

Study on The Scenario of Buffalo Farming in the Anwara Region, Chattogram



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List of Acronyms Symbols Used

Abbreviation	Elaboration
%	Percentage
e.g.	Example
etc.	Et cetera
et. al	And his associate
DLS	Department of Livestock Services
SSC	Secondary School Certificate
HSC	Higher Secondary School Certificate
CVASU	Chattogram Veterinary and Animal Sciences University

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ABSTRACT

The current study was carried out to examine to assess the socioeconomic circumstances of the buffalo farmers and the most recent management practices at farm level in Anwara region. From May to June 2023, questionnaires were used to gather information from six household farmers in Juidandi Union, Anwara Upazila which were chosen at random. Male farmers (100%) in the age range of 30 to 60 years (50%) who had only completed their primary education (17%) and belonged to a small group of farmers whose major occupation is agriculture (83%), reared buffaloes. Without any formal instruction, all farmers engaged in buffalo rearing. The majority of farmers (80%) raised female buffaloes in small herds (6). Around 83% of farmers in the Anwara upazila had traditional buffalo shelters without fencing, whereas 17% had fenced housing arrangements. The majority of the shelters offered, which were mostly used at night (100%), had a tin roof (67%), a muddy floor (83%), insufficient floor space (33%), and an ineffective drainage system (83%). The majority of farmers grazed their buffaloes on public property from dawn until dusk and provided them with locally harvested natural roughages at night, although they rarely fed concentrates. No farmers adopted any feeding technology, utilized growth promoters or vitamin-mineral supplements, or fed buffaloes a balanced diet. Buffaloes typically showed heat during the winter, and artificial insemination was a more frequent technique. Almost all farmers regularly practiced deworming and vaccinations. The most prevalent issue, along with others that demand attention, is the storage of food. Overall findings showed that farmers had not implemented scientific management techniques to fully utilize the potential of buffaloes, and as a result, management practices were not sufficient. This needed to be remedied by inspiring farmers and offering extension services.

Keywords: socio-economic status; management practices, buffalo, Anwara region.

CHAPTER 1: INTRODUCTION

Bangladesh's economy is based primarily on agriculture, and livestock is a key component of that economy. A significant livestock species in many tropical and subtropical nations is the buffalo (*Bubalus bubalis*), commonly known as the "Asian Animal." (Kabir et al., 2020) and provides milk, meat, and draught power, and makes a substantial contribution to the agricultural economy (Ghaffar et al., 1991). Asian buffalo has the highest potential for output among domesticated animals (Cockrill, 1994). The total number of buffalo throughout Bangladesh is 14.85 million heads (BER, 2018).

In Bangladesh, water buffaloes are primarily indigenous nondescriptive varieties and have no recognized breed. Despite the fact that the buffalo produce around 3-4% of Bangladesh's total milk production, which in 2014 was roughly 6.09 Mt, the growth rate of the buffalo population has been rising over the past ten years (DLS, 2015). From 2005 to 2010, there was a 4.0 and 12.7% growth in the consumption of milk and meat, respectively (Hamid et al., 2016). Because of its white appearance, high fat content, and flavor, buffalo milk is currently being consumed by an increasing number of people. As a result, there is a significant demand for buffalo milk in the nation, although the milk yield per dairy buffalo is quite low, at 600–1000/L and 250–270 days of lactation (Huque et al., 2012) Due to its considerable demand and preference, Bangladesh has a significant possibility to manufacture buffalo milk.

However, a number of limitations prevent the area from being properly employed yet. Buffalo in Bangladesh has traditionally been ignored despite playing an integral role in the country's economy (Hamid et al., 2016).The raising of buffaloes by farmers, particularly women, may enhance their standard of living and provide a vital route to reducing rural poverty (Kalash et al., 2009; Sarkar et al., 2013; Amin et al., 2015). Due to its higher production potential, improved ability to use low-quality forages, inherent disease resistance, and ability to adapt to all climate risks present in Bangladesh, particularly in coastal areas, the buffalo turns out to be highly productive.

People in the southern coastal region of the country are frequently observed involved in buffalo rearing due to their geographic location, the availability of grazing pastures, favorable weather,

and the lack of economic possibilities. The bathan (free range) technique is used by the locals to raise buffaloes both individually and as a community. For a variety of reasons, this kind of buffalo farming is not very advantageous, and the underlying causes require more focus. Given their genetic potential, however, buffalo's production potential is largely dependent on the management techniques used to raise them (Hamid et al., 2016). The current study was conducted to look into Bangladesh's buffalo research as well as to evaluate the socioeconomic situation of the buffalo farmers and current buffalo management techniques in Anwara region.

CHAPTER 2: MATERIAL AND METHOD

2.1 Study area and farmers' selection

From May to June 2023, the study was carried out at Juidandi Union, Anwara Upazila, Chattogram district. Prior to the final one, a draft questionnaire was created and adjusted in accordance with the goals of the study. A variety of sections were included in the questionnaire's design, including those on the socioeconomic standing of the farmers and the care, production, and management of buffalo. Through one-on-one conversations with specific farmers, data were gathered. Six buffalo farmers who had previous expertise with buffalo husbandry were chosen at random from the research area.

2.2 Development of interview schedule and data collection

The goals of the study were taken into consideration when creating an interview schedule that included both open-ended and closed-ended structured questions. Before final data collection, the draft interview schedule was pre-tested in the field with a few buffalo keepers and adjusted accordingly. Before conducting interviews, respondents were informed of the study's goals and persuaded to give as much factual information as possible. Simple explanations were provided as necessary along with the questions. Face-to-face interviews with the owners and on-site inspections were both used to gather data from May to June 2023.

2.3 Statistical analysis of data

Before being transferred to master sheets, all the data was checked and cross-checked. The computer software application Microsoft Excel-16 was used to analyse the data.

CHAPTER: 3 RESULT AND DISCUSSION

3.1 Socio-economic status of the farmers

Almost all of the farmers had an additional stream of income from raising buffalo. There were participants from all social classes, regardless of their background in terms of education, occupation, household size, or religion. The bulk of responses were men in the 30 to 60-year age (50%) range and about 33% of farming households had five people or more. The majority of farmers (83%) were illiterate, while only 17(%) had a primary level of education. According to Table 1, the majority of respondents (83%) worked in agriculture, which included raising other livestock. All of the farmers (100%) learned about buffalo rearing through their ancestors and/or other buffalo farmers in the area and none of them got training on buffalo rearing. A similar study was found by Sarkar et al. (2013) described that 30% buffalo farmers at Bangladesh's Bagerhat district were solely dependent on raising buffalo and they didn't receive any training.

Table 1: Socioeconomic status of farmers

Parameters	Categories	Frequency	Percentage%
Age (years)	Upto 30	1	17
	30-60	3	50
	Above 60	2	33
Household size	Upto 5 members	2	33
	Above 5 members	4	66
Education level	Primary	1	17
	Illiterate	5	83
Occupation	Agriculture	5	83
	Others	1	17
Training received	Yes	0	0
	No	6	100

3.2 Demographic distribution

In the research areas, almost 95% of the farmers raised buffaloes. They were nondescript in type and had a wide range of phenotypes. The remaining farmers raised mixed populations of indigenous and crossbred buffaloes as well as crossbred buffaloes. According to research by Hamid et al. (2016), the majority of the buffalo in Bangladesh are of indigenous origin and are

riverine kinds, with the exception of a few swamp species in the eastern region. Around Bangladesh's Indian border, there are very few different crossbred populations with Murrah, Nili-Ravi, Surti, and Jaffrabadi. (Haque and Borghese, 2012).

3.3 Husbandry practices

3.3.1 Herd size

Among the total population of 2–10 buffaloes in majority farms, an average herd contained 6 buffaloes. Because it is difficult to raise a lot of buffaloes in the house they would rather be raised in char or bathan household farming has a small herd size. The majority of farmers raised female buffaloes primarily for calving and milk production, and they typically sold their male buffalo calves after weaning or when they were young (2–2.5 years). The findings of the current study are consistent with those of Rahman et al. (2018), who noted that in the Bhola district, under a semi-intensive management style, the average herd size was 1.80 ± 0.12 and According to Karim et al. (2013), the herd size in the coastal regions of Pirojpur and Borguna district ranged from 3 to 4 buffaloes and Uddin et al. (2016), found 82% of respondents in household farming in non-coastal areas had one to three buffalo per household, with the proportion of female buffalo being greater.

3.3.2 Housing management of buffalo farm

In the Anwara Upazila, 83% of farmers had traditional buffalo sheds without fencing and 17% had fenced dwelling systems. The responders who offered a shed, which was primarily used at night (100%), chose to keep their buffaloes near their residence so that they could check on them more regularly, while only 17% of farmers provided separate buffalo sheds (Table 2). The majority of farmers built some shelters with tin roofs and others, with muddy floors and inadequate space but most of the homes lacked a boundary wall (Rahman et al., 2018). Hasan et al. (2016) found that in the Bhola district, 48.57% of farmers did not provide any housing for their buffaloes, compared to 31.42% who had a conventional buffalo shed without fencing and 20% who had a fenced housing system. Farmers in Subornochar, 80% of Trishal, 70% of Bagha, and 45% of Lalpur sub-districts, according to Siddiki (2017), didn't care about housing for buffaloes under semi-intensive systems. They furnished their buffaloes with an insufficient

amount of floor space, a tin hut, and a muddy floor. These results are consistent with the observations made by Rahman et al. (2018), who noted that most houses lacked a boundary wall and a roof, but some farmers built floors out of brick and some sheds had tin roofs. About 83% of farmers did not maintain a proper drainage system in the shed. About 50% of farmers provided cemented mangers and 67% of the farmers utilized manure to make fertilizer nearer to their dwellings. There was no provision for wallowing facilities in the shed and totally relied on natural circulating air (Table 2).

Table 2: Housing management of buffalo farm

Parameters	Categories	Frequency	Percentage%
Housing /shed	Sheds with fencing	1	17
	Sheds without fencing	5	83
Housing period	All time	0	0
	Only at night	6	100
Housing systems	Inside dwelling	0	0
	Near dwelling	5	83
	Separate buffalo sheds	1	17
Roof type	Tinned	4	67
	Pucca	1	17
	Locally available materials	1	16
Floor-type	Concrete	1	17
	Muddy	5	83
Floor space	Adequate	4	66
	Not adequate	2	33
Drainage facility	Fair	1	17
	Poor	5	83
Ventilation system	Natural	6	100
	Artificial	0	0
Manure disposal	Fertilizers	4	67
	Others(fuel)	2	33
Manger	Provided	3	50
	Not provided	3	50



Picture 1: Housing system of buffalo in Juidandi union, Anwara Upazila

3.3.3 Feeds and feeding management of buffalo farm

Most of the farmers (100%) practiced grazing their buffaloes from morning to evening at public land and then offered green grasses such as Durba (*Cynodon dactylon*), Halancha (*Enhydra fluctuens*), Water hyacinth (*Eichhornia crassipes*), etc. collected from the riverside, road-side, fallow land and/or crop residues (mainly rice straw) at night. A similar finding was observed by Amin et al. (2015) explained that the majority of respondents in the Subornochar upazila of Noakhali district (80%) were entirely reliant on roadside and underused land grasses. According to Sarkar et al. (2013), the majority of farmers in Bangladesh's Bagerhat district depended solely on grazing. About 83% of farmers did not practice the cultivation of fodder for their buffaloes. While the majority of respondents employed cut-and-carry grasses, water hyacinth, and tree leaves where rice straw is the main feed source, farmers were completely dependent on the roadside and underused land grasses (Durba, hishra, etc.). The use of locally accessible feed supplies is one benefit of buffalo management at the home farmer level. They lacked the necessary adaptation to feed their buffaloes a balanced diet. Farmers were shown to be extremely hesitant to accept any new feeding technology (Table 3). No farmers fully implemented improved feeding technology like urea-molasses straw/blocks (Rahman et al., 2018). The majority of farmers fed their buffaloes tiny amounts of concentrate but no additional vitamins,

minerals, or growth enhancers. This study's findings are consistent with those of Amin et al. (2015) and Sarkar et al. (2013), who discovered no farmers feeding concentrate to their buffaloes. It was astounding that the majority of respondents (50%) relied on tube wells, rivers/canals, and ponds as their main sources of drinking water (Table 3).

Table 3: Feeding management of buffalo farm

Parameters	Categories	Frequency	Percentage%
Feeding system	Tethering	0	0
	Grazing	6	100
Grazing land	Own	0	0
	Public land	6	100
Fodder cultivation	Practiced	1	17
	Not practiced	5	83
New feeding technology	UMS, UMB Practiced	0	0
	Not practiced	6	100
Sources of feed	Own crop	1	17
	Purchased	0	0
	Collected from fallow land	5	83
Feeding of balanced ration	Yes	0	0
	No	6	100
Vitamin, mineral Supplements	Yes	0	0
	No	6	100
Sources of drinking water	Tube-well	3	50
	River	1	16
	Pond	2	33

3.3.4 Breeding management of buffalo farm

Few farmers(17%) keep breeding bulls, and most farmers who raise buffaloes for subsistence rely on artificial insemination (83%). The findings of this study were dissimilar to Uddin et al. (2016), who found that the majority of family farmers (95%) in Bangladesh used the natural mating method despite the fact that there are only a very few breeding bulls. The majority of farmers claimed that buffaloes exhibited heat mostly in the winter and they detected heat in a symptomatic way, but no one utilized teaser bulls to do so (Table 4). Pregnancy diagnosis after insemination is essential for lowering the interval between calving at the farmer's doorstep. However, the majority (83%) of farmers rely on AI technicians to determine pregnancy (Table 4). Hasan et al. (2016) reported that only 25.71 percent of farmers used AI (artificial

insemination) for estrous synchronization in the Bhola district and Rahim et al. (2018) reported that all farmers (100%) used natural mating for buffalo production in the Noakhali district of Bangladesh which was not supported by the author. The farmers were not found to have preserved breeding records, because they were unaware of how to keep the records. But Rahim et al. (2018) explained that only 3% of farmers kept track of their buffaloes.

Table 4: Breeding management of buffalo farm

Parameters	Categories	Frequency	Percentage%
Heat detection	Symptomatic	6	100
	Using teaser bull	0	0
Methods of breeding	Natural	1	17
	AI	5	83
Breeding bull	Yes	1	17
	No	5	83
Pregnancy diagnosis	Own judgment	1	17
	AI technician	5	83
Breeding record	Yes	0	0
	No	6	100

3.3.5 Healthcare practices of buffalo farm

For their buffaloes, farmers regularly vaccinated and dewormed almost 100% of them. The aforementioned findings are similar to those of Rahman et al. (2018) who found that farmers in coastal areas attempted to vaccinate and deworm their buffaloes in roughly 65.2% and 91.3% of cases, respectively. The majority of responders (100%) treated buffaloes first with a quack before turning to a veterinarian only in extreme instances (Table 5). According to the study, the majority (83%) of buffalo owners were unaware that sick animals needed to be isolated. Only 17% of farmers were observed to clean buffalo stalls using disinfectants (Table 5). Kishore et al. (2013) reported minimal use of disinfectants which was similar to the author. This may be due to a lack of understanding among farmers, the high expense of disinfectants, and an added load that did not immediately yield any benefits for the farmer.

Table 5: Healthcare practices of buffalo farm

Parameters	Categories	Frequency	Percentage%
Vaccination	Yes	6	100
	No	0	0
Deworming	Yes	6	100
	No	0	0
Treated by	Quack	6	100
	Veterinarians	0	0
Isolation of sick animal	Yes	1	17
	No	5	83
Disinfection of shed	Yes	1	17
	No	5	83

3.3.6 Production and reproduction status of buffalo farm

With an average lactation period of 227 days and a daily average milk yield of only 3.0 L/day. The highest milk production and milking cows were recorded at 8 L (43%) and 18 (51.43%) in farm1 and the lowest milk production and milking cows were recorded at 1.5 L (8.11%) and 1(2.86%) in farm 5 (Figure 1 and Figure 2). Hand milking was practiced in all farms. The gestation period was recorded as 330 days. They utilized the milk for family consumption and calf feeding and the rest of the milk was sold to the local tea stall and villagers. The highest amount (58.33%) of pregnant cows were recorded in farm 1 while there were no records of pregnant cows in farm 3 and farm 5 respectively (Figure 3). The greatest number of calves (27.78%) were evident in farm 1 while farm 5 showed the lowest number of calves (5.56%) (Figure 4). In addition, the total number of heifers were high in farm 1 (26.67%).In contrast, the lowest number of heifers had been found in farm 2(6.67%) (Figure 5). Farm 1 was enriched with the highest number(71.43%) of bulls, while 3 farms(farm 3, farm 4and farm 5) did not contain bulls in their shed and an equal number (14.29%) of bulls were recorded in 2 farms (farm 4 and farm 6) (Figure 6). A similar result regarding average lactation period and daily average milk yield was reported by Huque, (2013).

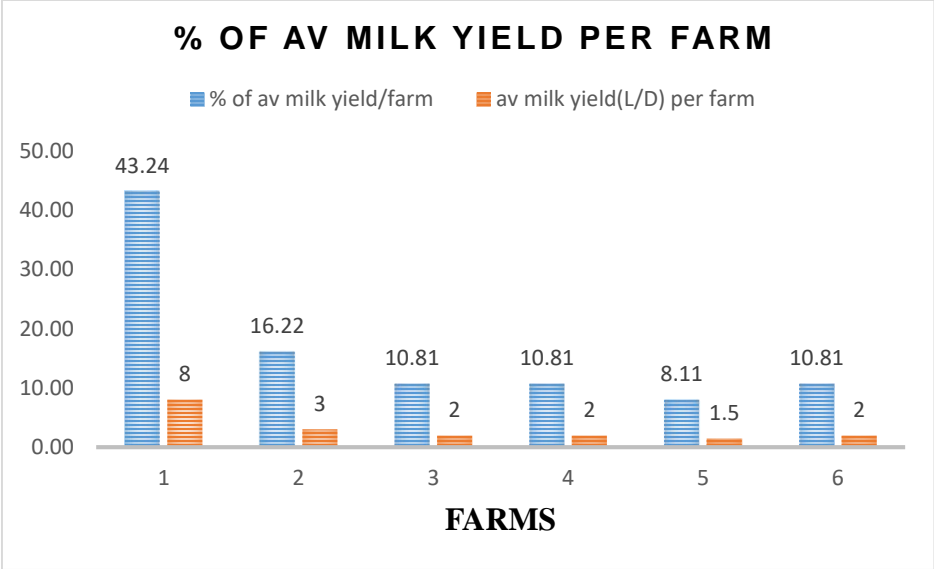


Figure 1: Milk yield percentage at different farm level.

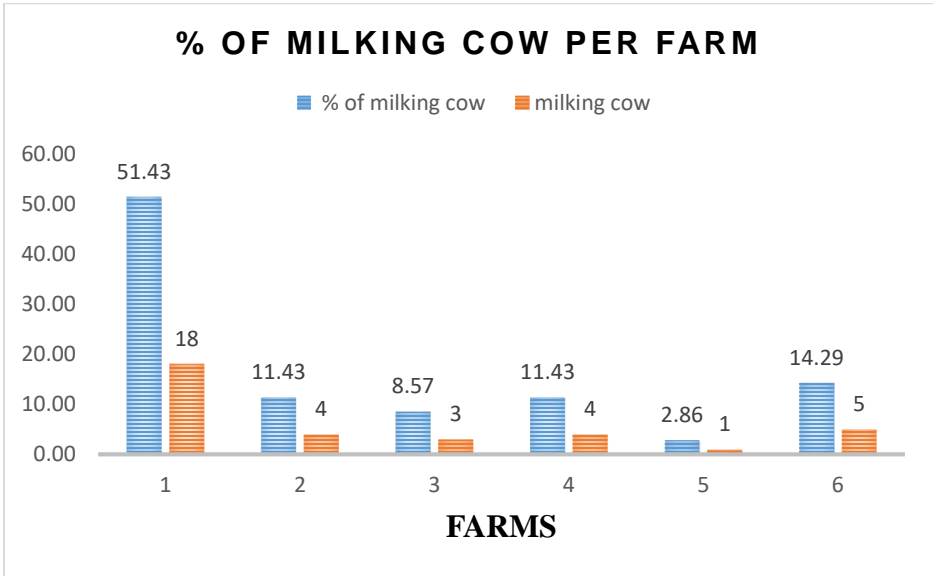


Figure 2: Milking cow percentage at different farm level.

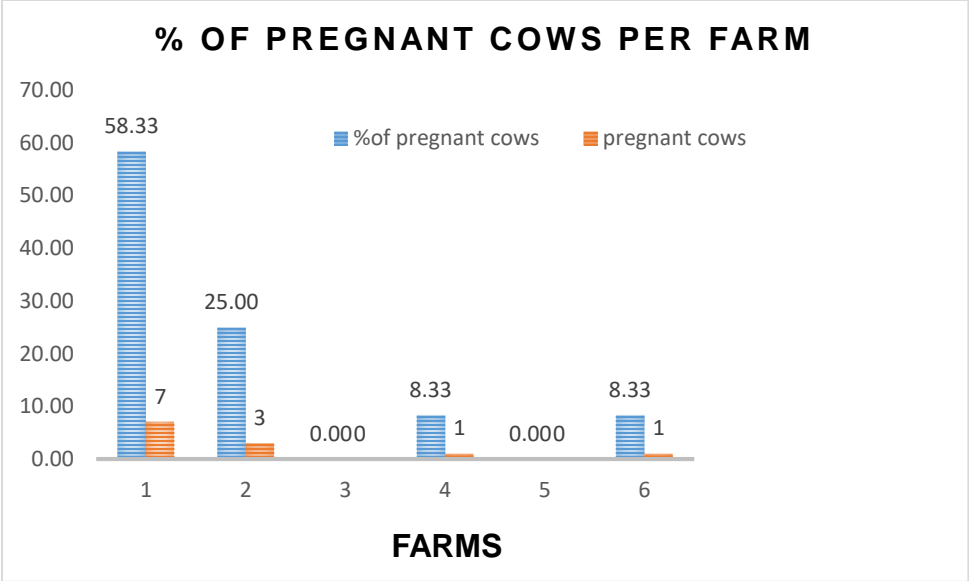


Figure 3: Pregnant buffalo percentage at different farm level.

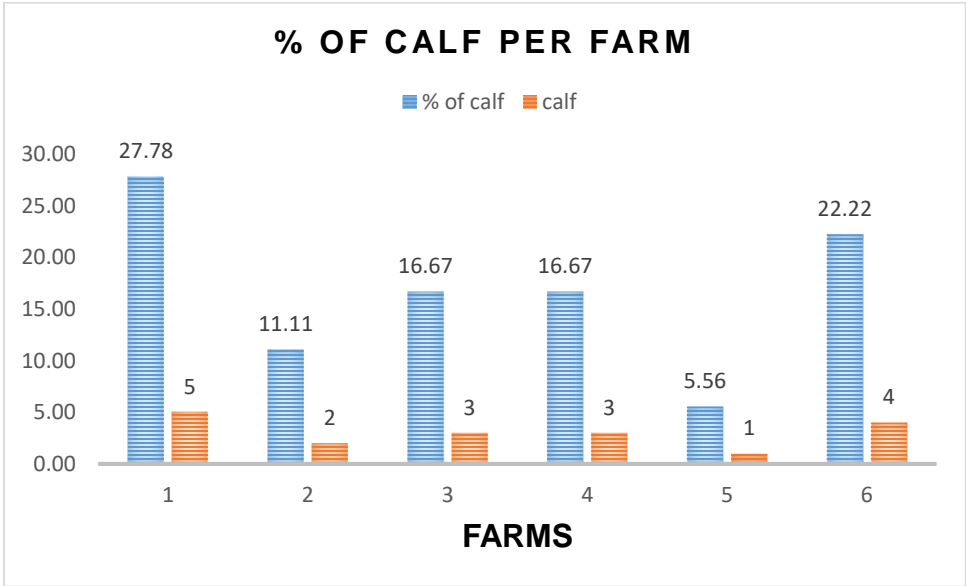


Figure 4: Calf percentage at different farm level.

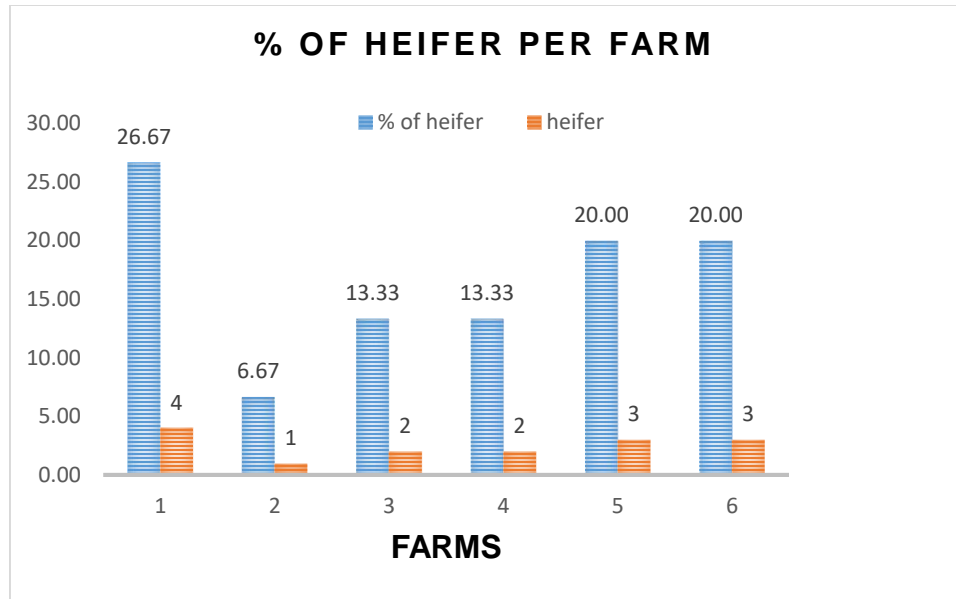


Figure 5: Heifer percentage at different farm level.

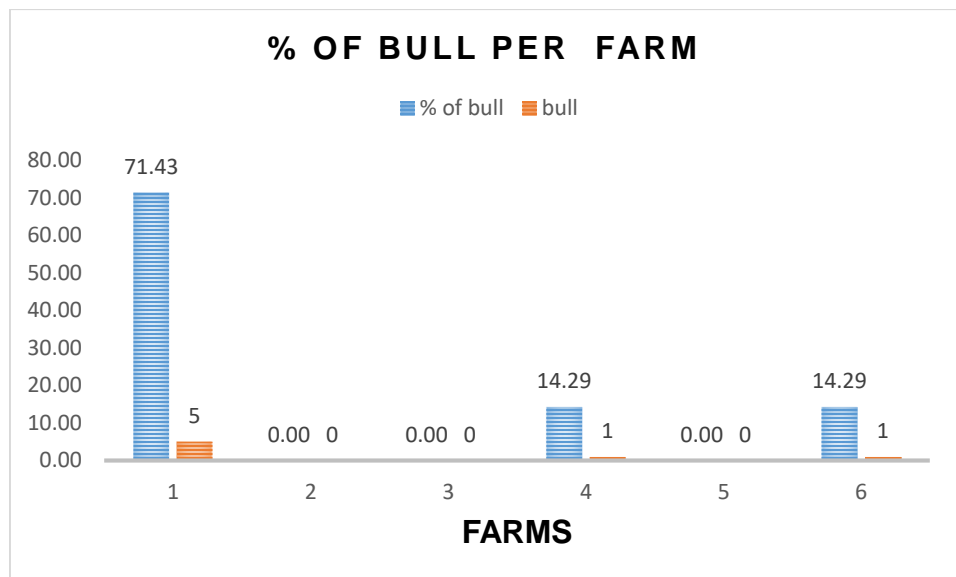


Figure 6: Bull percentage at different farm level.

3.4 Problems confronted by farmers

The main issues farmers faced included a lack of high-quality feeds and fodder, a lack of grazing land, poor veterinary care, an inferior breed, a problem with artificial insemination (AI), a lack

of government support, a lack of the necessary training facilities, an inappropriate marketing channel for buffalo milk and meat, etc. Particularly during the crop growing season and the dry season in Bangladesh's coastal regions, there is a severe lack of pasture and grazing space.

CHAPTER 4: LIMITATIONS

The author could only cover one union because of time constraints and the great distance from the Anwara Upazila Veterinary Hospital and therefore there was not enough data to conclude the paper. Additionally, several owners showed no interest in sharing data. Moreover, no farm record existed.

CHAPTER 5: CONCLUSION

The findings revealed that most farmers adopted a conventional backyard-rearing approach rather than adopting scientific feeding, breeding, housing, and health management practices. Based on the aforementioned information, it is possible to draw the conclusion that buffalo keepers should be motivated and familiarized with scientific husbandry techniques. In order to address the issues in a priority manner, the relevant authorities should take the necessary actions.

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BIOGRAPHY

I am Swagata Das Gupta. I passed my secondary school certificate (SSC) in 2014 with a GPA of 5.00 from Dr. Khastagir Government Girls' High School and my higher school certificate (HSC) in 2016 with a GPA of 4.83 from Govt. Hazi Muhammad Mohsin Collage, Chattogram. I admitted to Chattogram Veterinary and Animal Sciences University in 2018 and at present, I am an intern student of the 23rd batch under the Faculty of Veterinary Medicine at CVASU. I would like to pursue my higher education in Microbiology and Veterinary Public Health in the near future.