk factors of mastitis, farmer's knowledge, attitude and practices is limited in Bangladesh (Kahir et al., 2008; Uddin et al., 2009). Such information is important to understand the farmers' thoughts regarding mastitis and for designing appropriate strategies that would help reduce its prevalence and effects. So, Considering the above issues the article systematically illustrates the perception of dairy farmers, it also highlighted the farmer's knowledge, their attitude and practice in prevention and control of mastitis in dairy cow in selected areas of Bangladesh.

## **Materials and methods**

### ***Study location and duration***

The study was conducted in four different upazilas of Cumilla and Sirajgonj District. Data were collected from dairy farmers of Shahjadpur and Ullapara upazila of Sirajgonj district and Sadar and Laksham Upazila of Cumilla district in the year 2021. Data were collected through a pretested questionnaire. A total of 80 dairy farmers having at least 5 cows were selected purposively to collect data. The study was a cross sectional study. The questionnaire was prepared to get the answer regarding the farmer's knowledge, their perception, practices on cause and consequences of mastitis in cow. Data were collected by the researcher and the investigator of Bangladesh Academy for Rural Development (BARD). Researcher personal observations and respondents comments were also incorporated during report writing. After collection, data were inserted in MS excel sheet and then tabulated in order to get the result. The result were presented graphically and in a tabular form that were described in the report.

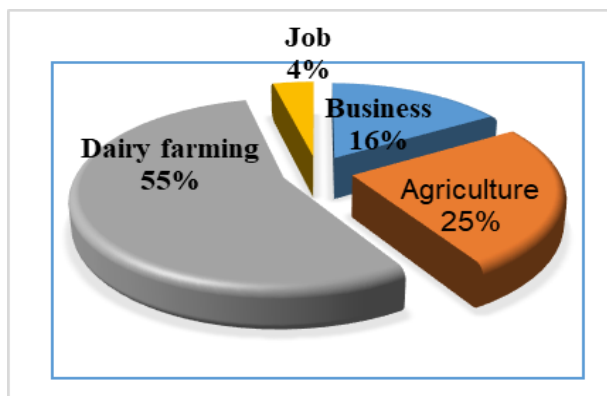
## **Result and Discussion**

### ***Education status of the respondent***

The study showed that 84% farmers are educated ranging from primary to graduation level. Only 16% respondents are found illiterate among the

study respondents. However it is also to note that most of the respondents are in the state of having primary and secondary level of education.

**Profession of the respondents**

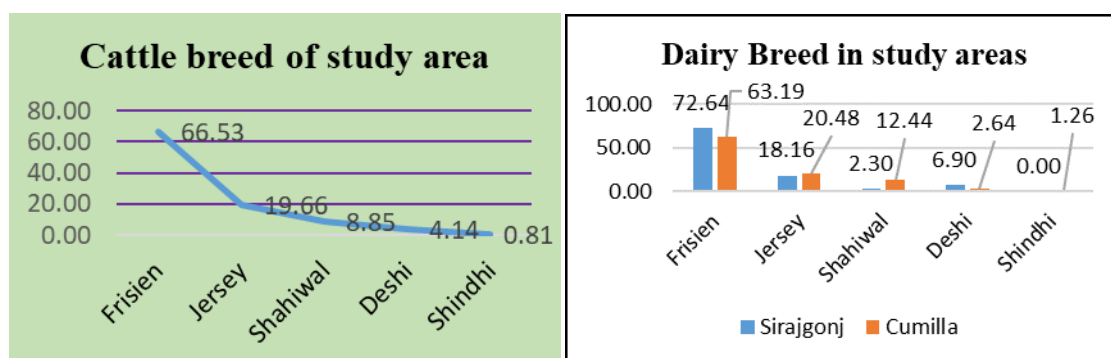


Among the respondents of the study area 55% have taken dairy farming as their main profession while 25% are involved in agriculture, 16.25% are businessman and 3.75% respondents are doing job in different sectors.

**Farming Experience**

Sirajgonj district is famous for dairy farming. The largest dairy grazing land (bathan) of Bangladesh is located in Sahazadpur Upazilla. It was found that farmers of the Sirajgonj district have 24.6 years farming experience while the farmers of cumilla district have dairy farming experience for 9.6 years.

**Cattle breed in the study areas**



In overall consideration, 66.53% Holstein friesian, 19.66% Jersey, 8.85% Shahiwal and 4.14% deshi cattle were recorded in the study area. But, if districts are considered only 2.64% and 6.9% indigenous cattle were found in Cumilla and Sirajgonj district. Rest of the cattle were cross bred. Among the cross bred cattle if Cumilla and Sirajgonj district is considered, 63.19% and 72.64% were Holstein Friesian, 20.48% and 18.16% were jersey, 12.4% and 2.3% were Shahiwal respectively. But

1.26% Shindhi breed was found in Sirajgonj District while no shindhi cattle was found among the farms in Cumilla.

### *Average milking cow and milk production*

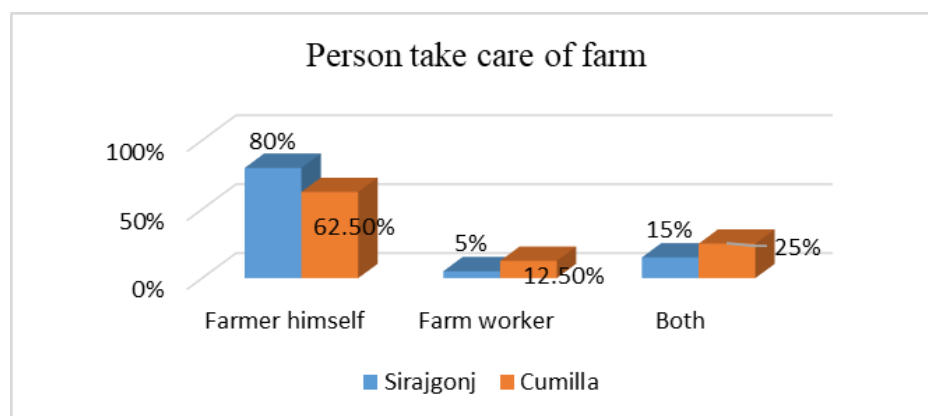
District	Milking cow	Milk production	Average Milk production (Litre)
Sirajgonj	159	1420	8.93
Cumilla	237	1981	8.36

It was found that the average number of animal was 5 in each household. In general average milk production per cow per day was 8.64 liter. But considering the district the average milk production was 8.93 liter per day per cow in Sirajgonj and 8.36 liter was reported in Cumilla District.

### **Training received by the farmers**

Training facilitates farmer's skill on health and production management. Among the selected farm owners 55% did not get any training on dairy farming whereas only 45% got training. Among the training receivers most of the farmers (94%) received training from the government office especially from the local livestock office. Only 6% received training from NGO or others.

### **Take-care of farm and farm animals**



Farm management practices are very important for udder health management. Bio-security practices, workers own hygiene, hygiene practices during milking of cow is very important. Monitoring the activities of farms is also important to reduce the disease incidence in the farm level. It was found in the farms of Sirajgonj that in 80% cases farmer himself works in his farm, while in 5% cases farm worker maintains the farm and in 15% farms farm owner works with farm worker. On the other hand, in Cumilla area 62.5% farmers maintain their own farm, in 12.5% cases farm workers is assigned to take care of the farm but in 25% cases farm owner works with worker. It was also found

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that in 57% cases farm owners take their own decision while applying any new idea in their farm management, 41% take specialized opinion while only 2% cases they depend on workers opinion.

### **Comparative status of subclinical mastitis in Sirajgonj and Cumilla district**

District	Number of cow Examined by CMT Kit	Sub Clinical Mastitis positive case Number (percentage)	Sub-clinical case Positive			
			Fore left	Fore Right	Hind left	Hind Right
Sirajgonj	92	17 (18.48%)				
Cumilla	96	27 (28.13%)	15	15	18	18

A total of 188 cows were tested with California Mastitis Test (CMT) kit to confirm whether the cow has sub-clinical mastitis or not. It was found that among the tested cows 23% were positive in CMT test. The result is lower than the findings of (Moges et al., 2012) who did Indicator Paper Test (PT) for subclinical mastitis test in their research and found 30.6% subclinical mastitis. Among the positive cases 9% were in Sirajgonj and 14% cases were found in the study areas of Cumilla district. The intensity of subclinical mastitis is high in Cumilla district compare to Sirajgonj may be because of better understanding of the farmers of Sirajgonj about mastitis prevention. If we consider the quarter of udder then it was found that 22% fore left quarter, 22% of fore right quarters were infected. On the other hand 27% cases of hind quarters both in left and right were infected. The incidence of SCM was high in hind quarters may be due to comparatively high milk production. Sharma et al., (2007) and Badiuzzaman et al., (2015) also reported hind quarter involvement was maximum in case of subclinical mastitis.

### **Farmer's Knowledge, Attitude and Practice regarding mastitis in cow**

#### **Farmer's Knowledge about Mastitis in Cow**

Among the respondents 95% opined that they know about the disease. Only 5% respondents reported that this disease is new to them. It was reported by 91% farmers that they faced the mastitis problem in their farm in last one year of study period. The 50% respondents said that they have learned about mastitis from the doctors (the person who serve them when their cow got infection of mastitis). Among the farmers 44.5% opined that they have learned about mastitis from the nearby farmers. Rest 3.6% farmers mentioned that they learned it from the training and only 1% mentioned that they have learned about mastitis from the television and leaflet. The data illustrate that very negligible percent of dairy farmers learned about mastitis from the training. Among the

respondents 73% opined that Holstein Friesian breeds are very prone to get mastitis infection, 24% said that Jersey cows are comparatively get mastitis infection more while 2% and 1% farmers said that deshi and Shahiwal cow get mastitis infection. Farmer's opinion supports the findings of Washburn SP et al., (2002).

Microorganism, incomplete milking, human eye or mouth and unknown factors causes mastitis mentioned by 76%, 18%, 2%, and 4% respondents respectively. On the other hand, 61% farmers mentioned unhygienic floor or bedding, 18% opined milking system, 10% opined milk man's hand, and 3% said incomplete milking predispose mastitis in cow. Among the respondents 8% said they do not know the cause of mastitis. According to 29% farmers rubber mat can spread mastitis producing organisms and 48% do not have idea if rubber mat spread the disease producing organisms or not. Rahman'et al., (2018) conducted a similar study on mastitis, in their study farmers opined that cause of mastitis was mainly due to microorganisms (46.15%), injury (20%). They also reported that 27.69% farmer don't know the actual cause showed in Table 1.

**Table 1:** Farmer's Knowledge about Mastitis

Sl. No.	Parameters	Indicators	Frequency (%)
1.	Know about Mastitis	Yes	95%
		No	5%
2.	Farmers experienced with mastitis in last 1 year	Yes	91%
		No	9%
3.	How they knew about mastitis?	Doctor	50%
		Farmers	44%
		Training	4%
		TV	1%
		Leaflet	1%
4.	How animal get infection?	Microorganism	76%
		Incomplete milking	18%
		Others eye or mouth	2%
		Unknown	4%
5.	What are the predisposing factors of getting mastitis infection?	Dirty/Wet floor/Bedding	61%
		Milk man hand	10%
		Milking system	18%

		Incomplete milking	3%
		Not known	8%

### Farmer's Attitude towards mastitis

About 96% respondents responded that they do not prefer milking machine. Among them 60% said it is troublesome, 22% said that it may cause problem in udder while 18% mentioned that it's price is not affordable. It was observed that 98% farmers uses oil as lubricant during milking and only 64% farmers maintain the milking time. Among the farmers 77.5% opined that eating milk from mastitis affected cow has no negative health impact while 11% farmers said that it may cause problem in human body while 11% said that they have no idea about this. Among the respondents 60% said that they do not consume or sale milk from infected quarters, while 40% respondents mentioned that they eat or sale milk from infected cow. Mastitis is a very severe disease for cow opined by 92% respondents, 6% took it as severe and only 2% said it is not so serious disease. Among the diseases mastitis is most dangerous mentioned by 49% respondents, while FMD, Anthrax and Infertility was mentioned by 30%, 20% and 1% respondents respectively. For prevention and control of mastitis in cow 57% farmers suggested to arrange training, 27% proposed to have treatment from government doctors. Besides ensuring biosecurity practices and supplying quality medicine can be helpful to control mastitis opined by 2% and 2% respondents respectively **Table 2**.

**Table 2:** Farmer's Attitude towards mastitis

Sl. No.	Parameters	Indicators	Frequency (%)
1.	Do they want to use milking machine?	Yes	4%
		No	96%
2.	Why milking machine is not liked by the farmers?	Troublesome	60%
		High Price	18%
		Cause udder problem	22%
3.	How mastitis can be prevented	Clean hand	29%
		Clean Udder	28%
		Clean floor	5%
		Milking time	20%
		Vaccination	18%
4.	Use of infected cow milk	Eat or sale	40%
		Do not eat the affected quarters milk	60%



5.	Is the milk of affected cow is bad for Health	Yes	11%
		No	77.5%
		Do not Know	11%
6.	Which disease is very dangerous for dairy cow?	FMD	30%
		Anthrax	20%
		Mastitis	49%
		Infertility	1%
7.	How severe the disease is?	Less severe	2%
		Severe	6%
		Very Severe	92%
8.	What are the feedback for prevention and control of mastitis	Training	57%
		Ensuring Govt. Facilities for treatment	27%
		Quality Medicine	2%
		Biosecurity	2%

### Farmer's Practice in farm

Among the respondents 51% use rubber mat as bedding material, only 8% use straw and 41% farmers do not use any bedding materials in the dairy shed. Among the respondents 53% farms have concrete floor and 47% have brick soiled floor. No farm's floor were muddy among the study farms. It was a good sign that farmers were rearing their cattle in concrete or brick solid floor.

**Table 3: Farmer's Practice in farm**

Sl. No.	Parameters	Indicators	Frequency (%)
1.	What is used as bedding materials	Rubber mat	51%
		Straw	8%
		Nothing	41%
2.	Rubber mat can spread the microorganisms	Yes	29%
		No	24%
		Do not know	48%
3.	Type of floor of cow shed	Brick	47%
		Concrete	53%
4.	Use of disinfectants during milking	Yes	12.5%
		No	87.5%
5.	Use of disinfectants in the house	Yes	81%
		No	19%
6.	Use of lubricant during milking	Yes	98%
		No	2%

Sl. No.	Parameters	Indicators	Frequency (%)
7.	Do they maintain milking time?	Yes	64%
		No	36%
8.	Milking by same person	Yes	64%
		No	36%
9.	Grazing the lactating cow outside (Sirajgonj)	Yes	80%
		No	20%
	Grazing the lactating cow outside (Cumilla)	Yes	40%
		No	60%

It was found that 87.5% farmers do not use sanitizer or antiseptic before or after milking, only 12.5% mentioned that they use sanitizer or antiseptic. But, 81% farmers mentioned that disinfectants are used in the floor during shed washing. In 64 % cases same person is assigned to milk cow while 36% cases they do not maintain it. Among the farmers of Sirajgonj Districts 80% graze their cow outside the shed while in Cumilla 40% farmers graze their cow in the field. It is assumed that Sirajgonj is historically famous for cow rearing and there are huge grazing land there, so grazing rate is high in Sirajgonj.

### **Conclusion and recommendation**

It is noteworthy that, most of the farmers of the study area know about mastitis. Even, most of them consider mastitis as a very severe disease. They are also aware about the predisposing factors and how the animals get the infection of mastitis. They also know possible measures to take in order to control and prevent mastitis in dairy cow. On the other hand, mastitis is a common problem in most of the farm. This denotes that farmers do not maintain what they know about the prevention and control of mastitis. Specifically, farmers do not maintain hygiene in the house, during milking and in overall biosecurity of farm. Besides, they are not aware about subclinical mastitis and antibiotic residue. Very often they take treatment from the quack and as a result, farmers become deprived from actual treatment. So, frequently they count huge economic loss. Moreover, most of the dairy farmers have some misconceptions about good dairy health and management system. So, the study suggests to arrange training or workshop/seminar regarding overall dairy health and management for dairy farmers.

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