A Study on Husbandry Practices of Dairy Farms at Chattogram Area of Bangladesh

By

Faruk Ahmed

ID: 56

Reg: 01490

Roll: 15/106

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Approved by:

.....

Dr. Md.Kabirul Islam Khan

Professor

Department of Genetics and Animal Breeding

Faculty of Veterinary Medicine

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A Study on Husbandry Practices of Dairy Farms at Chattogram Area of Bangladesh.

Abstract

The study was executed to explore the present husbandry practices of the dairy farms in Chattogram areas of Bangladesh. A total 20 farm were selected using simple random sampling technique from the Chattogram districts. Data were collected through well-developed, pre-tested objective-based questionnaire and on-farm face to face direct interview. Data were analyzed using MS Excel and SPSS-20 software with descriptive statistics. It was revealed that 47.2% face in, 42.50% face out, 7.60% mixed and 2.70% others (scattered) housing were practicing among the studied dairy farms at Chittagong out of which 83.96% farms have separate calf shed. About 24.12% farms not offered year round green grass to their animals while 38.20% were supplied. The crude protein (CP) contents were about 15-16% of supplied concentrate which were almost similar to the recommended level. The farmers does not maintained breeding policy for breed their cows in the studied farm. About 95.85% farms used artificial insemination (AI) and 4.15% farms practiced both AI and natural mating). Sub-clinical mastitis was common to all farms out of which 49.54% clinical form. Calf scour was detected to around 14.85% dairy farm. Merely 95.78% dairy farms practiced hand milking whereas 4.22% farm practice machine milking .About 95.85% dairy farms keep AI record. Finally, the study proved that the improper husbandry practices of dairy farms may lead to less profit. Therefore, we need to improve the overall husbandry practices in the dairy farms at Chattogram to get optimum production and profit.

Keywords: Breeding, feeding, housing, management and biosecurity.

Chapter I

INTRODUCTION

The economy of Bangladesh is mainly based on agriculture. Livestock plays a crucial role in the agricultural economy. About 36% of the total animal protein comes from the livestock products in our everyday life. In our countries 25% peoples are directly engaged in livestock sector and 50% peoples are partly associated in livestock production (Rahman et al. 2020). Development of dairy has generated considerable employment through the production and marketing of dairy and dairy products (Nedelea et al. 2009). The majority of the dairy cattle are in the hands of smallholder dairy producers. Also dairying is part of the mixed farming systems in Bangladesh and a predominant source of income, nutrition and jobs(Faruk et al. 2015). Dairying is also considered a strong tool to develop a village micro economy of Bangladesh in order to improve rural livelihoods and to alleviate rural poverty (Quddus et al. 2018). Agriculture is the largest food producing sector of the economy of Bangladesh since it comprises of 13.82% of the country's GDP and employs around 45% of the total labour forces (BBS, 2019). The sectorial growth rate of GDP by crops and horticulture, livestock, forestry and fisheries in 2016-17 was 6.98, 8.63, 12.44 and 12.34 % respectively (BBS, 2019).The Contribution of livestock sub-sector to the GDP was 1.44%, which was estimated about 13.46% GDP to agriculture (DLS, 2020-21). The production of milk and meat was 106.80 and 76.74 lakh metric ton respectively (Parvez, et al. 2020).

The scheme for diary, farming should include information on land, livestock markets, availability of water, feeds, fodders, veterinary aid, breeding facilities, marketing aspects, training facilities, use of manure, experience of the farmer and the type of assistance available from State Government, dairy society/union/federation.

Chattogram is now in a very satisfactory position on dairy farming contrast. More or less, majority farms are in benefited and contribute in the national economy. The farmers are getting veterinary services and providing feed and fodder. In most of the farms could not maintain proper husbandry practices in their farm and these are the vital issues. For determination the actual condition of this dairy farm various parameters like housing, feeding, breeding, biosecurity and health care management that mean the overall husbandry status need to evaluate for profitable farming. Therefore, this study was conducted with the following objectives.

1.To observe the overall husbandry practices regarding production in some dairy farms at Chattogram areas.

2.To find out the problems and ways of mitigation of these problems in different dairy farms at Chittagong.

Chapter II

METHOD AND MATERIALS

2.1 Study area

The study was conducted on animal husbandry practice on different dairy farm at Chattogram areas of Bangladesh. This area is located south-eastern region of Bangladesh at 22.2438 latitude and 92.0126 longitudes. This area is covered by hilly tracts and sea.

2.2 Study period

In order to collect the data from different farms a well-organized questionnaire was used. The total duration of the study was 3 months (from August 2021 to October 2021).

2.3 Collection of data

These data were collected by using following techniques:

- By visiting of individual farms.
- By Cross questioning to the owner /farmer/employee
- Records maintain by the farmers

2.4: Selection of farm

The daily routine activates in the selected dairy farm are presented in Table 1.

Table 1: Daily routine activates in the selected dairy farm

Time	Daily Routine Activities
5.00-6.00am	Washing of floor, removal of dung and detection of heat.
6-8.00am	Washing of milk utensils
8.00-9.30am	Supply of concentrate feed, Milking & supply of roughage.
10.00-12.00pm	Bathing of animals, Grass collection from fodder land.
12.00-3.00pm	Leisure period
3.00-5.30pm	Washing of milk utensils & milking
5.30-6.00pm	Supply of concentrate & roughage feed.
6.00-7.00pm	Cleaning & washing of the floor as well as the premises, dung removal
7.00-5.00am	Leisure period

After 7.00pm though leisure period is started but farmers is alert whole night for heat detection of cow. Some farmer supply feed and water for 24hrs.

2.5 Data collection

Data on husbandry practices like housing, feeding, breeding, udder heath status, biosecurity condition were collected from the selected farms using the pretested questionnaire, direct farm visit and farm record.

2.6 Data collection and analysis

After collecting the data from the individual dairy farms the mean and percentage (%) of some special important husbandry practice was analyzed using the Microsoft excel and SPSS-20 and some findings were plotted.

Chapter III

RESULT AND DISCUSSION

3.1 Housing strategy

Figure 1, showed the different types of housing, which are practiced in different dairy farms in Chattogram areas. After analyzing the farms of Chittagong it was found that42.50%face out,.20% face in, 7.60% mixed(both milch cow, dry cow, pregnant in a single unit), 3.15% others housing system (scattered) is practiced. According farmers opinion they have not enough land for all types of house in the farm.

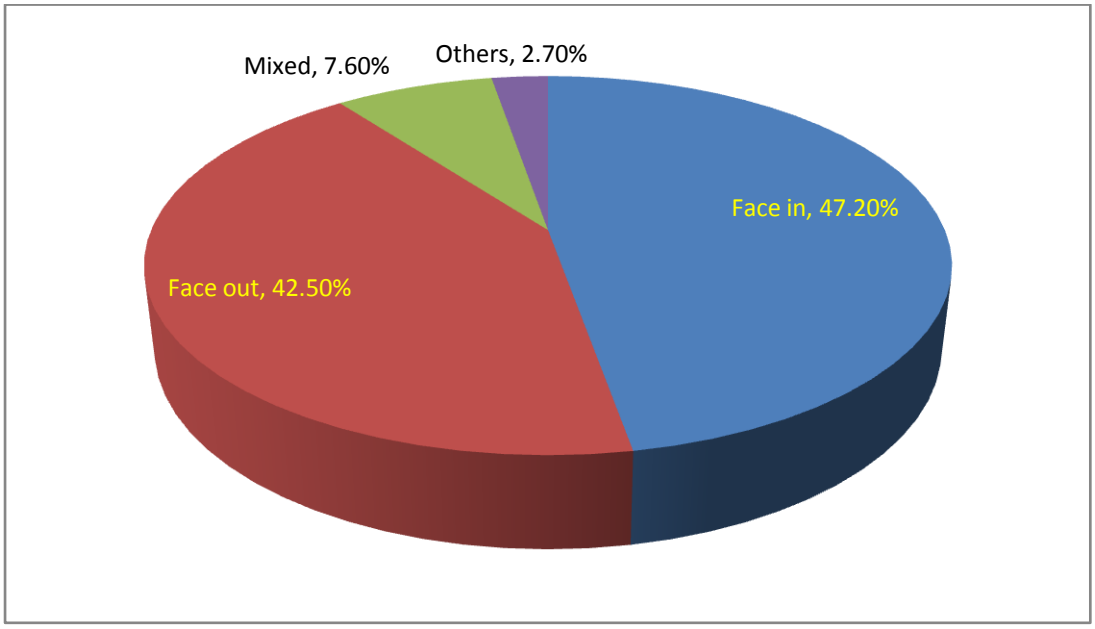


Figure 1: Percentage of different types of housing

There was no free range housing system all are intensive type of housing system is practiced in Chittagong.

3.2.Type of Shed

Individual sheds for individual categories of animal is required for a dairy farm to get optimum production. It is not only helps in easy management but also minimize different shorts of health hazards. Observation revealed that are using 75.86% totally single shed farm separate maternity or calving shed; only 3.85% farms have bull shed (Figure2). Actually maximum farmers prefer to rear the herd in a single shed except calf. They tried to manage at least a minimum separate accommodation for calf.

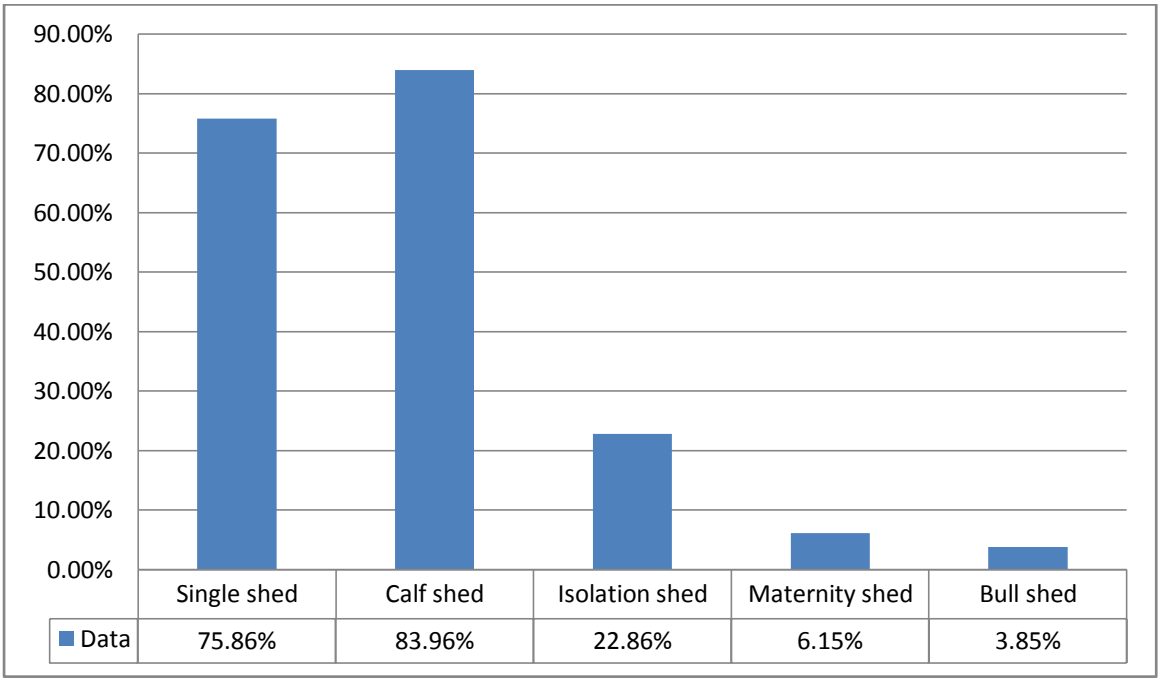


Figure 2: Percentage of shed based housing feature

Adequate space is needed for comfortless of the cattle. Survey results found that about 68% farms try to manage sufficient accommodation space for dairy cows, but too much gathering in case of calf which accounts 60% of dairy farms.

3.3 Dairy breeds available in the studied farm

At present almost all farms have cross breed (Local x Friesian) dairy cow. Pure breed is very rare. But Holstein-Friesian cross is in top level that is known as Australian cow to the local people. Friesian-Sahiwal, Friesian-local, Jersey-Sahiwal are the common crossbred dairy cow.

3.4 Feeding management

The different dairy farms of Chattogram practiced different types of feeding system. Farmers using the feeding system were not scientific according to the established feeding standard. Actually farmers offered feed to their cattle on the basis of their idea. 100% of farm prepared a general mixture of concentrate feed but supply randomly to the various categories of animals like milch cow, pregnant cow, heifer, calf as well as the bull if there any. Every farmer supplied a little bit higher amount of feed to their milch cow.

3.4.1 Milch cow feeding

Feeding system of various farms of Chittagong is roughage (straw, green grass) & concentrate based. But due to lack of available fodder land all farmers are not capable of

to supply green grass to their cattle. They tried from their best to offer green grass especially to their milch cow which are collected from the local area but not year round. Most of the dairy farm's feeding systems are mainly concentrating based but straw is common in 100% farms. Crisis of green grass occur in rainy season specially. Molasses & straw based feeding system is very popular in maximum farms. Only few farms have their own source of straw & green grass like Napier, Para, and German. A huge part of feed source is buying. About 85% of farmers prefer to give roughage before milking & concentrate after milking. Feeding green grass is beneficial for milk production. After analyzing the farms we categories this topic in following way:

1.Green grass most of the time of the year (cultivated land or collected)-38.20%

2.Green grass occasional (Collected or buying)-42.31%

3. Green grass not at all-24.12%

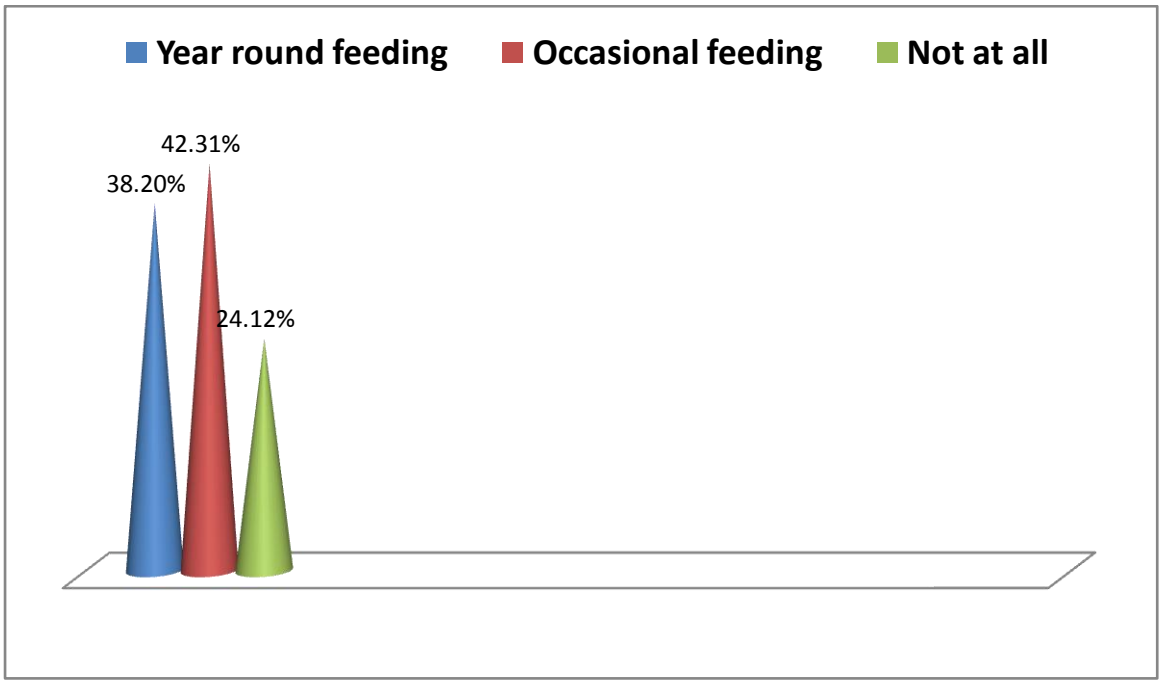


Figure 3: Percentage of status of green grass supply to the cows

Only 20% of farms have the idea about the production specific feeding or but not about the ration. Every farmer bears the will to get maximum amount of milk from their cows, for this reason they use various types of feed ingredients.

Table 2: The ingredients most commonly used are given bellow (farms, n=20):

Name of the ingredients	% of farms are using
Straw	**100**
Green grass(year round + occasional)	44
Rice polish	**91.23**
Wheat bran	**94.52**
Moshur/Kheshari	41.21
Broken rice	45.89
Broken maize	39.12
Mustered oil cake	55.65
Mug powder	29.34
Pea husk	**84.12**

Some farmers bear the concept about the additional concentrate feeding for extra each litter of milk production. But not a single farm gives the actual measurement of feed according to different stage of cattle. They give either very excessive amount or less then the requirement which is cause of economic loss of the farm s to some extent.

From the general mixture of concentrate feed mill as well as the pregnant cows consume near about 3.4-3.9 kg in average per day. Straw intake is about 4.2-4.8kg per cow/day but in case of pregnant cows it was 5.1-5.6kg.

Calf feeding

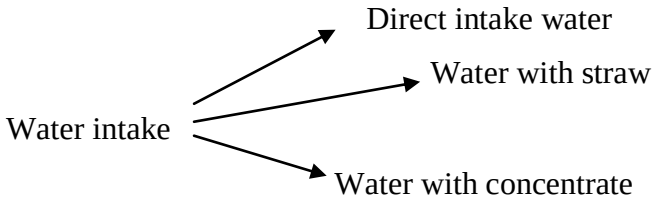
Calf feeding management is an important issue of a dairy farm because a healthy calf is the future profit of the farmer. However, farmers in the studied farm are not concern to special feeding of calf. Majority of farmers fed colostrum feeding to their calf but proper time & amount of feeding is questionable because farmers do not have enough idea on colostrum feeding. For each 10kg body weight required 1 litter colostrum but due to lack of proper consultancy colostrum amount is not exact level on some extant. As a result disorder like indigestion or diarrhea occurs for calves. In such condition farmer's fear to colostrum feeding, result sill-healthy calf. In case of motherless calf, farmers feed milk or other liquid to the calf by bottle feeder and only 6.5%farmers used milk replacer.

3.5 Nutritional management

Nutrition is one of the important issues for a dairy farm because the body growth and milk production is directly related with the nutrition. However, study showed that farmers not very much conscious about the nutritional requirement of their cow. The amount of protein, carbohydrate, vitamins, minerals are not in actual requirement state because 82% of farmers have no idea or knowledge on proximate components (CP, CF, NFE, Moisture, and Ash) levels of feed ingredients. Rest 18% have no some knowledge on nutrient and nutrition. Approximately 90% farmers supply the synthetic Vitamin-Mineral premix to avoid the nutritional deficiency of their cattle.

3.6 Water management

Fresh and clean water supply is very essential for a dairy farm. Study shown that about 100% of dairy farm of Chittagong has their own source of water they supply water adlibitum to their animals. But cleanliness is obviously questionable. Water is given to the cattle holding in manger for 24 hours and cows take it as their requirement. The whole study shown that cattle take water in 3 ways:



Water intake is much higher in summer than the winter season. Farmers have no headache on actual amount of water as well as feed supply.

3.7 Heat Detection status

Properly heat detection is a crucial and necessary factor for a dairy farm. A miss managemental heat detection practice can lead huge economic loss of the farm. Farm analyzing of Chittagong had shown that maximum level of heat detection of cow done by the farm manager or by the by observing during morning milking. Study find out that cow comes in heat at late/deep night, early in the morning and afternoon more profoundly. But survey proved that about 79% cows come in heat at early in the morning, 12% at deep or late night, 7% at afternoon & 2% in variable times of the day.

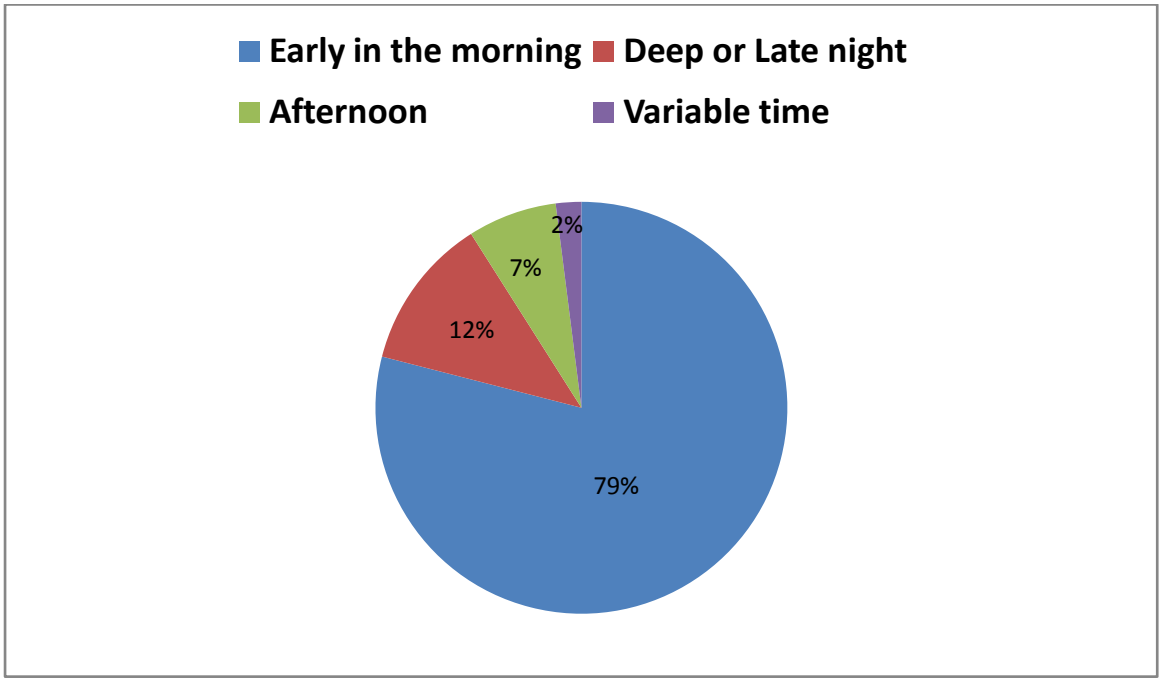


Figure 4: Heat detecting period

Farmers use the following common signs for heat detection:

1.Bellowing

2.Swollen vulva

3.Restlessness and mounting to others

4.Clean or stingy drooling mucous at the perennial region of the cow.

Other signs of heat detection like loss of appetite, arch back are the secondary observation.

3.8 Breeding Management

Breeding of cow in proper time is a key demand and profitable factor of a dairy farm. Missing of breeding is meaning full time cause conception failure as a result farmer fall in economic loss. Study shown that 95.85% of farms use AI technique for breeding. Only 4.15% of farm use both AI & Natural insemination technique

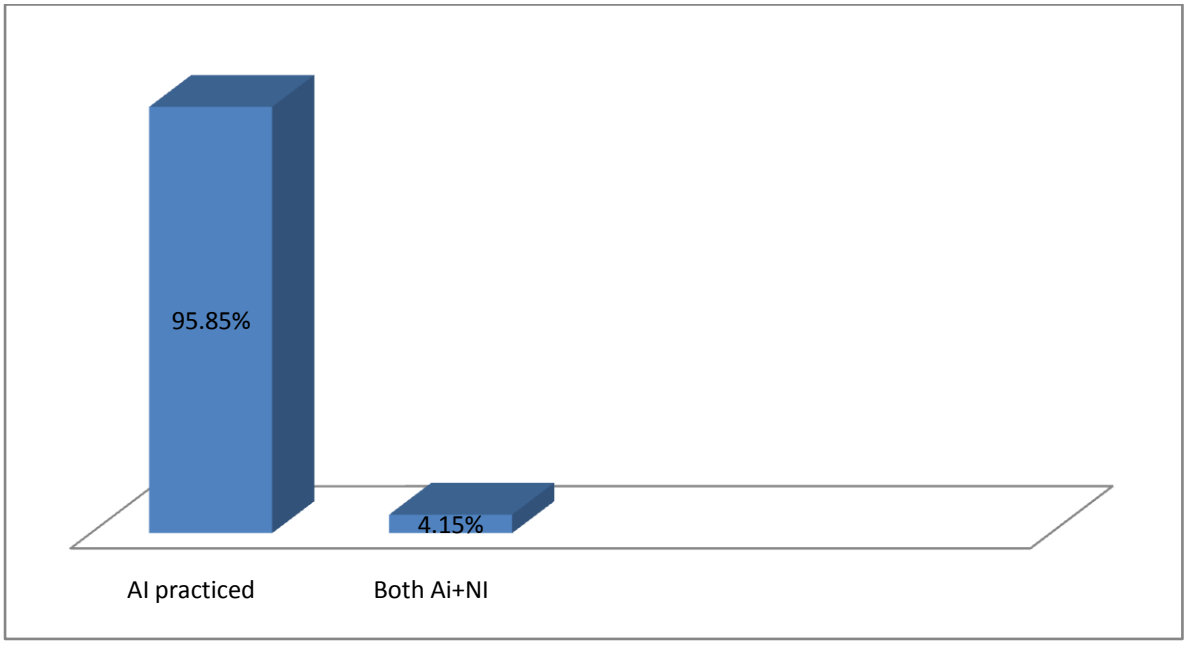


Figure 5: Practice breeding methods

Each farm of Chittagong the AI technicians or VFA performed this job. Mostly they use Holstein-Friesian semen. Matter of hope that farmers of different dairy farm of Chittagong built-up the concept of necessity to breed their cow in proper time that is within 12-18hrs of heat detection and they tried it from their best but situation is not always in their favour to perform this habit. In most of the farm required more than one insemination some where it is more than twice or thrice.

In case of parturated cow they don't breed in the first estrous period. Some farmers wait for 3-4 cycle. The number of AI indicates the calving interval of the farm. The scenarios of calving interval of cows in the studied farms is presented in Figure 6.

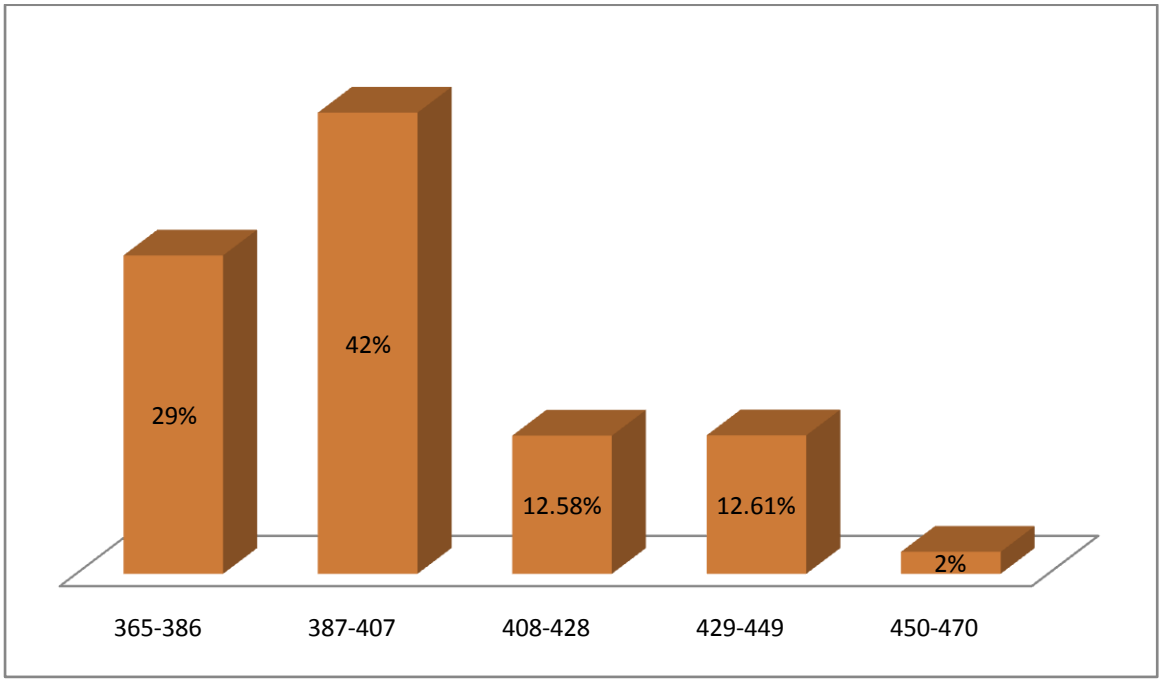


Figure6: Calving interval feature

Study shown that number of second insemination is higher than the first insemination

3.9 Udder Health Management

Udder health management is an important manifesto of a dairy farm. Farmers of Chittagong are more or less concern about this issues. About all farms of Chittagong uses mustered oil to create stimulation to the udder during milking. The vessels or bottle used for keeping oil are found in dirty condition. Lack of proper washing of hand before and after milking cause udder health hazard. Observation reviled that about 58% of farm use normal water (i.e. not contain any disinfectant) for cleaning and washing the udder of cow. But in case of conscious farmers mostly use Povisep or savlon for this purpose

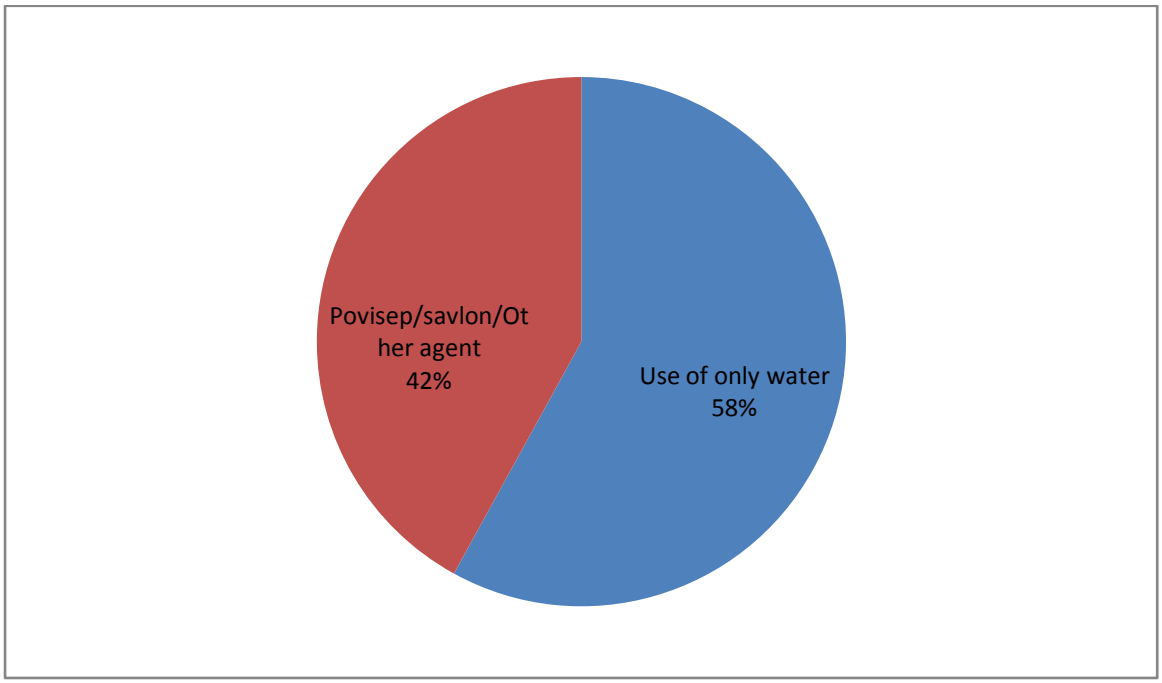


Figure 7: Using agent for udder cleaning

Machine milking is useful to protect this short of hazard. Only 4.22% of farms use both machine as well as hand milking and rest 95.78% of farms used hand milking.

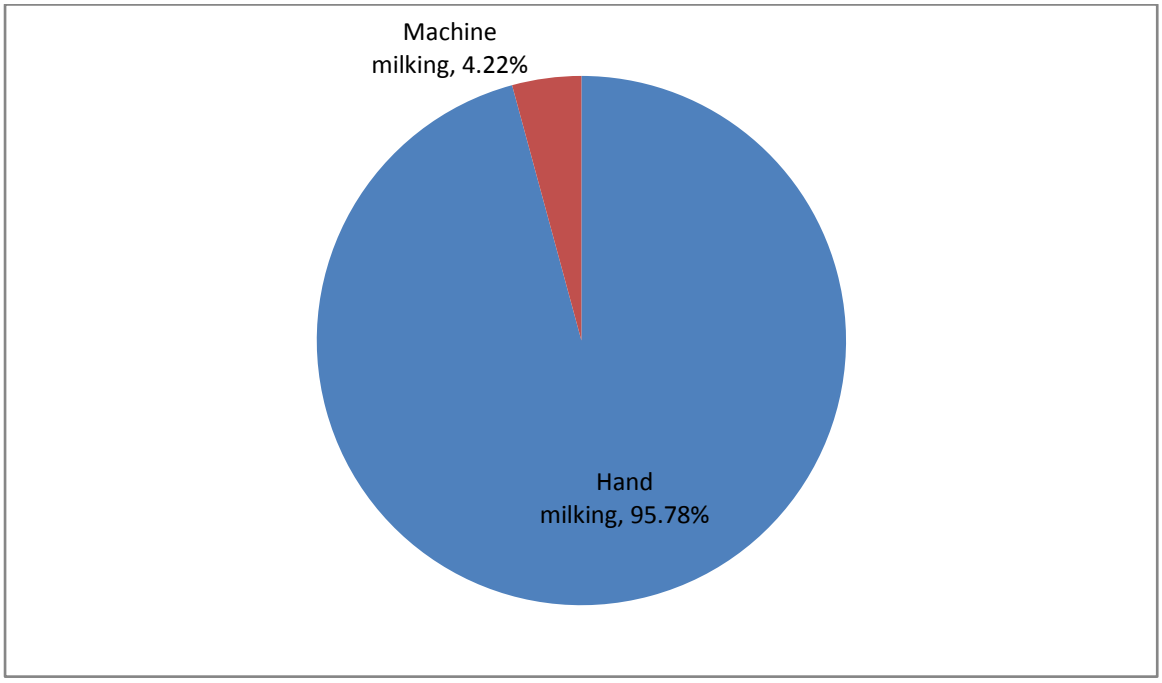


Figure 8: Type of milking

The common findings in this contrast are such types:

- Improper washing and cleaning of milkers hand.
- Use unclean water and stimulating agent like mustard oil kept in dirty vessels or bottles.
- Cracky floor
- Fly

Furthermore, 100% farmers given their opinion that mastitis is the most common problem of their dairy farms. Farmers used CMT (California Mastitis Test) in different dairy farm to detect mastitis, which gives 49.24% clinical and 29.54% subclinical mastitis prevalence.

3.10 Record Keeping Status

In order to properly operate a dairy farm it is highly necessary to maintain various types of records because these are the indicator of some important parameters of a dairy farm. In Chittagong farmers usually, keep the following records:

- AI record (Breeding record)
- Daily milk production record
- Calving records including various calving difficulties
- Therapeutics & vaccination record
- Disease register

Farmers who are not interested to keep records they maintain minimum AI or breeding record. 75%farm keeps only AI record, 22.32% keep both AI and daily milk production record and rest 2.68% farms was not maintain the record at all.

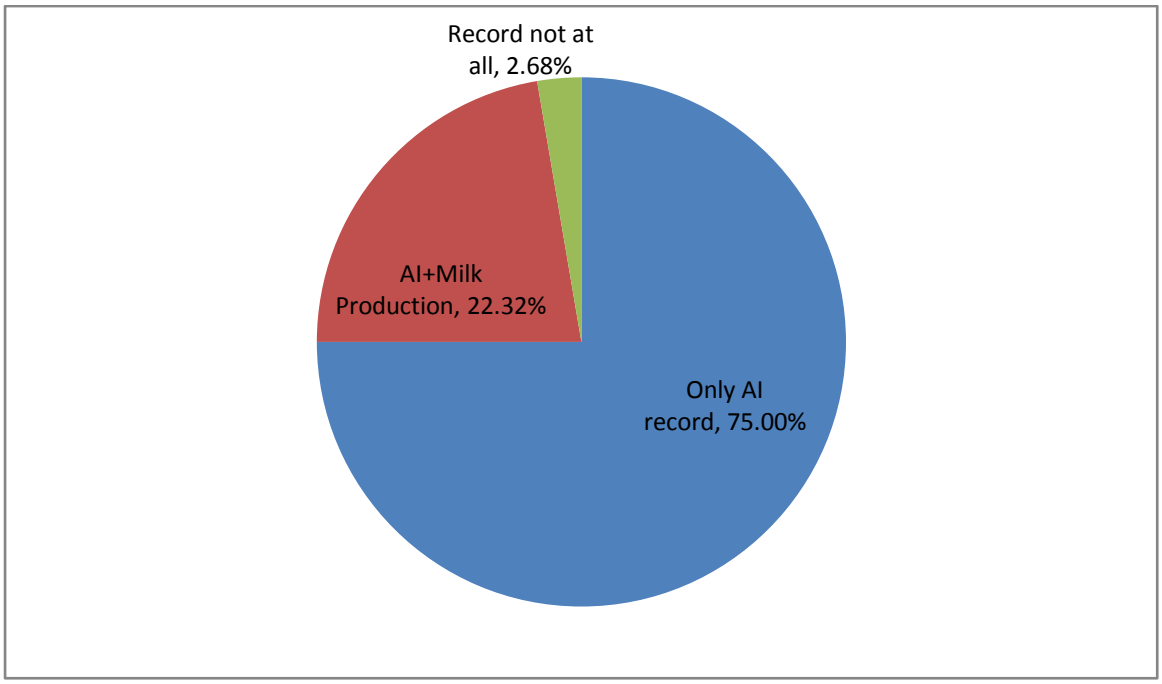


Figure 9: Record keeping feature

3.11 Biosecurity & Disease Management

Farmers tried to protect or control the herd from various diseases as well as health hazard. Miss management and lack of fundamental knowledge suffered the herd from diseases and health disorder. Survey reviled in Chittagong the health hazards:

- Mastitis-Throughout farm based- problem-49.54 %(only clinical based)
- Milk fever/parturient paresis-15.23%
- Ketosis-4.12%
- FMD (Farm based problem)
- Pneumonia-10.54%
- Calf scour-14.85%
- Parasitic infestation- Ascariasis (5.72) & Mite infestations are highly prevalence hazards.

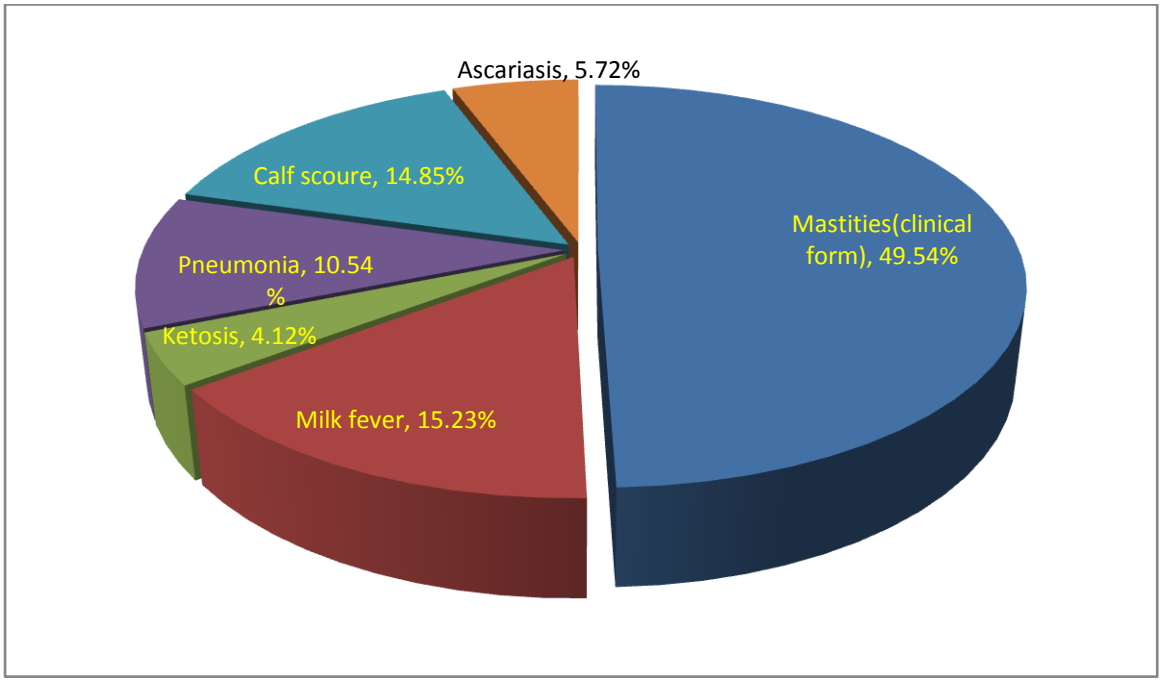


Figure 10: Diseases feature

Prevention is better than cure. Farmers of little educated or none educated prefer to treat the animal after accuracy. Some farmers have concept that diseases are auto curable and if taken step at the eleventh hour. Problem is there that farmers are still on some contrast are not aware about booster medication. It is matter of fact that majority farmers called veterinarian only in critical situation otherwise they tried firstly by themselves or by quack indiscriminately using of antibiotics. Average calf mortality in Chittagong is 7-10%. How ever now a day's farmers of Chittagong build-up consciousness on preventive measures against diseases or health hazards.

Table 3: Health preventive measures of dairy farm at a glance

Parameter	Percentage(%) of farm used
Deworming	46%
FMD vaccination	43%
Anthrax vaccination	11%

Sufficient drainage system helps in proper sewage disposal and it is very much necessary for the soil quality is clay type (Kazi Marufa-2006) which water absorbable capacity is less. In Chittagong 74.73% farms have sufficient & suitable drainage facility where as 25.27% are in insufficient position.

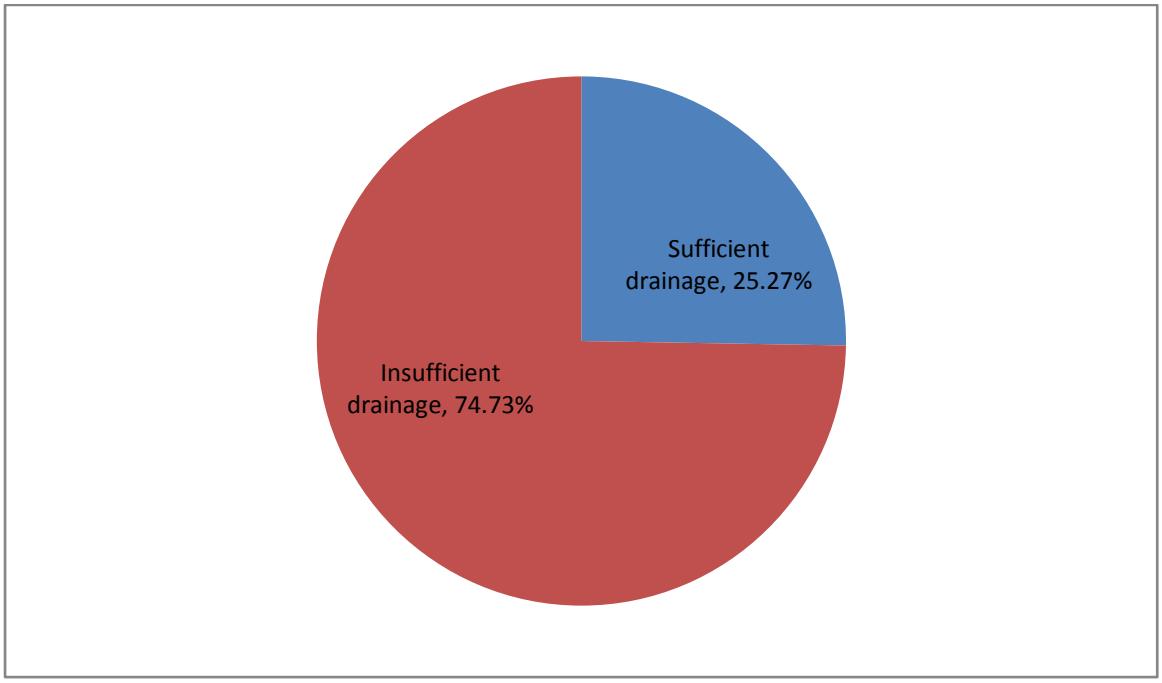


Figure 11: Drainage feature

Maintaining of quarantine period is valuable topic for dairy farm. But in Chattogram framers have no concept about quarantine. Maximum farmer normally entrance a newly buying cow in their herd without following a minimum quarantine period.

Standard man power ratio of dairy herd is 1:12. In Chattogram 53.37% have good enough manpower and 46.63% farm lack in this point.

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Chapter IV

CONCLUSION

The goal of dairy farms is to get the exponential profit. Without providing good facilities to the animals it is not possible to earn better output. Most of the farmers of the study area do not maintain standard husbandry practices regarding housing, feeding, biosecurity measures, and health management. It was revealed from the study that all dairy farms are practicing artificial insemination without following any breeding policy. Inventory record, animal records, milk records, breeding records, sale record and income record are the vital records of a farm to get optimum profitability, but in the present study area most of the farmers do not maintain any record except AI. In conclusion, dairy farming is a profitable business in Bangladesh no doubt if the farms be maintained properly husbandry practices in their farm.

Chapter V

REFERENCES:

Alam, G. M., Hoque, K. E., Khalifa, M. T. B., Siraj, S. B., and Ghani, M. F. B. A. 2009. The role of agriculture education and training on agriculture economics and national development of Bangladesh. *African Journal of Agricultural Research*, *4*(12):1334-1350.

Chakraborty, S., Rahman, A., and Salam, M. A.2020. Effect of integrated nutrient management on the growth and yield of Boro rice (Oryza sativa L.) cultivars. *Archives of Agriculture and Environmental Science*, *5*(4): 476-481.

DLS (Department of livestock service),2020. Animal Nutrition Development and Technology Manual, P.P: 22-23.

Faruk, M. S. A., S. K. M. A. Islam, M. Alam, A. Deb, and G. C. Chanda.2015. Husbandry Practices of Dairy Farming at Chittagong Sub-urban Area. *International Journal of Natural Sciences* 5(2): 59-65.

Hedman, H. D., Vasco, K. A., and Zhang, L. 2020. A review of antimicrobial resistance in poultry farming within low-resource settings. *Animals*, *10*(8): 1264.

Islam, M. S., Kundu, S. K., and Sarder, J. U. 2021. Productive Attributes of Dairy Cattle From Some Areas of Bangladesh. *LAP Lambert Academic Publishing, Germany*,5(8):34-37

Kumar, P., Singh, A., and Kumar, D. 2020. An overview of working models and approaches to climate smart livestock farming. *International Journal Of Life Sciences and Applied Sciences*, *1*(1): 1-13.

Nedelea, A., Grosu, V., and Shamsuddoha, M. 2009. Dairy Farming-an Alternative Income Generating Activity. *Bulletin UASVM Horticulture*, *66*(2): 352-355.

Parvez, M. A., Faruque, M. R., and Khatun, R. 2020. Prevalence of abortion, calf mortality and proportion of cattle population in commercial dairy farms of bangladesh. *Research Journal Veterinary Practices*, *8*(4): 51-55.

Quddus, A. 2018. Smallholder dairy farming in Bangladesh: A socioeconomic analysis. *Bangladesh Journal of Agricultural Economics*, *37*(454-2018-4203):42-45.

Rahman, M., Begum, S., Islam, S., Mondal, A. K., Hossain, M., Howlader, M., and Rahman, M. 2020. Current status of parasitic infection in cattle in Chuadanga district of Bangladesh. *International Journal of Natural Sciences*, *10*(1):40-45.