

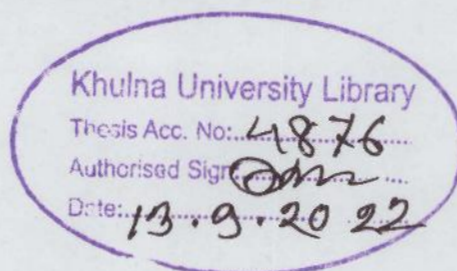
**CAUSES AND CONSEQUENCES OF LIVESTOCK REARING DURING
FALLOW PERIOD OF CROP PRODUCTION AS PERCEIVED BY THE
FARMERS**

A Thesis

By

Loknath Biswas

Student Id: MS-200823



**A Thesis (Course No. AERD-6104) Submitted to Agrotechnology Discipline in Partial
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LIFE SCIENCE SCHOOL
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KHULNA-9208**

MARCH 2022

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MARCH 2022

**Dedicated
To
My Beloved Parents & Teachers**

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First of all, the author would like to express all his devotion and reverence to the Omnipresent and Almighty Creator, who enabled the author to complete the research work successfully.

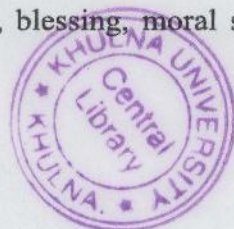
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March, 2022



The Author

ABSTRACT

There are several reasons which are favorable for livestock rearing and also some compelling issues which make the costal dwellers to accept livestock rearing as an alternative means of livelihood. The study examined the causes and consequences of livestock farming during fallow period of crop production as perceived by the farmers. Data were collected from 111 villagers of Assasuni upazila of Satkhira district during May 08 to December 23, 2021. Descriptive statistics were used for analysis. Respondents perception regarding the causes and consequences of livestock rearing were the dependent variable and the twelve selected characteristics of the respondents considered as the independent variables of the study. Most of the respondents had clear perception about the causes of livestock rearing. Paddy was cultivated once a year and the land remains fallow during rest of the times is the main causes of livestock rearing. Almost all of the respondents (98.2%) had highly score of consequences and rest (1.8%) had medium score in consequences of livestock rearing. Most of the respondents (92.8%) had faced highly severe problems and rest (7.2%) confronted severe problem. Shortage of food for cattle during the cropping season, lack of nutritious fodder and lack of good medical treatment are the main problems. Knowledge, training received, cosmopolitanism and extension media contact showed significant relationship between farmers' perceptions on related causes, consequences and problem confrontation of livestock rearing. Based on the findings, it is recommended that respective authorities i.e., DLS, DAE and NGOs should implement and popularize rural peoples for increasing livestock rearing.

Key words: Causes, Consequences, Grazing land, Livestock rearing, Paddy field

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CHAPTER I

INTRODUCTION

1.1 General Background

Bangladesh is predominantly an agricultural country and also agriculture is the backbone of Bangladesh economy. About 76.0% of the people live in rural areas, and 47.5% of the total manpower is involved in agriculture. In Bangladesh, agriculture contributes 14.23% of the gross domestic product (GDP) of the country in the year of 2020-2021 (BBS, 2021). Most of the rural people are dependent for their livelihood mainly on cropping and livestock farming. Livestock sub-sector is playing a crucial role in the traditional subsistence farming, contributing about 6.5 percent of the GDP, 13.0 percent of the total foreign exchange earnings and providing employment to 20.0 percent of the population. The majority of the rural households in Bangladesh have an average of 2-3 dairy cows. Often cattle are used as dual purpose i.e. milk and draft power. About 92.0 percent of the dairy cattle is descriptive indigenous and only eight percent is reported to be crossbred (BBS, 2014). The average milk yields 1.5liters/cow/day for indigenous and 2.5 liters/cow/day for cross-breeds. The livestock sub-sector plays a vital role for the economic development of agro-based Bangladesh. The contribution of livestock to national Gross Domestic Product (GDP) is 3.21 percent and which is 16.56 percent of total Agricultural share (DLS, 2016). About 44 percent of the animal protein comes from livestock sources. Moreover, 4.31 percent of foreign exchange comes from the export of leather and leather goods.

Livestock animals, kept especially on a farm, for economic benefits. In Bangladesh these are generally poultry, cattle, goats and sheep etc. Livestock constitute an important part of the wealth of a country, since in addition to draft power and leather; it provides manure, meat and milk to the vast majority of the people.

Livestock population in Bangladesh is currently estimated to comprise 25.7 million cattle, 0.83 million buffaloes, 14.8 million goats, 1.9 million sheep, 118.7million chicken and 34.1 million ducks. The density of livestock population per acre of cultivable land is 7.37. This density has been increasing every year in the country. The country has a relative density of livestock population well above the averages for many other countries of the world. In spite of a high density of livestock population, the country suffers from an acute shortage of livestock products like milk, meat and eggs. The shortage accounts for 85.9%, 88.1% and 70.7% for milk, meat and eggs, respectively. The annual growth rates of these products have significantly increased in recent years. However, if we desire to meet the increasing demand from domestic production, we will require an increase in production at the rate of 6 to 9 percent per year up to 2021. For that reason, a higher investment in the livestock sub-sector will be required. It is expected that an increase in investment in livestock research and extension by one Taka will give a return of Taka 1.42 to 3.15 per year depending on the type of livestock species and product.

In Bangladesh, 83.9 percent of total households own livestock (animals or poultry or both). About 45.9 percent households possess bovine stack, and 76.3 percent possess poultry. On average, each household owns 1.52 bovine animals, 0.9 goat and sheep and 6.8 chicken and ducks. It may be mentioned that the degree of inequality is very low in the distribution of livestock over the households. The degree of inequality as measured by Gini co-efficient was found to be 0.30 for livestock against 0.63 for land from a survey of 62 villages in 1992. In the following few years the inequality of landholdings has increased. The data generated by the 1996 Census of Agriculture showed that the inequality of land distribution was 0.66, against 0.37 for cattle and 0.17 for chicken. It suggests that further investment in livestock will have a positive impact on income distribution.

Livestock rearing is an important income generating activities that was initiated by different government, non- government organizations for the rural villagers .It is quite pertinent and necessary to know the extent of participation of the rural farmers towards livestock rearing of NGOs. But a very limited research work has been done on this aspect .Therefore, the researcher felt necessity to conduct a research entitled “Causes and Consequences of Livestock Rearing during Fallow Period of Crop Production as Perceived by the Farmers”.

1.2 Statement of the Problem

In the south-western part of Bangladesh a large largest area under monocropping. Only in monsoon T. Aman rice is grown in September to December. In the other time of the year large area remained fallow due to lack of fresh irrigation water; salinity problem and the underground water also contain soluble salt. On the other hand, the stored fresh water in the pond or small canals is not sufficient for crop cultivation. Because all the rivers and large channels are full with saline water (Hoque, M.E., 2019).

Now some government organization and NGOs try to cultivate second crop after short duration T. Aman rice variety as Sunflower, Mungbean, Wheat etc. But the cultivation of short duration rice variety the rice production is reduced and the second crop cost of production is also very high. So the farmers are not enough interested in that cropping system. In that area they always keep the land fallow and used for grazing of different livestock as cow, goat, sheep etc. But it is not well planned, the naturally born grass are directly eaten by the livestock in that area. We know that different species of grass can be used as good animal fodder.

That species of grass can also easily grown and required less water and fertilizer also can grow in the saline water we show. Grass can be grown with minimum cost of production than second crop production and that grass can be used as fodder for cow, goat and sheep.

In the present time there is huge demand of cow, goat and sheep for meat. So in the south-western region of Bangladesh, there is a large scope of grass cultivation for the purpose of livestock farming than second cropping practiced.

In view of the above background and facts the present study entitled “Causes and Consequences of Livestock Rearing during Fallow Period of Crop Production as Perceived by the Farmers’ at Assasuni upazila of Satkhira district was undertaken. Analyzing the issue from respondents’ perspective, this study was specifically designed to find out the answer to the following question:

- i. What are the main causes of livestock rearing at that area?
- ii. What are the consequences of livestock rearing at that area?
- iii. What are the farmers perception on the problems associated with livestock rearing?
- iv. What are the relationship between the selected characteristics of the respondents with causes, consequences and problems?



In order to answer the above mentioned research questions the present study entitled “Causes and Consequences of Livestock Rearing during Fallow Period of Crop Production as Perceived by the Farmers’ at Assasuni upazila of Satkhira district was undertaken.

1.3 Objectives of the Research

Meaningful, accurate and obtainable objectives are an important role to achievement in all kinds of research. In view of above cited facts, the present study will be conducted with the following specific objectives:

- i. To find out the causes of livestock rearing;
- ii. To explain the consequences of livestock rearing;
- iii. To point out the problems associated with livestock rearing;

- iv. To describe the selected characteristics of the farmers; and
- v. To explore the relationship between the selected characteristics of causes consequences and problems.

1.4 Scope and Limitation of the Study

The study will show the probability of livestock rearing in that adverse ecological region of our country. Considering time, money, and other necessary resources to the researcher and to make the study manageable and meaningful from the research point of view it has become necessary to inflict certain limitation as mentioned below:

- i. This study was confined to two union of Assasuni upazilla under Satkhira district.
- ii. The characteristics of the respondents were many in number but only 12 personal and socio-economic characteristics were selected for investigation in this study.
- iii. The interview schedule was prepared in English but was translated into mother tongue while taking data.
- iv. For information about the study, the researcher depended on data as furnished by the selected male and female respondents randomly during collection of data. .

The findings could be applicable only for the study area and only for the similar situations of physical, socio-economic culture and geographic conditions.

1.5 Assumption of the Study

“An assumption is the supposition that apparent fact and principle to find out the true in the light of the available evidence” (Goode and Hatt, 1945). The following assumptions were in the mind of the researcher while undertaking this study:

- i. The selected respondents were capable of furnishing proper responses to the questions contain in the interview schedule and responses furnished by the respondents were valid.

- ii. Information furnished by the respondents included in the sample was the representative of the whole population of the study area.
- iii. The researcher who acted as interviewer was well adjusted to the social environment of the study area .Hence; the data collected by him from the respondents were free from bias.
- iv. The respondents selected for the area were competent enough to the reply the questions made by the investigator.
- v. The researcher who acted as an interviewer was well adjusted to the social and environment of the study area.

1.6 Definition of Terms

Age: It may be defined as the stretch of them between birth and the time of interview. It was measured in terms of actual years.

Educational Qualification: Education refers to the development of desirable knowledge, skill and attitude in individual male and female through the experience of reading, writing, observation and other related activities .It is measured in terms of years of formal schooling.

Family Size: Family size of the respondents is defined as the number of individuals in the family including herself, her husband, children, brother, sisters and ant other permanent dependents members that live and eat together.

Farm Size: It refers to the area owned by farmer including the homestead on which he carried on her farming and family business, the area being estimated in terms of full benefit to the farmer.

A farmer is considered to have full benefit from cultivated area either owned by himself or obtained on lease from others and half benefit from the area, which was either cultivated by herself on lease or given to others from cultivation on rent basis.

Experience: It refers to the livestock rearing, crop production and aquaculture experience in years.

Family income: It is defined as the total earning of an individual and the members of the family from crop, livestock, fish and other sources (service, business) during a year. It was expressed in taka.

Extension Contact: It refers to use different mass media such as TV, radio, contact with the peer group, DAE officers and other extension agents.

Cosmopolitanism: It refers to the orientations or exposure of the respondents external to his social system.

Knowledge: Literally, knowledge means knowing on what ones know about a subject, facts, persons etc. Here agricultural knowledge was the extent of basic understanding of the respondent in different aspects of agricultural subject matters. It includes the basic understanding of the use of different agricultural activities i.e. crops, livestock, fisheries etc.

Livestock: Livestock are the domesticated animals raised in an agricultural setting to provide labor and produce commodities such as meat, eggs, milk, fur, leather, and wool.

Fallow Land: It is the term referring to a land which has been ploughed and tilled but left unseeded during growing season.

Grazing Land: The land used primarily for production of native forage plants for livestock grazing as differentiated from lands where a crop is harvested.

Aquaculture: It's also known as aqua farming, is the controlled cultivation of aquatic organisms such as fish, crustaceans, mollusks, algae and other organisms of value such as aquatic plants.

Poultry Farming: It is the form of animal husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food.

Goat Farmers: It refers to those farmers who are engaged in goat rearing activities in their families for income generation.

Cattle Farmers: It refers to those farmers who are engaged in cattle rearing activities in their families for additional income.

Production: It refers to the yearly number of livestock that are reproduced, purchased, obtained from donation etc. in a family excluding the number of loss and death.

Soil Salinity: It is the salt content in the soil; the process of increasing the salt content is known as salinization. Salts occur naturally within soils and water. Salination can be caused by natural processes such as mineral weathering or by the gradual withdrawal of an ocean.

Contact with Mass Media: It refers to the contact with different mass media by the respondent women to acquire information and knowledge regarding livestock rearing.

CHAPTER II

REVIEW OF LITERATURE

Review of literature gives the clear and concise direction of the researcher for conducting the experiment. In this chapter, review of literatures relevant to the objectives of this study was presented. This was mainly concerned with causes, consequences and problems of livestock rearing. There was serious dearth of literature with respect to research studies on this aspect. So, the directly related literatures were not readily available for this study. Some researchers addressed various aspects of the attitude of rural people and its effect on client group and suggesting strategies for their emancipation from socio-economic deprivations. A few of these studies relevant to this research are briefly discussed in this chapter under the following six sections:

- i. Concept of attitude, components of attitude, formation of attitude and review related to measurement of attitude
- ii. Past related research on rural agricultural activities
- iii. Previous research studies related to livestock rearing
- iv. Relationship between the selected characteristics of the respondents and their extent of attitude
- v. Research gap of the study
- vi. Conceptual framework of the study

2.1 Concept of Study and Past Related Research

2.1.1 Concept of Study

Attitude may be thought of as a person perspective toward a specific target and way of predisposition to act, perceive, think and feel in relation to something. It is expressed as one views regarding an object as positive or negative, favorable or unfavorable, like or dislike etc.

with varying degrees (Bhuiyan, 2012). Eleven different persons have defined attitude in different ways. Some of these are mentioned below: Attitude as the effect for or against a psychological object defined by Thurstone (1928). Attitude means one's feeling towards persons, ideas, institution, practices of facts (Morgan et al., 1929). Attitude as a specific mental disposition towards an incoming or arising experience, whereby that experience is modified, or in other words, it is a condition of readiness for a certain type activity (Warren, 1934). Goode (1945) in his Dictionary of education defined the term attitude as a state of mental and emotional readiness to react to situations, person or things, in harmony with a habitual emotional readiness to react to situations, person or things, in harmony with a habitual pattern of response previously conditioned to or associated with these stimuli. Green (1954) distinguished three kinds of attitude universe to represent three different classes of individual responses to sets of social objects. These are: i) verbal attitudes, given in response to question, ii) spontaneous verbal attitude, usually expressed in normal conversation and iii) action attitudes which include both verbal and non-verbal behavior directed towards object in referent class. Sherif and Sherif (1956) defined the term attitude as a relatively stable tendency to respond with a positive or negative effect to a specific referent. McGrawth (1966) defined attitude as the learned orientations towards objects, or predisposition to behave in certain ways towards a given objects or a class of objects. An attitude has always in object, person, thing or concept and it may be general or specific.

Drever (1968) defined attitude as more or less a stable set or disposition of opinion, interest or purpose, involving expectancy of certain kind of experience and readiness with appropriate kind of response. Doob (1948) stated that attitude affects behavior since an implicit, drive producing response considered socially significant in the individual society. If this definition is broken down typographically into phases and clauses, an attitude implies the following.

- i) It is an implicit response.

- ii) It is both anticipatory and mediating reference to covert responses.
- iii) It is evoked by a variety of stimulus patterns as a result of previous learning, or of gradients of generalization and discrimination.
- iv) It is itself a cue and drive producing.
- v) It is considered socially significant in the individual's society.

Allport (1935) who devoted the major part of her life to research on attitude, defined the term in the following manner. An attitude is a mental and neural state of readiness, organized through experience, exerting experience or dynamic influence upon the individual, response to all objects and situation with which it is related.

2.1.2 Components of Study

Krech (1962) explained attitude as a system of three interrelated components and the authors express as, as systems, we are emphasizing the interrelatedness of the three attitude components become mutually interdependent about an object are influenced by their feelings and action tendencies toward that object will tend to produce changes in her feelings and action tendencies toward it. Another definition of attitude made by Triandis (1971), "an attitude is an idea changed with emotion which predisposes a class or actions to a particular class or social situations". This definition suggests that attitude has three components. These components are cognitive, affective and behavioral.

- i. The cognitive component of an attitude consists of the belief of the individual about the object. This may also be said as understanding, knowledge and conception.
- ii. The feeling or affective component with the object. The objects in felt to be pleasing or displeasing.

- iii. The action or behavioral component of an attitude includes all the behavioral readiness associated with the attitude. Attitude as a system bearing these three components is expected to be consistent but there may have some degree of inconsistency.

2.1.3 Formation of Study

The term study formation is important within the individual in order to ensure more accurate prediction about their behavior and to have greater control over action. Rosenberg (1956) studied on goals and attitude and found that the individuals coping with various problems try to satisfy his wants and develop attitudes. He develops favorable attitude towards objects that satisfy his wants, final goal object will be favorably evaluated and develops unfavorable attitude towards objects that block the achievement of his goal. Krech (1962) from the results of different experiments and observations enlisted individual's wants, information, group affiliations and personality as factors for attitudes while coping with various problems in trying to satisfy his wants. He develops favorable attitudes towards objects and people that satisfy his wants and unfavorable attitude towards objects and persons that block the achievement of his goal.

2.1.4 Review Related to Measurement of Study

Getting information from data of social science is not so easy. There is no standard measurable unit to convey the meaning of the behavior of respondents to the people. But scientific survey measurement is a key tool. For this reason, many scientists had developed techniques for measuring attitude like any other psychological concept. Many opined that attitude may be measured from respondent's behavior and opinion. But these are not correct enough to assess one's attitude.

Because, people are often unwilling to express opinions and may simply answer that they are undecided or do not know or are uncared of their attitudes towards a given psychological object. On the other hand, in many situations behavior is designed to conceal feeling or behavior observed may be determined by factors data quantitatively. For statistical analysis and scientific interpretation there must be quantitative data. In this regard, Thurstone (1928) 14 made a good contribution by evolving a scale named as Thurstone scale for measuring attitudes. In 1928, he first adopted the methods of psychological scaling originated by year to the scaling of judgments of favorableness and unfavorable toward various objects.

i) The Method of Equal Appearing Intervals

This method was developed by Thurstone (1928). This technique is the approximation of interval scale. An interval scale is one on which the distances between the points on the measuring instrument are known and on which equal numerical distances represent equal distance along the continuum being measured (Selltiz et al., 1959). The first step to construct this scale is to collect a large number of statements usually ranging from 100-200 related to attitude being investigated. A large number of judges usually from 50 to 300, working independently are to classify this statement into eleven groups or piles. In the first pile, the judge places the statement he considered most unfavorable to the object, then he considered the next most unfavorable. In the eleventh piles, the statements he considers most favorable. The sixth or the neutral positions defined as the point at which there is neither favorableness nor favorableness. The judges are not asked to give their own opinions, but merely to estimate the degree of favorableness or unfavorableness expressed by each statement. The scale value of a statement is computed as the medium position to which it is assigned by the judges. Statements that have too broad a scatter are discarded as ambiguous or irrelevant.



The formal selections made, taking those statements about twenty, which scale values relatively, equally spaced along the continuum. The form of statements with which they agreed, the score for each respondent is the mean scale values or items with which he showed agreement.

ii) Method of summated ratings

This method was developed by Likert (1932) and was used more or less similar to the other Thurston scale. The difference is that this method does not require 15 panel of judge ratings. It is less cumbersome and takes less time to construct. This scale is more reliable than Thurstone (Selltiz et al., 1959). The procedure for constructing this type of scale starts with the selection of a large number of statements which are considered, relevant to the attitude being investigated. Statements failing to meet the prescribed standards are eliminated from the scale. The selected statements should be the expression of desired behavior as far as possible and not statements of facts. The favorable and unfavorable statements are distributed randomly throughout the scale. The ambiguous statements are avoided and only clear, concise and straightforward ones are retained. The half of the statements are so worded that the response of agreement indicates a favorable response to the rest a response of agreement indicates an unfavorable reaction. The favorable and unfavorable statements are distributed randomly throughout the scale. The respondents are asked to check whether they strongly agree, agree, undecided, disagree, and strongly disagree with each statement. These four alternative responses were assigned scores of 4, 3, 2, 1 or 1, 2, 3, 4 in proper order, the direction of scoring determined by the favorableness or unfavorableness of each statement. Sometimes scores of 3, 2, 1, 0 and 0, 1, 2, 3 were preferred for weighting the statements. Each individual's total score is computed by adding his item score.

2.2 Past Related Research

Activities of rural people can be divided into two broad categories: agricultural and non-agricultural activities. Homestead vegetables cultivation, crop production, post-harvest activities in agriculture farming, poultry rearing, management of livestock, fisheries, bee keeping, sericulture, etc., are the most important agricultural activities.

Livestock: Livestock is the basis of survival for poor and land low households in Bangladesh. The poorest peoples collect dung from fields for making dried dung cakes that they sell during the winter. One strategy for the very poor is taking animals on shared ownership, whereby poor people care for richer people's animals in return for 50% of its production including offspring (Islam, 2008). Dairy provides a viable subsidiary occupation for the unemployed rural poor (Shamsuddoha, 2009). Parveen (2008) reported that care of all animals is the domain of peoples. Cattle, sheep and goats are led to graze by older peoples and children, while housewives prepare feed, feed and clean animals, and often milk cows. Studies quoted by Jahan and Rahman (2003) confirm this - but peoples usually do not milk cows. Eggs and milk tend to be sold by peoples, primarily within the village. They also found that livestock rearing was difficult for peoples-headed households due to the small number of working members. Goat and cow rearing (even on a shared-basis) requires collection of fodder or taking the animals regularly for grazing. They also reported that peoples often face difficulties to get support from government veterinary hospitals.

Poultry: Poultry (chicken and ducks) rearing at household level in Bangladesh is a traditional method. It is an integral part of agro-business of the village community. About 89% of the rural households rear poultry and the average number of birds per household is 6.8 (Islam et al., 2003). Usually poultry related work is carried out by peoples (Rahman, 2003), which play vital role for income generation. In rural areas, 94% of the poultry is owned by peoples

(BRAC, 2007). Major involvement of peoples in this sector is due to the fact that it requires minimum land, short capital and not very high skills. Poultry production by poor rural households contributes to income, nutrition, food security, savings and insurance (Nielsen et al., 2003; Sonaiya, 2007; Smucker and Wisner, 2008). Furthermore, poultry production constitutes a quick and high return investment opportunity (Islam et al., 2010) for improving income level. In fact among the rural poor, poultry is found to be a crucial livelihoods asset for the poorest segments, i.e., households that are in the first income quintile (Roland-Holst et al., 2007), which is associated with breaking out of poverty traps (Alabi et al., 2006; Guèye, 2007). However, it is not without risk. Recent outbreaks of highly pathogenic Avian Influenza caused severe economic damage (FAO, 2006).

Homestead Vegetable Cultivation: Homestead gardening is the main agricultural activity of rural peoples in Bangladesh (Khan et al., 2009), which provides the major share of livelihood resources for poor farmers (Ali et al., 2008). In the rural areas, home gardens are a well-established land-use system where different vegetables and trees are grown, capital input is low, simple techniques are applied and the family members themselves participate as labor. More than 60 types of vegetables of indigenous and exotic origin are grown. Primarily, homestead gardens are the source of supplementary food which plays an important role to meet nutrient requirements for a family. Vegetables from homestead are mostly consumed at home and only the surplus is sold (HKIB, 2008). Plants are generally grown in the back yard, at the pond side, and around the cow shed (Millat-e-Mustafa et al., 2000). Homestead gardening improves the resources of poor farmers and also meets several socio-economic and ecological conditions which contribute to sustainability (Khan et al., 2009).

Aquaculture: Traditionally, fishing is an occupation for the peoples of every religion and only men are involved in catching fish, with peoples in the supporting roles of making nets and in sorting and drying of fish (Sultana, 2006).

In coastal areas, rural peoples are directly or indirectly involved in fishery activities - mostly processing and marketing (Shelly, 2005; Sultana et. al., 2005). However, peoples do cultivate ponds, especially small ponds close to Situation of peoples in Bangladesh: A brief overview homestead (known as pagar) for generating income. Pond fish culture can create employment and improve the quality of life (Rahman and Naoroze, 2007).

Non-agricultural activities: Traditionally, rural peoples are practicing non-farm self-employment activities such as handicrafts (dressmaking, nakshikatha, wall mats, household accessories, baskets making, jute bags, bamboo work, embroidery) or cigarette (biri) making (Al-Amin, 2008). Some peoples operate grocery shops (especially if adjoining their homes), or travel from village to village to selling clothes and other items (Fakir, 2008; Farid et al., 2009). The poorest propels are finding work such as gathering firewood, laboring in brick 18 fields, and earthwork on roads, and in rural industries. Peoples are also engaged in rice/paddy trading, rent of rickshaws, studio business, preparing and supplying fishing nets and other fishing instruments, and so on. They also work as domestic helpers in other peoples place (Hossain and Bose, 2004), where payment is often minimal. Earnings may be very low, but such home work has the advantage of being flexible, fitting in around other domestic and agricultural tasks (Kabeer, 2008). With access to micro-credit, peoples are also investing in a range of non-farm businesses (Kelkar et al., 2004). Due to have limited employment opportunities in the rural areas, many peoples migrate from villages to the city in search of jobs. Mainly they employed in the garment industry. In Bangladesh, over 3 million peoples are working in the garment industry and 85 percent of these workers are peoples (Alam et al., 2011). In addition, every year Bangladeshi peoples also migrate to Middle-East countries for earning. A total of 24,838 Bangladeshi female workers secured their overseas employment in 2010 (BMET, 2011).

2.3 Previous Research Studies Related to Livestock Rearing

This study is concerned with the socio-economic study on the livestock rearing. Available literatures were extensively reviewed to search out related works carried out in the Sher-e-Bangla Agricultural University as well as in other places of Bangladesh. But a very few studies directly related to the present study were found. These are discussed below:

Selvam (2004) conducted a study in five villages of Namakkal district, Tamil Nadu, India to find out the economic potential of free-range local poultry rearing by rural peoples. The farms were post-stratified into small, medium and large categories. The flock sizes were 5, 12 and 26, and egg production for each flock size was 44, 49, and 52, respectively. The sale price of eggs and birds on free range rearing was much higher than sale price of commercial eggs and broilers. 19 Kozarova (2002) conducted a study on the prevention and control of coccidiosis has been the essential component of successful and profitable poultry rearing. Good management practices and hygiene help to prevent the spread of the disease. To control coccidiosis, prophylactic medication or vaccination were absolute requirements. Anti-coccidial drugs are routinely and continuously administered in the feed. The main problems associated with the chemotherapeutic approach to controlling coccidiosis, the emergence of drug resistant strains and drug residues, are met by the requirement for the use of vaccines. The vaccines represent a biological approach to the control of coccidiosis. In spite of the advances in chemotherapy, management, nutrition, and genetics, coccidiosis still remains the most important and expensive disease of poultry production. Hansen (1992) in conducting research for Danish poultry breeders is mixed. This uncertainty is mostly due to the likely outcome of the GATT negotiations which will liberate the market. The EC reforms, similarly leading to market liberalization, will have some influence but as the EC subsidies for poultry are low the sector will not be harmed to any great extent.

2.4 Relationship between the Selected Characteristics of the Respondents and Their Perception on Causes and Consequences of Livestock Rearing

The reviews related to the selected characteristic of rural farm peoples and their extent of attitude towards in different agricultural activities rearing activities was not available. Yet the researcher tried her best to find out the related reviews. Here describes the recent attitude related reviews, which were found.

2.4.1 Age and Perception

Chowdhury (2003) found in his study that age had no relationship with attitude towards livestock rearing. Sarker (2002) found that age of the world vision farmers had no significant relationship with their attitude. Bari (2000) reported in his study that age of the farmers had no significant relationship with their attitude. Verma and Kumar (1991) conducted a study on comparison of 20 farmer's attitude towards buffalo management practice in adopted and non-adopted village. The study revealed that there was relationship between age and attitudes in case of adopted village and they found no significant relationship between age and attitude of the farmers of non-adopted village. Sarker (1983) observed that age of the farmers had no relationship with their attitude towards poultry rearing. Singh and Kunzroo (1985) obtained similar type of findings. Therefore, the related reviews of literatures were cited above regarding attitude and age. It may be concluded that age may have relationship between attitudes towards poultry rearing.

2.4.2 Education and Perception

Zahan (2008) studied that education had significant relationship with attitude towards livestock rearing. Sarker (2002) found that education had positive correlation with the World Vision farmer's attitude. Verma and Kumar (1991) reported that there was positive and significant relationship between education of farmers and their attitude on non-adopted

village but the relationship was not significant in adopted village. Kumari (1998) from the study on communication effectiveness of selected mass media conducted that there was a significant association between education of the respondents (rural peoples) and their attitude. Kashem (1987) found that attitude of the small farmers had significant positive relationship with their educational level. Singh and Kunzroo (1985) in their study revealed that there was positive and significant relationship between education of farmers and their attitude. Therefore, the related reviews of literatures were cited above regarding attitude and education. It may be concluded that education may have positive relationship between attitudes towards poultry rearing.

2.4.3 Annual Family Income and Perception

Chowdhury (2003) found that family income of farmers had positive significant relationship with their attitude. Shehrawat et al. (2002) observed in their article a significant and positive relationship between income of family 21 and attitude of farmers. Islam and Shahidullah (1989) found a significant positive relationship between family income and poultry rearing. Kashem (1987) found that income of the small farmers had no significant relationship with their attitude of the farmers. Therefore, the related reviews of literatures were cited above regarding attitude and annual family income. Therefore, it may be concluded that annual family income may have relationship between attitudes towards poultry rearing.

2.4.4 Contact with Service Providers and Perception

Zahan (2008) studied that contact with service providers had a significant relationship with attitude towards livestock rearing. Sadat (2002) reported that extension media contact had significant positive relationship with attitude of both beneficiaries and non-beneficiaries. Kaur (1988) found that extension contact and attitude had significant influence upon opinion, level of knowledge and adoption of selected programs of rural peoples.

Gura (1986) suggested that rural peoples need to be recognized as a group with specific extension and training needs. Group approaches, compared to methods of extension that are general to individuals, have potential to extent the benefits of extension efforts and to increase impact of extension work. He opined that group approach of peoples rather than individual approach might help to reduce the social and cultural restriction that impedes contact between female farmers and male extension agent. Therefore, the related reviews of literatures were cited above regarding attitude and extension contact. Therefore, it may be concluded that extension contact may have relationship between attitudes towards poultry rearing.

2.4.5 Use of Mass Media and Perception

A few studies were found related use of mass media and attitude. However, other literatures showing the relationship between extension media and attitude that are more likely use of mass media and attitude are cited below: Noor (2010) observed that extension contact had no relationship with attitude. Similar findings were obtained by Zahan (2008), Bari (2000) and Habib (2000) in their study. Zahan (2008) studied on attitude of rural peoples towards livestock rearing at Kapashia upazila in Gazipur district and she found that contact with mass media had no significant relationship with their attitude toward livestock rearing. Bhuiyan (2008) reported a significant and positive relationship between extension contact and attitude. Shehrawat (2002) also found similar result in his study. Islam (2007) found in the study of attitude of farmers" towards modern jute cultivation that there was negative significant relationship between extension media contact and attitude. Chowdhury (2003) observed no relationship between extension media contact and attitude of farmers towards crop diversification. Sadat (2002) reported in his study that extension media contact had significant relationship with PROSHIKA-beneficiaries attitude towards PROSHIKA.

Nuruzzaman (2001) revealed that extension contact of the FFS farmers was positively significant with their attitude on IPM but in case of non-FFS farmers, there was no significant relationship with their attitude on IPM. Vidyashankar (1997) reported that the media participation had positive relationship with the attitude towards seed production programmed of seed growers. Kaur and Singh (1991) revealed that extension contact and mass media exposure 23 influenced the rural peoples to form favorable attitude and as a result the rate of adoption of smokeless chula was increased. Thomas et al. (1990) observed that group meetings had significant relationship with the adoption of integrated pest management practices among the cotton growers of Texas. Ajore (1989) observed in his study that mass media exposure of farmers had a significant relationship with their attitude towards chemical fertilizer. Similar findings were obtained by Verma and Kumar (1991), Noor (1995), Paul (2000), Mannan (2001), Sarker (2001) and Rahman (2001) in their respective studies. Karim (1973) found that the higher the extension exposure of the farmer, the higher was their adoption behavior in respect of fertilizer.

2.4.6 Knowledge on Livestock Rearing and Perception

Tarannum (2013) found a positive significant relationship between knowledge and attitude in her study. Bhuiyan (2008) and Zahan (2008) found a positive significant relationship between knowledge and attitude. Similar results were obtained by Afrad (2002), Siddique (2002), Haque (2002), Sarker (2002), Mannan (2001), Paul (2000), Nuruzzaman (2001) and Ali (1995) in their respective studies. Sadat (2002) study revealed that agricultural knowledge was positively associated with the attitude of non-beneficiaries towards PROSHIKA but no relationship was found between these two variables in case of PROSHIKA beneficiaries. Bari (2000) concluded that agricultural knowledge of rice growers had no significant relationship with their attitude towards hybrid rice AALOK 6204. Sarker (2001) found that the knowledge of the world vision farmers had a significant positive relationship with their attitude towards

organic homestead gardening practices. Similar findings were obtained by Ali (1995), Nuruzzaman (2001), Bari (2000), Paul (2000) and Rahman (2001) in their respective studies.

2.4.7 Other Selected Characteristics of Respondents and Perception

There was found a very little or no review on livestock rearing experience, training exposure, livestock management practices, financial facilities and marketing amenities regarding livestock rearing by respondents.

2.5 Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. Studies on individual, group and society revealed that acceptance of modern technologies is conditional upon many factors. Some of these are social, personal, economical and situational factors and the behavior of respondents are influenced by these characteristics. The hypothesis of a research while constructed properly consist at least two important elements i.e.: a dependent variable and an independent variable. A dependent variable is that factor which appears, disappears or varies as the researcher introduces, removes or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon. Variables together are the causes and the phenomenon is effect and thus, there is cause effect relationship everywhere in the universe for a specific events or issues. This study is concerned with the attitude of respondents towards Livestock Rearing in Assasuni Upazila. Thus, the attitude of rural respondents towards livestock rearing was the dependent variable and 12 selected characteristics of the respondents were considered as the independent variables under the study. Attitude of rural peoples towards livestock rearing may be affected through interacting forces of many independent variables. It is not possible to deal with all of the independent variables in a single study. It was therefore, necessary to

limit the independent variables, which include age, level of education, annual family income, livestock rearing experience, usages of mass media, training exposure, livestock management practices, financial facilities, marketing amenities and knowledge on livestock rearing for this study.

Considering the above-mentioned situation and discussion, a conceptual framework has been developed for this study, which is diagrammatically presented in the following.

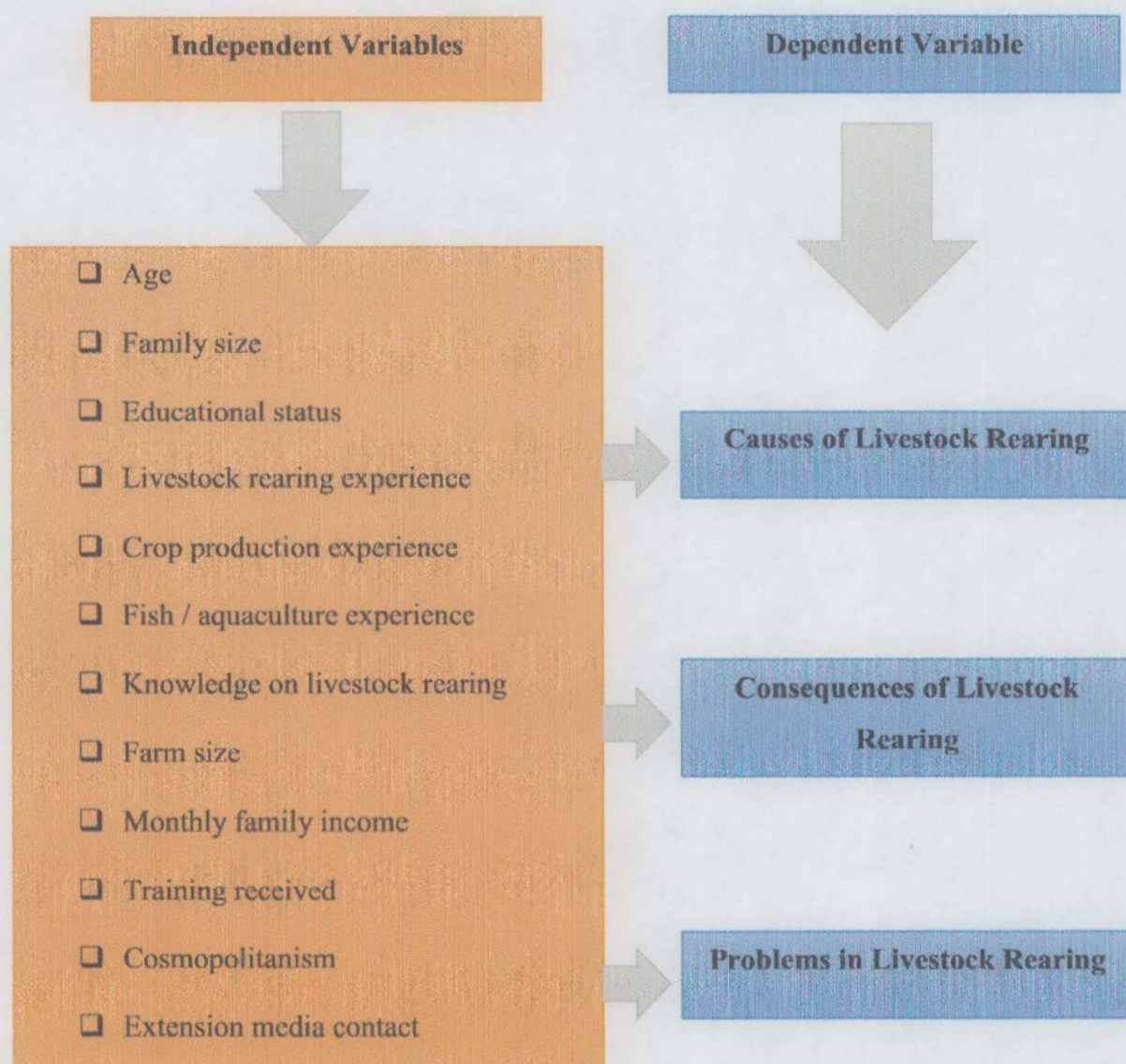


Figure 2.1: Conceptual framework of the study

CHAPTER III

METHODOLOGY

Research methodology is a systematic way to solve a research problem. It can also be defined as the study or description of methods. It may be understood as a science of studying how research is done. It is the general research strategy that outlines the way in which a research is to be undertaken and identifies the methods and procedures to be used in it. A methodology does not set out to provide solution, these methods described in the methodology; define the means or modes of data collection or something how a specific result is to be calculated. So, before conducting a research work it is very important to select proper methods and procedures that are required for collection and analysis of data.

In a methodology a research is responsible for describing clearly what sorts of research design, methods and procedures would be followed in collecting valid and reliable data and to analyze and interpret those data to arrive at correct summary and conclusion. So the methods and procedures followed in conducting this study have been described in this following chapter.

3.1 Design of the Study

An ex-post facto explanatory cross sectional research design was used for the study. The study was quasi-experimental and tried to predict the relationship of the selected characteristics of the respondents with their knowledge and achievement of livestock rearing experience. It was conducted following “diagnostic and descriptive research design”. Data were collected through survey. It was conducted on the basis of collection of data by interviewing the villagers both male and female of a following upazila. It was designed to investigate the causes and consequences of livestock rearing during fallow period of crop production as perceived by the farmer at Assasuni upazila of Satkhira district by cross checking the villagers.

3.2 The Locale of the Study

The study was conducted at different villages of Assasuni upazila under Satkhira district. The researcher deliberately selected the villages from the upazila. The selected areas were in remote corner and depend mainly on farming, agriculture and aquaculture related works and business for their livelihood. An approximate distance of Assasuni upazila from Satkhira city is 30 kilometers. In Assasuni farmers were practicing mainly fish farming, rice and vegetables cultivation besides livestock based agriculture. Assasuni upazila was known for shrimp production. The farmers of Assasuni upazila are faced different climatic disaster and salinity problems. A large area under monocropping and only in monsoon T. Aman rice is grown in September to December. In the others time of the year large area remained fallow due to lack of fresh irrigation water, salinity problem and the underground water also contain soluble salt. So, livestock rearing is the major part of their livelihood.

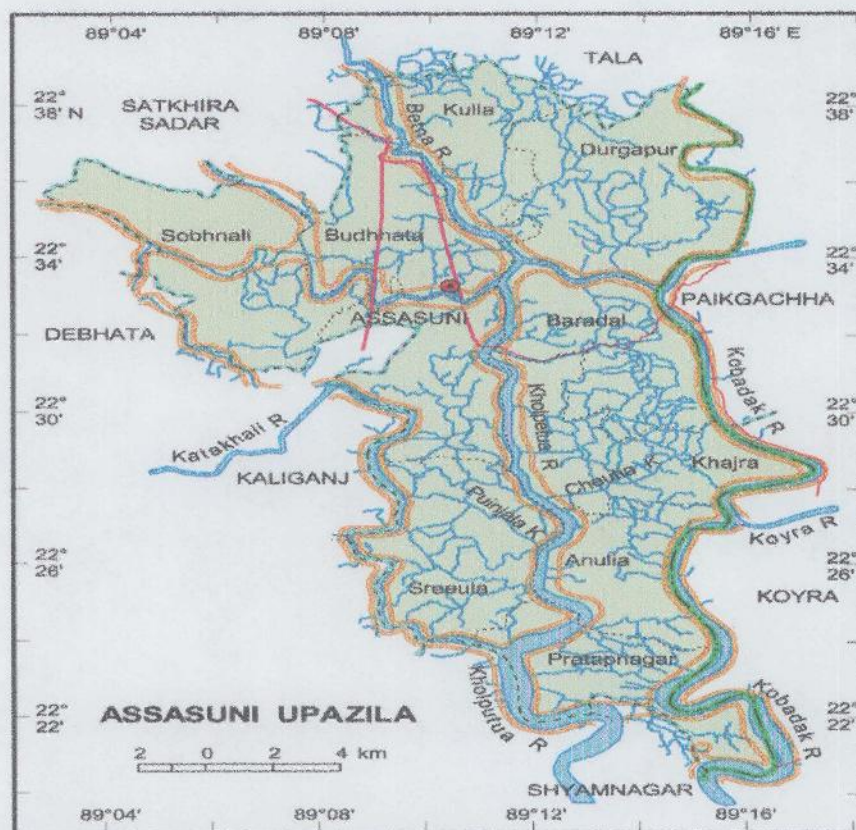


Figure 3.1: A map of Assasuni upazila

3.3 Population and Sampling

Out of seven upazilas of the Satkhira district, the Assasuni Upazila was selected randomly as the locale of the study. As of the 2011 Bangladesh census, Assasuni had a population of 268,754. Males constituted 49.86% of the population and females 50.14%. Assasuni Upazila is divided into 11 union parishads: Anulia, Assasuni, Baradal, Budhhata, Durgapur, Kadakati, Khajra, Kulla, Pratapnagar, Sobhnali, and Sreeula. The union parishads are subdivided into 143 mauzas and 241 villages. Among that, six villages of two union parishads were selected purposively. Among the villagers 111 household respondents which 57.66% male and 42.42% female were selected to cross check the consequences and consequences of livestock farming during fallow period of crop production as perceived by the villagers. The distribution of the population shown in Table-3.1.

Table 3.1: Distribution of respondents in the study area

Serial No.	Name of Union Parishads	Name of Village	Number of respondents
1.	Khajra	Tuardanga	15
		Murarikati	20
		Gadaipur	16
2.	Baradal	Goaldanga	20
		Fakrabad	20
		Buriya	20
		Total= 111	

3.4 Preparation of Interview Schedule

An interview schedule was prepared for collecting valid and reliable information from the villagers. This interview schedule was used as research instrument. It was designed according to the objectives of the study. Different simple and direct questions and scales were added to the interview schedule to collect data required for the selected variables. Before final data collection, the interview schedule was pretested with 20 farmers of the study areas for checking suitability of the statements added in it. On the basis of the pretested result, the interview schedule was carefully corrected and modified according to the directions of the supervisor of the researchers. The final interview schedule was then prepared and made necessary number of copies for the study. The English version of the interview schedule has been added in Appendix A.

3.5 Method and Time of Data Collection

The researchers collected data from the villagers through face to face interview during their free time. The local people, upazila livestock officers and the agricultural officers of the concerned block and areas helped and cooperated the researchers in data collection. During data collection, the researcher made necessary efforts to establish rapport with the villagers and farmers, so that they become free to answer the questions and statements included in the interview schedule. The researcher explained and clarified the questions and statements as much as possible so that the farmers could easily understand and answer the questions correctly. All the data in the interview schedule was collected from the farmers checked properly. The farmers were very cooperative during interview. The researchers collected data from the respondents during May 08 of 2021 to December 23 of 2021. During this time the researcher made several visits for collecting valid and reliable data from the respondents.

3.6 Specification and Measurement of the Variables

3.6.1 Specification of the Variables

In survey research the specification and measurement of the variables constitute an important task. A research hypothesis contains at least two elements, an independent variable and dependent variable. The researcher keeping all these in mind took adequate care in selecting the variables of the study. Before the onset of the study, the researcher visited the study area for several times. The researcher also met the farmers several times to establish an intimate relationship so the farmers can share their experiences. Based on the practical knowledge, side by side an extensive literature review and discussions with relevant experts and academicians, the researchers selected socioeconomic characteristics of these respondents as independent variables and role and problem severity as dependent variable for the study. For the respondents farmer, the selected characteristics (independent variables) are age, educational qualification, family size, farming experience, knowledge on agriculture, farm size, family income, training received, cosmopolitanism and extension media contact.

Table 3.2: Selected characteristics of respondents

- | | |
|-------|----------------------------|
| i. | Age |
| ii. | Family size |
| iii. | Educational qualification |
| iv. | Livestock experience |
| v. | Crop production experience |
| vi. | Aquaculture experience |
| vii. | Farm size |
| viii. | Family income |
| ix. | Training received |
| x. | Cosmopolitanism |
| xi. | Extension media contact |

3.6.2 Measurements of Socioeconomic Characteristics

3.6.2.1 Age

Age of the respondents was determined by counting their age from the birth to the time of data collecting according to their statement. It was expressed in terms of complete year. It was scored one for each year of their age. It is included in the interview schedule as the item No.1 (Appendix A). According to age range the respondents of the upazilas were classified into three categories as shown in Table 3.3.

Table 3.3: Categories of respondents according to their age

Categories	Age limits (years)
Young aged	≤ 35
Middle aged	36-55
Old aged	> 55

3.6.2.2 Family Size

Family size was determined by the total number of family members of a respondent including themselves and the others dependents. Score of a OL and a Farmer on family size was counted by the actual number of their family members. Family size belongs to item No.3 in the interview schedule (Appendix A). On basis of family size, respondents were classified into following categories showing in Table 3.4.

Table 3.4: Categories of respondents according to their family size

Categories	Number of family members
Small	≤ 4
Medium	5-6
Large	> 6

3.6.2.3 Educational Qualification

Formal education was regarded as educational qualification of a respondent. The level of education was measured by the years required to achieve formal education. A score of one (1) was given to the respondents for each year of schooling on the basis of passed class. Again the score of 1 was also given to those respondents who have no formal education but can sign name only. Thus the score of a respondent on educational qualification was determined from response to item No.3 in the interview schedule (appendix A). On the basis of educational qualification, respondents were classified into following categories shown in Table 3.5.

Table 3.5: Categories of respondents according to their educational qualification

Categories	Score (years of schooling)
Illiterate	0
Can sign only	0.5
Primary	1-5
Secondary	6-10
Higher Secondary	11-12
Undergraduate	13-16
Postgraduate	>16

3.6.2.4 Experience

The researcher included mainly three types of experience in livestock rearing, crop production and aquaculture of a respondent was measured by length covered from his/her starting year in farming to the interview on the basis of his/her statement No.5, 6&7 in the interview schedule (Appendix A). On the basis of the experience they are classified into following categories in Table 3.6.

Table 3.6: Categories of respondents according to their experience

Categories	Score
Low	≤ 10
Medium	11-20
High	> 20

3.6.2.5 Knowledge on Livestock Rearing

Knowledge on livestock rearing was measured by asking 5 different questions in relation to the livestock rearing. It was composed of basic knowledge and practices commonly cattle. It appears in item No.8 in the interview schedule (Appendix A). The assigned score for each correct answer was 2. If the answer is partially correct, it is scored 1, A zero was given for wrong or no answer. The total score obtained by a respondent determined his/her knowledge on livestock rearing. The score could range from 0 to 10 where 0 means no knowledge on livestock rearing and 10 meaning high knowledge on livestock rearing. According to knowledge, respondents are classified into following categories as shown in Table 3.7.

Table 3.7: Categories of respondents according to their knowledge on livestock rearing

Categories	Score
Low	≤ 3
Medium	4-6
High	> 6

3.6.2.6 Farm Size

Farm size refers to the total area of land owned by a respondent including homestead area. It also includes the land obtained from others on share cropping/lease or taken from others on lease. The area was being estimated in terms of full of benefits to the respondents. The farm size was calculated using following formula,

$$FS = A1 + A2 + 1/2 (A3 + A4) + A5$$

Where, FS= Farm size

A1= Homestead

A2= Own land under cultivation

A3= Land given to others on barga

A4= Land taken from others on barga

A5= Land taken from others on lease

A6= Others



The farm size was recorded in local unit and then it was converted to hectare. Farm size belongs to item No.9 in the interview schedule (Appendix A). On the basis of farm size, farmers were classified into five categories which are shown in Table 3.8.

Table 3.8: Categories of respondents according to their farm size

Categories	Score (ha)
Landless	≤ 0.02
Marginal	0.02-0.2
Small	0.21-1.0
Medium	1-3
Large	> 3

(BBS, 2016)

3.6.2.7 Monthly Family Income

Family income (monthly) was estimated by considering total earning in the last year from different source viz. crop, livestock, fish, business, service and others. Family income is included in the interview schedule as item No.10 and (Appendix A). The respondents were classified into following categories according to monthly income as shown in Table 3.9.

Table 3.9: Categories of respondents according to their monthly family income

Categories	Taka (BDT)
Low	<10000
Medium	10000-20000
High	>20000

3.6.2.8 Training Received

Training score of the respondent was measured depending on the number of training he/she had received. For computing training score (1) was given receiving on the training only. Respondents who have received one or two or three training, were assigned a score of 1, 2, 3 respectively. The score 0 was assigned if they do not take any train. Training received is included in the interview schedule as item No.11 (appendix A). The respondents were classified into following categories in the Table 3.10.

Table 3.10: Categories of respondents according to their training received

Categories	Score
No	0
Low	1-2
Medium	3-5
High	>5

3.6.2.9 Cosmopolitanism

The cosmopolitanism score of a respondent was measured to determine the extent of his/her cosmopolitanism on the basis of his/her frequencies of visits to the places outside of his/her own social system. It was determined by counting the number of visits made in five different places which indicate the extent of visit as frequently, occasionally, rarely and not at all and the scores were 3, 2, 1 and 0 respectively. The score could range from 0 to 15 where '0' meaning no cosmopolitanism and "15" meaning very high cosmopolitanism. Cosmopolitanism of the respondents is shown in item No.12 (Appendix A). Respondents are classified into different categories according to their cosmopolitanism as shown in Table 3.11.

Table 3.11: Categories of respondents according to their cosmopolitanism

Categories	Score
Low	≤ 5
Medium	6-10
High	>10

3.6.2.10 Extension Media Contact

Extension media contact of a respondent was determined as his/her degree of exposure with different extension media and persons that acted as information sources to motivate him/her and to broaden his outlook to new practices. A list of media sources was selected in consulting with local extension personnel, farmers and by reviewing related literature. It is included in item No13. In interview schedule (Appendix A).

The score could range from 0 to 96 where “0” meaning no extension media exposure and “96” meaning very high extension media exposure. The respondents were classified into following categories according to extension media exposure as shown in Table 3.12.

Table 3.12: Categories of respondents according to their extension media contact

Categories	Score
No	0
Rare	1-24
Occasional	25-48
Often	49-72
Regular	>72

3.6.3 Measurement of Focus Variable

3.6.3.1 Causes of Livestock Rearing of This Area to the Farmers Score

In this study, each respondent was asked to indicate his/her causes of different livestock rearing. Ultimately 20 causes of livestock rearing were incorporated in the interview schedule. Each respondent was asked to identify the causes of livestock rearing against each of the statements. The causes of livestock rearing was related as strongly agree, agree, undecided, disagree and strongly disagree and the rating scale was assigned as 5, 4, 3, 2, 1 respectively. The cause of livestock rearing score of a respondent was determined by summing the scores of all the causes of the item No.14 in the interview schedule (Appendix A). The possible range of score was 20 to 100 for the respondents. The cause of livestock rearing was classified into following categories as shown in table 3.13.

Table 3.13: Categories of causes of livestock rearing of this area to the farmers score

Categories	Score
Low number of causes for LR	≤ 33
Medium number of causes for LR	34-66
High number of causes for LR	> 66

To compare the perception of the respondents regarding the selected statements on causes of livestock rearing a Farmers Perception Index (FPI) will be calculated by using the following formula:

$$FPI = N_{sa} \times 5 + N_a \times 4 + N_u \times 3 + N_{da} \times 2 + N_{sda} \times 1$$

Where,

FPI= Farmers Perception Index

N_{sa} = Number of respondents rated the statement as strongly agree

N_a = Number of respondents rated the statement as agree

N_u = Number of respondents rated the statement as undecided

N_{da} = Number of respondents rated the statement as disagree

N_{sda} = Number of respondents rated the statement as strongly disagree

Respondent or farmer perception index is the ratio of observe cause perception score to possible cause perception index and multiple by 100. It was calculated the following formula:

$$\text{Farmer perception index} = \frac{\text{Observed perception score on causes}}{\text{Possible perception score on causes}} \times 100$$

3.6.3.2 Consequences of Livestock Rearing of This Area to the Farmers Score

In this study, each respondent was asked to indicate his/her consequences of different livestock rearing. Ultimately 20 consequences of livestock rearing were incorporated in the interview schedule. Each respondent was asked to identify the consequences of livestock rearing against each of the statements. The consequences of livestock rearing was related as strongly agree, agree, undecided, disagree and strongly disagree and the rating scale was assigned as 5, 4, 3, 2, 1 respectively. The consequence of livestock rearing score of a respondent was determined by summing the scores of all the consequences in the item No.15 in the interview schedule (Appendix A). The possible range of score was 20 to 100 for the respondents. The consequences of livestock rearing was classified into following categories as shown in table 3.14

Table 3.14: Consequences of livestock rearing of this area to the farmers score

Categories	Score
Low number of consequences for LR	≤ 33
Medium number of consequences for LR	34-66
High number of consequences for LR	> 66

To compare the perception of the respondents regarding the selected statements on consequences of livestock rearing a Farmers Perception Index (FPI) will be calculated by using the following formula:

$$FPI = N_{sa} \times 5 + N_a \times 4 + N_u \times 3 + N_{da} \times 2 + N_{sda} \times 1$$

Where,

FPI= Farmers Perception Index

N_{sa} = Number of respondents rated the statement as strongly agree

N_a = Number of respondents rated the statement as agree

N_u = Number of respondents rated the statement as undecided

N_{da} = Number of respondents rated the statement as disagree

N_{sda} = Number of respondents rated the statement as strongly disagree

Respondent or farmer perception index is the ratio of observed consequences perception score to possible cause perception index and multiple by 100. It was calculated the following formula:

$$\text{Farmer perception index} = \frac{\text{Observed perception score on consequences}}{\text{Possible perception score on consequences}} \times 100$$

3.6.3.3 Problems in Livestock Rearing of This Area to the Farmers Score

In this study, each respondent was asked to indicate his/her problems of different livestock rearing. Ultimately 10 problems of livestock rearing were incorporated in the interview schedule. Each respondent was asked to identify the problems of livestock rearing against each of the statements. The problem of livestock rearing was related as highly severe, severe, moderately severe, less severe and not at all and the rating scale was assigned as 4, 3, 2, 1, and 0 respectively. The problem of livestock rearing score of a respondent was determined by summing the scores of all the problems in the item No.16 in the interview schedule (Appendix A). The possible range of score was 0 to 40 for the respondents. The problems of livestock rearing was classified into following categories as shown in table 3.15

Table 3.15: Problems in livestock rearing of this area to the farmers score

Categories	Score
Less severe	≤ 10
Moderately severe	11-20
Severe	21-30
Highly severe	> 30

The severity of a problem of livestock rearing was determined based on problem severity index (PSI). The possible range of problem severity index (PSI) was 0 to 40 for the respondents. The PSI was determined by using the following formula,

$$PSI = N_1 \times 4 + N_2 \times 3 + N_3 \times 2 + N_4 \times 1 + N_5 \times 0$$

Where,

N_1 = Number of respondents extended the problems and related as highly severe

N_2 = Number of respondents extended the problems and rated as severe

N_3 = Number of respondents extended the problems and rated as moderate severe

N_4 = Number of respondents extended the problems and rated as less severe

N_5 = Number of respondents did not extent the problems at all

After determination of PSI, the severity of the problem was determined by following formula

$$(\%) \text{ Severity of the problem} = \frac{\text{Observe problem in livestock score}}{\text{Possible problem in livestock score}} \times 100$$

3.7 Data Processing and Analysis

3.7.1 Data Processing and Tabulation

During data processing, appropriate scoring technique was applied for conversion all the qualitative data into quantitative form. Local units of measurements were converted into standard units. In case of some variables, proper indices and scales were made through the simple accumulation of score assigned to individual or pattern of attributes. Indices and scales were considered the efficient instruments for data reduction and analysis. All personal characteristics were categorized and arranged in simple tables for interpretation and discussion. Number, frequency, percentage, mean, range, standard deviation and correlation were used for statistical description.

All the interview schedules were prepared for data tabulation after completing the field study. Collected data were summarized and inspected thoroughly. A master sheet was prepared to tabulate all the data by transferring all the individual variables in order to meet the objectives of the study.

3.7.2 Compilation of Data

After completion of field survey data from all the interview schedules were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units and qualitative data were converted into quantitative ones by means of suitable scoring whenever necessary. The responses to the questions in the interview schedule were transferred to master sheet to facilitate tabulation.

3.7.3 Categorization of Data

For describing the different characteristics and their problem extension, the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding prevailing in the social system and possible observed scoring system. The procedure for categorization of data in respect of different variable is elaborately being discussed while discussing those variables in section.

3.7.4 Statistical Techniques

The analysis was performed using SPSS (Statistical package for social science) computer package version 25. Descriptive statistics such as range, number, percentage, mean, standard deviation and rank order were used whenever possible. Spearman rank order correlation was used in order to explore the relationship between the concerned variables, throughout the study; at least five percent (0.05) level of probability was used as basis of rejecting a null hypothesis.

CHAPTER IV

RESULTS AND DISCUSSION

The main purpose of this chapter is to describe the findings of the present study. The study investigates the Causes and consequences of livestock farming during fallow period of crop production as perceived by the farmers. In accordance with the objectives, presentation of the findings has been made in the following sections:

- i. Description of the selected characteristics of the farmer's or respondents.
- ii. Causes of Livestock Rearing.
- iii. Consequences of Livestock Rearing.
- iv. Problems in Livestock Rearing.
- v. Relationship between the selected characteristics with causes, consequences and problems.

4.1 Selected Characteristics

The characteristics of the villagers or respondents can include age, gender, family size, educational qualification, farming experience as Livestock experience, Crop production experience, Aquaculture experience, knowledge on agriculture, farm size, monthly family income, training received, cosmopolitanism and extension media contact of an individual.

4.1.1 Personal Characteristics

The personal characteristics of the respondents varied from different ranges. On the basis of the personal characteristics, distribution of respondents is shown below in Table 4.1.

Data presented in table 4.1 showed that highest proportion (43.2%) of the respondents were middle aged. The minimum and maximum age was 19 and 85 years respectively with a mean of 43.72 years and standard deviation 14.47.

Among the respondents (57.66%) of them was male and (42.42%) of the respondents was female.

Table 4.1: Distribution of respondents according to their personal characteristics

Respondents	Categories	Score	N=111		Mean±SD ($\bar{X} \pm \delta$)	Range (observed)	
			Number	%		Min.	Max .
1.Age (Years)	Young	≤35	36	32.4	43.72 ± 14.47	19	85
	Middle	36-55	48	43.2			
	Old	>55	27	24.3		Range (possible): Unknown	
2.Gender (Numbers)	Male	64		57.66			
	Female	47		42.42			
3.Family size (Numbers)	Small	≤4	46	41.4	5.09±1.86	3	15
	Medium	5-6	47	42.3			
	Large	>6	18	16.2		Range (possible): Unknown	
4.Educational qualification (Classes)	Illiterate	0	17	15.3	6.88±4.61	0	17
	Can sign only	0.5	12	10.8			
	Primary	1-5	7	6.3			
	Secondary	6-10	64	57.7			
	Higher Secondary	11-12	6	5.4			
	Undergraduate	13-16	3	2.7		Range (possible):0-21	
	Postgraduate	>16	2	1.8			
5.Livestock experience (Years)	No	0	1	0.9	20.12±10.95	5	50
	Low	≤10	38	34.2			
	Medium	11-20	38	34.2			
	High	>20	34	30.6		Range (possible):0- unknown	
6.Crop production experience (Years)	No	0	23	20.7	23.81±14.00	5	65
	Low	≤10	24	21.6			
	Medium	11-20	28	25.2			
	High	>20	36	32.2		Range (possible):0- unknown	
7.Acquacultur e experience (Years)	No	0	75	67.6	15.58±8.21	5	40
	Low	≤10	20	18			
	Medium	11-20	11	9.9			
	High	>20	5	4.5		Range (possible):0- unknown	

Respondents	Categories	Score	N=111		Mean±SD ($\bar{X} \pm \delta$)	Range (observed)	
			Number	%		Min.	Max
8.Knowledge (Score)	Low	≤3	87	78.4	2.57±1.39	0	8
	Medium	4-6	21	18.9		Range (possible):0- unknown	
	High	>6	3	2.7			
9.Farm size (Hectare)	Landless	≤0.02	2	1.8	0.6572±0.75	0.00	6.57
	Marginal	0.02-0.2	15	13.5			
	Small	0.21-1.0	77	69.4			
	Medium	1.01-3	16	14.4		Range (possible): 0-Unknown	
	Large	>3	1	0.9			
10.Family income (BDTmonth ⁻¹)	Low	<10000	25	22.5	15293.69±8870. 38	5000	850 00
	Medium	10000- 20000	73	65.8			
	High	>20000	13	11.7		Range (possible): 0-Unknown	
11.Training received (Numbers)	No	0	86	77.5	0.279±0.558	0	2
	Low	1	19	17.1			
	Medium	2	6	5.4		Range (possible): 0-Unknown	
	High	>2					
12.Cosmopol itanism (Score)	Low	≤3	93	83.8	2.53±1.14	1	9
	Medium	4-8	17	22.5			
	High	>8	1	0.9		Range (possible): 0-15	
13.Extension media contact (Score)	No	0	0	0	14.16±4.35	6	25
	Rare	1-24	108	97.3			
	Occasional	25-48	3	2.7			
	Often	49-72				Range (possible): 0-96	
	Regularly	>72					

SD= Standard Deviation

According to the data of Table 4.1 the majority of families (42.3%) were medium sized. The minimum and maximum family members of the respondents were 3 and 15 respectively with a mean of 5.09 and standard deviation of 1.86.

The highest portion (57.7%) of respondents had secondary level of education. The minimum and maximum schooling years were 0 and 17 classes respectively with a mean of 6.88 and standard deviation of 4.61.

Highest proportion (34.2%) of the respondents had low and medium level of livestock rearing experience with a mean of 20.12 and standard deviation 10.95. The maximum and minimum experiences range from 50 years to 5 years respectively.

The highest proportion (32.2%) of the respondents had high level of crop production experience with a mean of 23.81 and standard deviation 10.14.00. The maximum and minimum experiences range from 65 years to 5 years respectively.

Also, the highest proportion (67.6%) of the respondents had no aquaculture experience with a mean of 15.58 and standard deviation of 8.21. The maximum and minimum experiences range from 40 years to 5 years respectively.

Table 4.1 showed that the highest proportion (78.4%) of the respondents was low knowledgeable with minimum and maximum score of 0 and 8 respectively. The mean of this variable was 2.57 with a standard deviation of 1.39.

The farm size of the maximum respondents (69.4%) of the respondents was small. The minimum and maximum land sizes of the respondents were 0.00ha and 6.57ha respectively with a mean of 0.6572 and standard deviation of 0.75.

Results presented in Table 4.1 showed that highest portion of the respondents (65.8%) had medium income with a mean and standard deviation of 15293.69 and 8870.38 respectively. The minimum and maximum income was 5000 B.D.T and 85000 B.D.T.

Among the total respondents (77.5%) had no training on different agricultural sectors with a mean and standard deviation of 0.279 and 0.558 respectively. And the maximum number of training 2 to minimum 0 numbers of training.

The data presented in Table 4.1 that (83.8%) of respondents had low cosmopolitanism. The minimum and maximum score of the respondents were 1 and 9 with a mean of 2.53 and standard deviation 1.14.

The data presented in Table 4.1 showed that highest portion (97.3%) of respondents had rare extension media contact with a mean of 14.16 and standard deviation 4.35. The minimum and maximum score of the respondents were 6 and 25.

4.2 Relative Position (rank order) of the Statements Related to Respondents Perception on Causes of Livestock Rearing

The data presented in Table 4.2 showed different causes of livestock rearing and their relative rank order position perceived by the respondents. The score of ranged from 324 to 546 where possible range was 111 to 555.

Table 4.2: Relative position (rank order) of the statements related to respondents perception on causes of livestock rearing

Sl. No.	Causes of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
1.	Paddy is cultivated once a year and the land remains fallow at other times.	102×5	9×4	0×3	0×2	0×1	546	98.37	1 st
2.	There is comparatively more time for grazing cattle.	92×5	19×4	0×3	0×2	0×1	536	96.57	4 th

Sl. No.	Causes of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
3.	Naturally grown grass can be fed.	91×5	15×4	1×3	4×2	0×1	526	94.7	5 th
4.	A source of additional family income.	99×5	12×4	0×3	0×2	0×1	543	97.8	2 nd
5.	Anyone in the family can nurture it easily.	94×5	17×4	0×3	0×2	0×1	538	96.9	3 rd
6.	Milk and fuel are available from cows.	71×5	40×4	0×3	0×2	0×1	515	92.7	6 th
7.	It is the tradition of many aristocratic families.	0×5	21×4	61×3	28×2	1×1	324	58.3	19 th
8.	2nd or 3rd crop production is costly.	4×5	74×4	33×3	0×2	0×1	415	74.7	17 th
9.	The yield of 2nd or 3rd crop is also much less.	3×5	72×4	35×3	1×2	0×1	410	73.8	18 th =
10.	Raising cattle is an easy way to save money.	37×5	73×4	1×3	0×2	0×1	480	86.4	11 th
11.	Livestock acts as a source of emergency money.	53×5	58×4	0×3	0×2	0×1	497	89.5	9 th
12.	Many people use cattle in religious festivals.	30×5	79×4	1×3	1×2	0×1	471	84.8	12 th
13.	Raising cattle is a dependent business.	18×5	89×4	2×3	2×2	0×1	456	82.1	14 th
14.	In need of social festivities. As; Marriage, Akika etc.	67×5	43×4	0×3	1×2	0×1	509	91.7	7 th
15.	Due to the high price of cattle.	22×5	88×4	1×3	0×2	0×1	465	83.7	13 th
16.	With a little investment one can make a profit in less time.	14×5	94×4	2×3	1×2	0×1	454	81.8	15 th
17.	Cattle care is relatively easy.	41×5	68×4	1×3	1×2	0×1	482	86.8	10 th
18.	In addition to the main work, cattle can be easily reared	54×5	57×4	0×3	0×2	0×1	498	89.7	8 th



Sl. No.	Causes of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
19.	Some people kept cattle as a hobby.	5×5	101×4	5×3	0×2	0×1	444	80.0	16 th
20.	Algae are being used as cattle feed in the southern region.	5×5	68×4	37×3	1×2	0×1	410	73.8	18 th =

Paddy is cultivated once a year and the land remains fallow at other times was the first ranked of the causes of livestock rearing at that area. The second cause of livestock rearing was a source of additional family income. Other main causes of livestock rearing was respectively anyone in the family can nurture it easily, there is comparatively more time for grazing cattle, naturally grown grass can be fed, algae are being used as cattle feed in the southern region etc.

4.3 Respondents Perception on Causes of Livestock Rearing

Results presented in Table 4.3 indicate that all of the respondents (100%) had highly score of causes of livestock rearing. The minimum and maximum score was 68 and 95 with the mean of 85.18 and standard deviation of 4.94.

Table 4.3: Distribution of respondents according to their perception on causes of livestock rearing

Causes	Categories	Score	N=111		Mean±SD ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Livestock Rearing (Score)	Low	≤33	0	0	85.18 ±4.94	68	95
	Medium	34-66	0	0			
	High	>66	111	100		Range(possible): 20-100	

SD= Standard Deviation

Paddy is cultivated once a year and the land remains fallow at other times is the main causes of livestock rearing in that area. Besides this the other causes are a source of additional family income, anyone in the family can nurture it easily, there is comparatively more time for grazing cattle, naturally grown grass can be fed, algae are being used as cattle feed in the southern region etc.

4.4 Relative Position (rank order) of the Statements Related to Respondents Perception on Consequences of Livestock Rearing

The data presented in Table 4.4 showed different consequences of livestock rearing and their relative rank order position perceived by the respondents. The score of ranged from 213 to 534 where possible range was 111 to 555.

Table 4.4: Relative position (rank order) of the statements related to respondents perception on consequences of livestock rearing

Sl. No.	Consequences of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
1.	Economic prosperity is coming.	44×5	65×4	1×3	1×2	0×1	485	87.38	4 th
2.	Livestock production has increased.	26×5	83×4	2×3	0×2	0×1	468	84.32	7 th
3.	The food security and nutrition needs of the villagers have been largely met.	3×5	50×4	55×3	3×2	0×1	386	69.54	17 th
4.	These areas have become self-sufficient in meat.	2×5	18×4	68×3	23×2	0×1	332	59.81	18 th
5.	Milk production has increased.	15×5	92×4	0×3	4×2	0×1	451	81.26	11 th
6.	Extreme poverty has been somewhat eradicated.	5×5	94×4	5×3	7×2	0×1	430	77.47	15 th

Sl. No.	Consequences of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
7.	Many women have become self-reliant.	24×5	86×4	1×3	0×2	0×1	467	84.14	8 th
8.	Economic security has been ensured.	13×5	91×4	6×3	1×2	0×1	449	80.90	12 th
9.	Social conditions have improved.	12×5	80×4	17×3	2×2	0×1	435	78.37	14 th
10.	Appropriate use of natural resources has been ensured.	44×5	60×4	7×3	0×2	0×1	481	86.66	5 th
11.	It has been possible to earn some money from the fallow land.	90×5	21×4	0×3	0×2	0×1	534	96.26	1 st
12.	Cattle manure is being used in agriculture as organic manure.	33×5	76×4	1×3	1×2	0×1	474	85.40	6 th
13.	The use of chemical fertilizers is relatively low in these areas.	1×5	8×4	10×3	84×2	8×1	243	43.78	19 th
14.	Using dung in fish farming land is giving good results.	68×5	41×4	2×3	0×2	0×1	510	91.89	2 nd
15.	Peoples are getting a large amount of money from cattle.	11×5	96×4	1×3	3×2	0×1	448	80.72	13 th
16.	Money is being made available in times of crisis.	18×5	92×4	1×3	0×2	0×1	461	83.06	9 th
17.	Unemployment problems of many have been solved.	3×5	92×4	12×3	3×2	0×1	425	76.57	16 th
18.	It has created employment for the elderly and women.	12×5	96×4	2×3	1×2	0×1	452	81.44	10 th
19.	Proper use of uncultivated land has been ensured.	47×5	62×4	2×3	0×2	0×1	489	88.10	3 rd

Sl. No.	Consequences of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)	Score	%	Rank
20.	Social solidarity and brotherhood have been strengthened.	0×5	3×4	16×3	61×2	31×1	213	38.37	20 th

Through livestock rearing, it has been possible to earn some money from the fallow land was the first ranked of the consequences. Using dung in fish farming land is giving good results placed as second rank. Proper use of uncultivated land has been ensured, economic prosperity is coming and appropriate use of natural resources has been ensured obtained 3rd 4th and 5th rank respectively.

4.5 Respondents Perception on Consequences of Livestock Rearing

The data presented in Table 4.5 indicate that almost all of the respondents (98.2%) had highly score of consequences and rest (1.8%) had medium score in consequences of livestock rearing. The minimum and maximum score were 63 and 86 with the mean 77.20 and standard deviation of 4.21.

Table 4.5: Distribution of respondents according to their perception on consequences of livestock rearing

Consequences	Categories	Score	N=111		Mean±SD ($\bar{X} \pm \delta$)	Range (observed)	
			Number	%		Min.	Max.
Livestock Rearing	Low	≤33	0	0	77.20 ±4.21	63	86
	Medium	34-66	2	1.8			
	High	>66	109	98.2		Range (possible): 20-100	

SD= Standard Deviation

Livestock rearing has been possible to earn some money from the fallow land is the main consequence in livestock rearing in that area. Besides this the other consequences are using dung in fish farming land is giving good results, milk production has increased, money is being made available in times of crisis, created employment for the elderly and women etc.

4.6 Relative Position (rank order) of the Statements Related to Respondents Perception on Problems of Livestock Rearing

The data presented in Table 4.6 showed different problems of livestock rearing and their severity perceived by the respondents. The score of severity ranged from 215 to 434 where possible range was 0 to 444.

Table 4.6: Relative position (rank order) of the statements related to respondents perception on problems of livestock rearing

Sl. No.	Problems in Livestock Rearing	Highly severe (4)	Severe (3)	Moderately severe (2)	severe Less (1)	Not at all (0)	Score	%	Rank
1.	There is a shortage of food for cattle during the cropping season.	101×4	10×3	0×2	0×1	0×0	434	97.74	1 st =
2.	Lack of nutritious fodder.	60×4	45×3	6×2	0×1	0×0	387	87.16	6 th
3.	Sometimes grass cannot grow due to salinity and lack of water.	93×4	18×3	0×2	0×1	0×0	426	95.94	2 nd
4.	During the summer there is a shortage of potable water in the bill.	102×4	8×3	1×2	0×1	0×0	434	97.74	1 st =
5.	Lack of good medical treatment for cattle.	62×4	49×3	0×2	0×1	0×0	395	88.96	3 rd
6.	There is no fair market system for buying and selling cattle.	8×4	67×3	19×2	17×1	0×0	288	64.86	8 th
7.	Social recognition and economic problems in raising cattle.	2×4	12×3	74×2	23×1	0×0	215	48.42	9 th

Sl. No.	Problems in Livestock Rearing	Highly severe (4)	Severe (3)	Moderately severe (2)	severe Less (1)	Not at all (0)	Score	%	Rank
8.	Lack of government support.	37×4	74×3	0×2	0×1	0×0	370	83.33	7 th
9.	Farmers lack training in cattle.	56×4	55×3	0×2	0×1	0×0	389	87.61	5 th
10.	Cattle theft occurs.	57×4	54×3	0×2	0×1	0×0	390	87.83	4 th

There is a shortage of food for cattle during the cropping season and during the summer there is a shortage of potable water in the bill was the first ranked of the problems. Sometimes grass cannot grow due to salinity and lack of water placed as second rank. Lack of good medical treatment for cattle, cattle theft occurs and farmers lack training in cattle obtained 3rd 4th and 5th rank respectively.

4.7 Respondents Perception on Problems of Livestock Rearing

The data presented in Table 4.7 indicate that majority of the respondents (92.8%) had highly severe problems and rest (7.2%) had severe problem. The minimum and maximum score was 22 and 38 with the mean 33.45 and standard deviation 2.44.

Table 4.7: Distribution of respondents according to their perception on problems of livestock rearing

Problems	Categories	Score	N=111		Mean±SD ($\bar{X}\pm\delta$)	Range (observed)	
			Number	%		Min.	Max.
Livestock Rearing	Less severe	<11	0	0	33.45±2.44	22	38
	Moderately severe	11-20	0	0			
	Severe	21-30	8	7.2			
	Highly severe	>30	103	92.8			
						Range (possible): 0-40	

SD= Standard Deviation

Shortage of food for cattle during the cropping season and shortage of potable water in the bill during summer season is the main problems in livestock rearing in that area. Besides this the other severe problems are farmers lack training in cattle, lack of good medical treatment for cattle etc.

4.8 Relation between the Selected Characteristics of the Respondents and Their Perception on the Causes, Consequences and Problems of Livestock Rearing

Among the selected twelve characteristics knowledge, cosmopolitanism and extension media contact had significant and positive relationship with causes of livestock rearing at 1% level of significant. Based on the findings null hypothesis could be rejected and research hypothesis was accepted. It means that the higher the knowledge, cosmopolitanism and extension media contact the higher is the causes of livestock rearing. Training received had significant and positive relationship with causes of livestock rearing at 5% level of significant. Educational qualification and family income had positive but non-significant relationship. Age, family size, livestock experience, crop production experience, aquaculture experience and farm size had non-significant and negative relationship. Based on the findings null hypothesis is accepted.

Knowledge, training received, cosmopolitanism and extension media contact had significant and positive relationship with consequences of livestock rearing at 1% level of significant. Based on the findings null hypothesis could be rejected and research hypothesis was accepted. It means that the higher the knowledge, training received, cosmopolitanism and extension media contact the higher is the consequences of livestock rearing. Educational qualification, farm size and family income had positive but non-significant relationship. Age, family size, livestock experience, crop production experience, aquaculture experience and

aquaculture experience had non-significant and negative relationship. Based on the findings null hypothesis is accepted.

Table 4.8: Relationship between the selected characteristics with causes, consequences and problems of livestock rearing

Characteristics (Independent variable)	Dependent variable		
	Causes	Consequences	Problems
1.Age	-0.101	-0.168	0.001
2.Family size	-0.022	-0.028	-0.066
3.Educational qualification	0.127	0.181	0.008
4.Livestock experience	-0.111	-0.154	0.032
5.Crop production experience	-0.034	-0.188	-0.100
6.Aquaculture experience	-0.172	-0.163	-0.244
7.Knowledge	0.290**	0.351**	0.206*
8.Farm size	-0.030	0.047	0.003
9.Family income	0.013	0.124	0.096
10.Training received	0.215*	0.320**	0.213*
11.Cosmopolitanism	0.313**	0.316**	0.261**
12.Extension media contact	0.336**	0.250**	0.266**

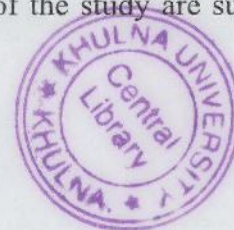
**=Correlation is significant at the 0.01 level (2-tailed) and *=Correlation is significant at the 0.05 level (2-tailed)

On the other hands, cosmopolitanism and extension media contact had significant and positive relationship with problems of livestock rearing at 1% level of significant. Based on the findings null hypothesis could be rejected and research hypothesis was accepted. It means that the higher the cosmopolitanism and extension media contact the higher is the problems of livestock rearing. Knowledge and training received had significant and positive relationship with problems of livestock rearing at 5% level of significant. Age, livestock experience, educational qualification, farm size and family income had positive but non-significant relationship. Family size, crop production experience and aquaculture experience had non-significant and negative relationship. Based on the findings null hypothesis is accepted.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The study was conducted in the Assasuni upazila of Satkhira district to find out the causes and consequences of livestock farming during fallow period of crop production as perceived by the farmers. A well-structured interview schedule was developed based on objectives of the study for collecting information. The independent variables were: age, educational qualification, family size, farming experience, knowledge on agriculture, farm size, family income, training received, cosmopolitanism and extension media contact. The dependent variables of this study were causes of livestock rearing, consequences of livestock rearing and problems in livestock rearing. Data collection was started in May 08 of 2021 to December 23 of 2021. Various statistical measures such as frequency counts, percentage distribution, average, and standard deviation were used in describing data. In order to estimate the contribution of the selected characteristics of respondent to the causes, consequences towards livestock rearing and multiple statistical analyses was used. The major findings of the study are summarized below:



5.1 Major Findings

5.1.1 Selected Characteristics of the Respondents

Age: The highest proportions (43.2%) of the respondents were middle aged and the lowest proportion by the old aged category (24.3%). The minimum and maximum age was 19 and 85 years respectively.

Family Size: According to the data the majority of families (42.3%) were medium sized. The minimum and maximum family members of the respondents were 3 and 15 respectively.

Educational Qualification: The highest portion (57.7%) of respondents had secondary level of education. The minimum and maximum schooling years were 0 and 17 classes respectively.

Livestock Rearing Experience: Highest proportion (34.2%) of the respondents had low and medium level of livestock rearing experience with a mean of 20. The maximum and minimum experiences range from 50 years to 5 years respectively.

Crop Production Experience: The highest proportion (32.2%) of the respondents had high level of crop production experience and the maximum and minimum experiences range from 65 years to 5 years respectively.

Aquaculture Experience: The highest proportion (67.6%) of the respondents had no aquaculture experience and maximum and minimum experiences range from 40 years to 5 years respectively.

Knowledge on Livestock Rearing: The highest proportion (78.4%) of the respondents was low knowledgeable and (2.7%) of the respondents had high knowledge of livestock rearing.

Farm Size: The farm size of the maximum respondents (69.4%) of the respondents was small. The minimum and maximum land sizes of the respondents were 0.00ha and 6.57ha respectively.

Family Income: Data presented that highest portion of the respondents (65.8%) had medium and the minimum and maximum income was 5000 B.D.T and 85000 B.D.T.

Training Received: Among the total respondents (77.5%) had no training on different agricultural sectors.

Cosmopolitanism: The study found that (83.8%) of respondents had low cosmopolitanism.

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Extension Media Contact: Highest portion (97.3%) of respondents exposed rare extension media contact. While 2.7 percent were in occasional extension media contact.

5.1.2 Causes of Livestock Rearing Rank of this Area

Paddy is cultivated once a year and the land remains fallow at other times was the first ranked of the causes of livestock rearing at that area. Livestock rearing was a source of additional family income was the 2nd cause of the study. The others main causes were anyone in the family can nurture it easily, naturally grown grass can be fed, milks and fuel are available from cows, in need of social festivities. As; Marriage, Akika etc., in addition to the main work, cattle can be easily reared, livestock acts as a source of emergency money etc.

5.1.3 Consequences of Livestock Rearing Rank

The first ranked of the consequences was through livestock rearing, it has been possible to earn some money from the fallow land. Using dung in fish farming land is giving good results placed as second rank. Proper use of uncultivated land has been ensured, economic prosperity is coming and appropriate use of natural resources has been ensured obtained 3rd 4th and 5th rank respectively.

5.1.4 Rank of Problems in Livestock Rearing

There is a shortage of food for cattle during the cropping season and during the summer there is a shortage of potable water in the bill was the first ranked of the problems. Sometimes grass cannot grow due to salinity and lack of water placed as second rank. Lack of good medical treatment for cattle, cattle theft occurs and farmers lack training in cattle obtained 3rd 4th and 5th rank respectively.

5.2 Conclusions

Though the prospects of livestock rearing of regarding causes and consequences are clear but the farmers faced highly severe problems. The most important cause was monoculture of paddy enhances to remain land fallow which compelled them to rear livestock and livestock rearing in fallow land contribute to earn livelihood. Shortages of food in cropping season and potable water in summer are some of the severe problems. The prospects of the farms regarding causes and consequences of livestock rearing and problems were affected by farmers' knowledge, training received, cosmopolitanism and extension media contract.

The findings and relevant facts of research work prompted the researcher to draw following conclusions.

- i. Level of education of the respondents showed the most important contributing factor to livestock rearing. This means that high literacy and educational level among the rural peoples might have influenced towards livestock rearing. Conclusion could be drowned that these rural people could be more ameliorated in all aspects of socio-economic of life if government takes more educational project to make it more educated.
- ii. It may be concluded that high livestock rearing experience encourage the rural people to rare more livestock.
- iii. Conclusion could be drawn that if the respondents would be motivated to participate in training activities then livestock rearing would likely to enhance.
- iv. Knowledge on livestock rearing of the respondents had a significant contribution to causes of livestock rearing. The above facts lead to the conclusion that necessary arrangements should be made increase the knowledge of the villagers which would ultimately increase livestock rearing.

5.3 Recommendations

5.3.1 Recommendations for Policy

On the basis of observation and conclusions drawn from the findings of the study following recommendations are made:

- i. It is, therefore, recommended that an effective step should be taken by the Department of Livestock Services (DLS) and Non-Government Organizations (NGOs) for strengthening the people's qualities in favor of livestock rearing to a higher degree. It requires massive demonstration programs, training programs, field trips etc. should be implemented to bring about considerable changes in the people.
- ii. Livestock rearing experience of the respondents was important contributing factors to livestock rearing. Therefore, it is recommended that the extension workers should work with the experienced people to enhance livestock rearing.
- iii. It is recommended that financial facilities providing authority should be more flexible in case of providing financial supports to the rural people which would ultimately enhance livestock rearing as well as livestock production.
- iv. Livestock management practices of the rural people were important contributing factors to livestock rearing. Therefore, it is recommended that the extension workers should work with the rural people through practical management practices of livestock that would help livestock rearing.
- v. It should be selected on priority basis for any knowledge enhancing program Non-Government Organizations (NGOs) for gaining sustainable livestock production.

5.3.2 Recommendations for Further Study

On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for future study.

- i. The study area was purposively selected at Assasuni upazilla due to resource and time limitations. Moreover, survey methodology used in this study, is limited in generalizing the findings. It is recommended that similar studies should be conducted in other areas of Bangladesh and compared with findings which would be effective and helpful for policy formulation.
- ii. The study was based on the causes, consequences and problems of livestock rearing. Further studies may be conducted in respect of causes, consequences and problems of other crop production.
- iii. It is suggested that there should be continuous research in various aspects for agricultural development in Bangladesh.

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Appendix A

Agrotechnology Discipline

Life Science School

Khulna University, Khulna-9208

Title: Causes and Consequences of Livestock Rearing During Fallow Period of Crop
Production as Perceived by the Farmers.

(Interview Schedule)

(Please answer the following questions & put a tick mark (√) wherever applicable)

Date:.....

1. Personal information of the respondent:

Name:

Address:

Contract No:

Age:

2. Family size of the respondent (number of family members):

3. Educational status: a) Illiterate, b) Can sign only, c) Actual schooling years

4. Numbers of livestock:

A. Cattle: Cow/Heifer; Bull/Ox

B. Buffalo:

C. Goat:

D. Sheep:

E. Poultry Birds:

F. Others:

5. Livestock rearing experience (years):

6. Crop production experience (years):

7. Fish / aquaculture experience (years):

8. Knowledge on livestock rearing:

SL NO.	Question	Correct (2)	Partially Correct(1)	Wrong (0)
1.	Name two improved breed of dairy cattle.			
2.	What is UMB?			
3.	What is the usefulness of artificial insemination?			
4.	Name two diseases of cattle.			
5.	Name two vaccines for two diseases.			

9. Farm size (ha):

Please Furnish information about your lands according to use.

SL No.	Use of land	Area of land	
		Local unit	Hectare or acre
A1	Homestead		
A2	Own land under cultivation		
A3	Land given to others on barga		
A4	Land taken from others on barga		
A5	Land taken from others on lease		
A6	Others		

$$FS = A1 + A2 + 1/2(A3 + A4) + A5 \pm A6$$

10. Monthly family income:

Please mention information's about your family income (annual) from different sources:

SL No.	Sources of income	Amount of income (taka)
1.	Crop	
2.	Livestock	
3.	Fish	
4.	Business	
5.	Service	
6.	Others	
7.	Total	

11. Training Received: Do you receive any agricultural training?

Name of the training	Duration(Days)	Organized by

a. Yes () b. No ()

12. Cosmopolitanism:

Please indicate the number of times you have visited the following places within the specified period:

SL No.	Place of visit	Nature of visit			
		Frequently (3)	Occasionally (2)	Rarely (1)	Not at all (0)
1.	Relative or other Known persons located outside of your own village	5-6 times/month	3-4 times/month	1-2 times/month	0 times/month
2.	Union parishad office	8-10 times/month	5-6 times/month	2-3 times/month	0 times/month
3.	Own upazila/ distric sadar	5-6 times/month	3-4 times/month	1-2 times/month	0 times/month
4.	Other district upazila/ sadar	4 times/year	3 times/year	1-2 times/year	0 times/year
5.	Capital and other cities	3 times/year	2 times/year	1 times/year	0 times/year

13. Extension media contact:

Categories		Regularly (4)	Often (3)	Occasionally (2)	Rarely (1)	Not at all (0)
a. Mass media	1. Radio					
	2. Television					
	3. Poster					
	4. Leaflets					
	5. Newspaper					
	6. Exhibition/ Agriculture fair					
	7 .Magazine					
	8. Online Agricultural Apps					
b. Group Contact	1. Farmers field					
	2. School					
	3.1PM/ICM club					
	4. Tours					
	5 .Lecture					
c. Personal cosmopolites	1.office call (SAAO)					
	2.office call(AEO/UAO)					
	3. Email					
	4. Personal letter					
	5. Mobile					
	6.Farm & home visit by SAAO					
d. Personal locality	1. Friends					
	2.Relatives					
	3.Ncighbor					
	4. Dealer (pesticide)					
	5. Model farmer					

14.	In need of social festivities. As; Marriage, Akika etc.					
15.	Due to the high price of cattle.					
16.	With a little investment one can make a profit in less time.					
17.	Cattle care is relatively easy.					
18.	In addition to the main work, cattle can be easily reared.					
19.	Some people kept cattle as a hobby.					
20.	Algae are being used as cattle feed in the southern region.					

15. Consequences of Livestock Rearing:

SL NO.	Consequences of Livestock Rearing.	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
1.	Economic prosperity is coming.					
2.	Livestock production has increased.					
3.	The food security and nutrition needs of the villagers have been largely met.					
4.	These areas have become self-sufficient in meat.					
5.	Milk production has increased.					
6.	Extreme poverty has been somewhat eradicated.					
7.	Many women have become self-reliant.					

8.	Economic security has been ensured.					
9.	Social conditions have improved.					
10.	Appropriate use of natural resources has been ensured.					
11.	It has been possible to earn some money from the fallow land.					
12.	Cattle manure is being used in agriculture as organic manure.					
13.	The use of chemical fertilizers is relatively low in these areas.					
14.	Using dung in fish farming land is giving good results.					
15.	Peoples are getting a large amount of money from cattle.					
16.	Money is being made available in times of crisis.					
17.	Unemployment problems of many have been solved.					
18.	It has created employment for the elderly and women.					
19.	Proper use of uncultivated land has been ensured.					
20.	Social solidarity and brotherhood have been strengthened.					