Baseline Study Report

Safe Meat and Dairy Product Market Development Sub-project

Implemented by: DABI Moulik Unnayan Sangstha

Supported by

Palli Karma-Sahayak Foundation (PKSF)
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Acronyms

ADG	Average daily gain (live body weight)
ADL	American Dairy Limited
AI	Artificial Insemination
AISP	Artificial Insemination Service Provider
BBG	Black Bengal Goat
BDT	Bangladeshi Taka
PPHs	Project Participant Households
BQ	Black Quarter
Ca	Calcium
CaO	Calcium Oxide
CI	Calving intervals
DANIDA	Danish International Development Agency
DLS	Department of Livestock Services
FAO	Food and Agricultural Organization
FCR	Feed Conversion Ratio
FGD	Focus Group Discussion
Fig	Figure
FMD	Foot and Mouth Disease
g/d	Gram per Day
GAP	Good Agricultural Practices
GDP	Gross Domestic Products
GLMP	Good Livestock Management Practices
GO	Government Organization
HACCP	Hazard Analysis on Critical Control Points
HHS	Household Study
HHs	Households
HS	Haemorrhagic Septicaemia
HSC	Higher Secondary Certificate
HYV	High Yielding Variety
ICI	Inter-calving-interval
ICT	Information, Communication and Technology
IDF	International Development Fund
IFAD	International Fund for Agricultural Development
Kg	Kilogram
KI	Kidding Interval
KII	Key Informant Interview
KK	Kedah-Kelantan
LEO	Livestock Extension Officer
LS	Litter Size
LSD	Lumpy Skin Disease
LSP	Livestock Service Provider
MA	Master of Arts
MBA	Master of Business Administration
MC	Munshiganj Cattle
ml	Milliliter
NaOH	Sodium Hydroxide
NGO	Non-Government Organization

NPHs	Non-Participant Households
P	Phosphorus
Para-vet	Para-Veterinary Workers
PKSF	Palli Karma-Sahayak Foundation
PPHP	Postpartum heat period
PPR	Pestis-de-Petits Ruminant
RB	Repeat Breeding
RCC	Red Chittagong Cattle
RMTP	Rural Microenterprise Transformation Project
SDGs	Sustainable Development Goals
SMART	Specific, measurable, achievable, relevant, and targeted
SPSS	Statistical Package for Social Science
SSC	Secondary School Certificate
TMR	Total Mixed Ration
ULO	Upazila Livestock Officer
UMMB	Urea-Molasses-Multinutrient Block
UMS	Urea Molasses Straw
UNDP	United Nations Development Program
UTS	Urea Treated Straw
VS	Veterinary Surgeon
Yrs	Years

Executive Summary

DABI Moulik Unnayan Sangstha is implementing a sub-project named "Safe Meat and Dairy Product Market Development" at five upazilas in Naogaon and Bogura districts under Rural Microenterprise Transformation Project (RMTP) of PKSF. The project is providing support to produce and distribute safe dairy and meat products following the Global Good Agricultural Practices (GAP) and Hazard Analysis on Critical Control Points (HACCP) protocols. The objective of the sub-project is to increase the income, food security and nutrition status of marginal, small farmers and small entrepreneurs in the project areas through value chain activities. A total of 24000 project participant farmers (dairy, fattening, goat and sheep keeper) and 1000 stakeholders (service providers, input suppliers, traders, product processors) will get different technical and logistic supports through this sub-project. Under this sub-project, a baseline study was conducted with a view to obtain a snapshot assessment of the current socio-economic, animal management and safe meat and milk products marketing status of the project participant farmers.

Among the interviewers, about 19.33% were ultra-poor, 18.59% transitional-poor and 62.1% enterprising-poor. Most of the farmers had multiple profession and among them about 83.6% were occupied in livestock farming, 72.5% in agriculture, 36% in wage based works and 26% in small business. Most of the farmers (about 31%) had primary level of education. About 50% project participants were aged between 36 to 50 years old. The average family size was 4.40 members, whilst highest about 57.8% family belonged to 4 to 5 members. The sex ratio was 50.8: 49.2 (male: female). About 97.8% were male headed family. The project participant family had an average of 1.40 earning members in their family who belonged to an average of 81 decimal lands including homestead land with average monthly income of BDT 14725/-.

Among dairy keeper farmers, about 55% of them kept crossbred and about 45% kept native cattle. In case of fattening cattle, 57% kept crossbred and 43% kept native. On the other hand, most of the goat keepers had native goat (about 69%). All the sheep kept by the farmers were native. The management system of dairy and beef cattle were mostly intensive i.e. kept in confinement, while in case of goat, about 75% farmers followed semi-intensive management system. On the other hand, about 57% sheep keepers followed extensive or grazing system. About 20% dairy farmers fed their cattle by grazing, while rice straw, concentrate feed, cultivated fodder and cut & carry local grasses were supplied by 99, 91, 30 and 67% farmers, respectively. On the other hand, about 91, 96, 48 and 57% farmers provided rice straw, concentrate feed, cultivated fodder and cut & carry local grasses to their fattening cattle, respectively. About 81% farmers allowed their goats for grazing, while straw, concentrate feed, cultivated fodder and cut & carry local grasses were provided by 42, 78, 7 and 73% farmers, respectively. On the other hand, all sheep keeper farmers grazed their sheep. Besides, straw, concentrate feed and cut & carry local grasses were provided by 17, 50, and 33% farmers, respectively. The average daily allowances of concentrate feeds (mixed) per dairy cow, fattening bull, goat and sheep were 1.57, 2.25, 0.300 and 0.232 kg, respectively. Among the project participant farmers, only about 28% cultivated high yielding fodder in an average of 12 decimal lands and about 6% among them used to sell it. Napier was the prime choice which was cultivated by about 90% among farmers who cultivate fodders. In general, about 25% farmers used to buy cultivated fodders for their animals. On the other hand, a very few farmers (about 4%) sell rice straw to others, while about 82% farmers required to buy straw for their animals.

The average daily milk yield of native and crossbred cows were 1.24 and 4.74 kg with lactation persisted to about 5.54 and 6.82 months, respectively. The first estrous of native and crossbred heifers showed at average ages of 23.7 and 18.4 months, respectively. The mean numbers of services of 1.7 and 1.4 for each conception were required for native and crossbred cows, respectively. The postpartum heat period (PPHP) of native and crossbred cows were estimated as 56 and 62 days, respectively. The inter-calving-interval (ICI) for both genotypes were 15.2 and 16.9 months, respectively. The daily body weight gains of native and crossbred fattening bulls were estimated which averaged 423 and 511 g, respectively. The native and improved goats (Jamnapari/crossbred) attained puberty at about 8.5 and 9.4 months, respectively. The average PPHP of native and improved goats were 36.5 and 41 days, respectively. The kidding interval (KI) and litter size (LS) of native and improved goats were 6.8 months and 2.1 kids and 6.9 month and 2.3 kids, respectively. The age puberty, PPHP, lambing interval and LS of native sheep were obtained as 8.0 months, 26 days, 7.3 months and 2.33 numbers, respectively.

Among the project participant farmers, about 64% of them availed animal feeds and 70% availed high yielding varieties of fodders. About 90% farmers availed vaccines, anthelmintic and medicines and about 98% farmers availed bull semen. Among dairy keeper farmers, about 56% chosen Friesian bull semen and 43% chosen Sahiwal bull semen to bred their cows. Farmers also reported that they had access for buck and ram service to mate their does and ewes. About 45% farmers had their first choice in favor of native Black Bengal buck. About 95% farmers confessed that veterinary treatment services were available, while about 70% of them were satisfied on the services what they got. Among the project participant farmers, about 32% of them took loans and among them about 36.5% had taken loans for livestock rearing.

In the investigation, only about 0.74% farmers were well known on good agricultural practices (GAP), also followed it practically. About 36% dairy farmers cleaned their animal sheds by only brooming, while 62% by both brooming and washing and only 2% used disinfectants after brooming and washing. About 61.5% dairy farmers left farm wastes in the open place and 56% used those as manure and 44% used it as cooking fuel. Almost all dairy farmers cleaned the udder and milkers' hands with mostly water (63%). Only 4% project participant farmers used to maintain farm records. Most of the dairy farmers sold milk to the milkman/goala and local consumers (both equally 40%) with an average selling price of BDT 53/-. In case of marketing animals (cattle, goat and sheep) most of the farmers (71%) sold them to the local hat/market, while about 81% farmers were satisfied on the selling price of milk and animals. The income earned by selling milk and animals is mostly (82%) utilized for family expenses of the farmers.

Among project participant farmers, about 39% of them got training on livestock farming where about 70% of them got training on dairy farming, 33% on beef fattening and 28% on goat and sheep farming. It was investigated that about 61% farmers under the project areas were anyhow linked with input suppliers (feed, medicine, vaccine, green grass etc.), 56% with experienced veterinary and artificial insemination service providers, 70% with local milk traders/goalas, 35% with financial & credit services and only 0.4% with online marketing channels.

The study revealed that about 91% farmers used to vaccinate and 96% dewormed their dairy cattle regularly. The study also investigated that the dairy cattle of about 37% farmers were affected by different diseases which was mostly (67%) LSD. Among the disease affected dairy cattle, about 19% animals were died which was due to mostly Anthrax, FMD, LSD and bloat. On other hand, about 86% farmers used to vaccinate and 81% dewormed their fattening cattle regularly. The study further investigated that the fattening cattle of about 31% farmers were affected by different diseases, mostly (73%) LSD, but none of those died. About 73% goat keeper farmers used to vaccinate and 90% de-wormed regularly. The disease prevalence were obtained among 20% goat keepers, which was mostly PPR (67%), while about 27% goat keepers claimed that their goats had died of mostly PPR (67%). All goats were died in winter season. On the other hand, about 67% sheep keeper farmers used to vaccinate and 83% de-wormed regularly. The disease prevalence were obtained among 60% sheep keepers, which was mostly PPR (67%), while about 33% sheep keepers claimed that their sheep had died of only PPR. All sheep were died in rainy season. About 72% livestock keeper farmers reported that disease prevalence and mortality of all kinds of animals had been decreased than earlier. It was investigated that about 2.5% dairy farmers and 2.2% fattening farmers had wage based labors. From the study it was investigated that highest about 40% participant farmers consumed 4 items of foods in their daily diet against 10 items necessary for human.

Based on the findings it may be concluded that the project participant farmers though, availed abundant supplies of necessary inputs and services, but they had huge scarcity of green grasses and balanced ration. Most of the farmers practiced scheduled vaccination and de-worming, but they had difficulty and relaxation to ensure good management and environment facilities to the animals. Finally, it may be recommended that the interventions should be given to develop a good marketing channel to be established under the project lead by Dabi as to ensure fair price of animals, milk and milk products with uninterrupted price fluctuation round the year. Farmers should be motivated for cultivation of high yielding fodders massively. Disease diagnostic kits, milk testing tools and kits, milk pasteurization, chilling, filling and packaging should be supplied for providing safe milk and milk products. Training on GAP, HACCP should be given to all stakeholders to ensure safe meat, milk and milk products.

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INTRODUCTION

The economic strength of Bangladesh is mainly based on agriculture. Livestock is one of the major components of agriculture (crop, livestock, fisheries and forestry) which plays an important role in national economy, with a GDP growth rate at 3.10%, contribution of Livestock sector in national economy of 1.90%, role of livestock in agriculture production of 16.52%, contribution of direct and indirect employment of 20% and 50%, respectively (BBS, 2022). According to Food and Agricultural Organization (FAO, 2014), the need of per capita milk and meat is 250g/day and 120g/day, respectively with a per capita availability of 120 ml milk/day, 62 g meat/day. In other words, Bangladesh has an annual need of 15.20 million tons of milk and 7.30 million tons of meat with a production amounting only 9.92 and 7.51 milion tons milk and meat, respectively. Milk is such type of liquid food which is very much essential for all ages of people and has also market demand, but dairy industry has not been developed as like as poultry industry. This is mainly due to shortage of feed supply, especially green grasses. However, price of other feed components like straw and concentrate feed ingredients have been rising day by day, consequently decreasing the profit margin of this sector. However, the situation of dairy industry in Bangladesh has become worse due to different havocs exploited previously like melamine, cyclone (Sidre, Aila) including diseases and price hiking of dairy input supports. Thus, the major challenge for the dairy sector is to ensure a balanced input and output supports through increasing low cost production of milk and marketing of milk and milk products with reasonable price.

Cattle fattening for beef production have become an important business of the small farmers in Bangladesh. Cattle fattening helps to meet the rising demand for high-protein foods in the country and plays a great role in: (i) enhancing food security, (ii) providing households with employment, income, investment opportunity and a store of value, and (iii) providing draught power and manure for sustainable agriculture and (iv) cattle fulfilling cultural roles. The growing demands for ruminants' meats from city dwellers also present opportunities for fattening as well as improved markets for the animals. Fattening of animals is a highly profitable venture with return of premium to the farmer. Bangladesh is currently working hard to develop its agribusiness potential mainly cattle fattening. Cattle fattening mostly conducted through micro-credit activities, could form an appropriate tool for poverty alleviation and improvement in food security among the people. However, the country's meat producers estimate that slaughterhouses need up to 6 to 7 million beef cattle every year to feed Bangladeshi appetites, and to help meet demand. To meet-up this requirement, more than 0.5 to 1.0 million beef cattle are smuggled from India to Bangladesh every year and most of the illegal trade takes place through the Indian border state of West Bengal. This is one of the major challenges for rising domestic meat production sector in Bangladesh. However, goat and sheep may be considered as another important sources of meat production.

Zero hunger is one of the sustainable development goals (SDGs) of UNDP. To achieve the goals, Bangladesh government has identified livestock as one of the key sectors. The government has set strategic targets for meeting protein demand, employment generation, up-scaling export earnings and women's empowerment through the livestock

sub-sector. Small-scale commercial livestock (cattle, buffalo, goat and sheep) production and related backward and forward linkage activities in marketing, input supply, etc. have the potential for significant employment generation and poverty alleviation. The problem is to identify, develop and test appropriate institutional arrangements for linking production, marketing and processing activities to improve smallholder access to urban markets at competitive cost. Improving smallholder competitiveness will require appropriate technology and services (e.g. breed and breeding services, feed and health inputs) specifically targeting smallholder needs for improving productivity.

Management is an utmost important part of livestock production system. Good Agricultural Practices (GAP) is a new concept which is globally encouraged to follow in agricultural operations and related activities. In livestock sector, we can reshape 'GLMP' (good livestock management practices) as a similar concept of GAP. GLMP is an integrated approach as shown in Fig. 1. GLMP minimize the production cost by reducing disease incidence and improving feed utilization efficiency. GLMP includes regular grooming and bathing of animals, cleaning and washing of animal house, feeding & watering manger, drainage system, disinfection of farm house and premises as a measure of farm bio-security. Timely feeding and providing fresh & clean drinking water should be provided. Waste feed leftover alone or mixed with fresh feed must not be provided to the animals. In that case, feed may be frequently supplied in a day. Feeds must not be mixed with water or other liquid substances and should not be kept for longer period as it may have chance of contamination which may create toxicity or disturbance of digestion. Good animal health is necessary for uninterrupted appetite and subsequent daily weight gain. If sudden health hazard is existing, animal lose its appetite resulting loss of weight gain. Surprisingly, it takes long period to regain its body weight. Thus, it is important to inspect health status of animal regularly by checking some indicators like body temperature, respiration, deification, gesture, appetite, looking muzzle (moist or dryness) etc. Ticks, mosquito, fly etc. hazardous organisms often create stressful condition for the animals, and thus need to be prevented. These activities should be included under GLMP.

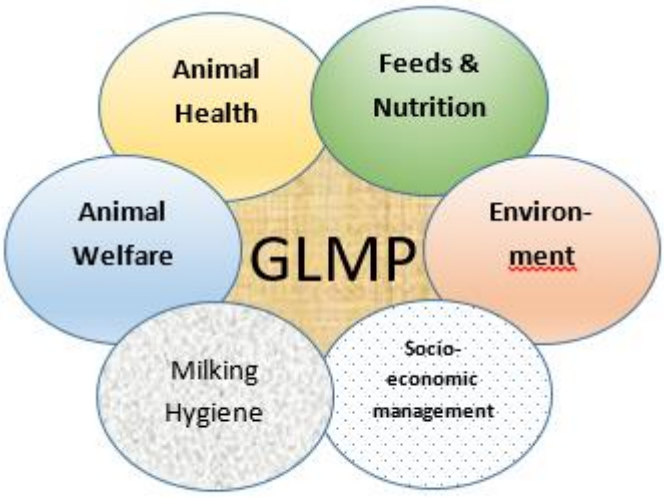

Fig. 1: Good livestock management practices (GLMP)

Good livestock management practices (dairy, fattening, goat and sheep) must ensure that the milk and healthy animal produced are safe and suitable for their intended use, and also that the farm enterprise is viable into the future, from the economic, social and environmental perspectives. Most importantly, livestock keeper farmers are in the business of producing food (milk and meat) for human consumption, so they must be confident in the safety and quality of the products they produce. Good farming practice underpins the production of milk and meat that satisfies the highest expectations of the

food industry and consumers. Good farming practice also ensures that the milk and meat is produced by healthy animals in a manner that is sustainable and responsible from the animal welfare, social, economic and environmental perspectives. So implementing good farming practice is good risk management for the short and long term future of the dairy and beef farming enterprise (FAO and IDF, 2011).

Recently, eco-management has come into light in livestock production system which is mostly related with environment friendly farming system. Basically, ecomanagement is known as various strategies to minimize or eliminate the adverse effects of human activities on the environment. We know that livestock wastes (like cow dung, urine, feed leftover etc.) are remarkable sources of noxious gases (methane, carbon di-oxide, carbon monoxide etc.), harmful pathogens and odors. Hence, these farm wastes have public health and environmental concern. Therefore, livestock wastes need to be managed properly to mitigate the production of these pollutants. Moreover, livestock waste management should be included under GLMP. Proper utilization and recycling of these farm wastages may help environment safe and clean. Hence, there is a need for new waste management systems that make animal operations economically feasible and eco-friendly which ensures higher profit to livestock owners, recycling and sustainable use of nutrients with mitigation of environmental impacts. Proper utilization of cow dung and urine into biogas, compost, vermicompost, bio-pesticides, medicines and other daily products can generate new employment opportunities in rural areas as well as it can protect soil from chemicals and fertilizers and improve soil fertility. The dead animals can also be successfully composted to make nutrient-rich compost. Thus, eco-management can play important role in profitable livestock farm operation. A conceptual diagram of establishing eco-management farming system is illustrated in Fig. 2.

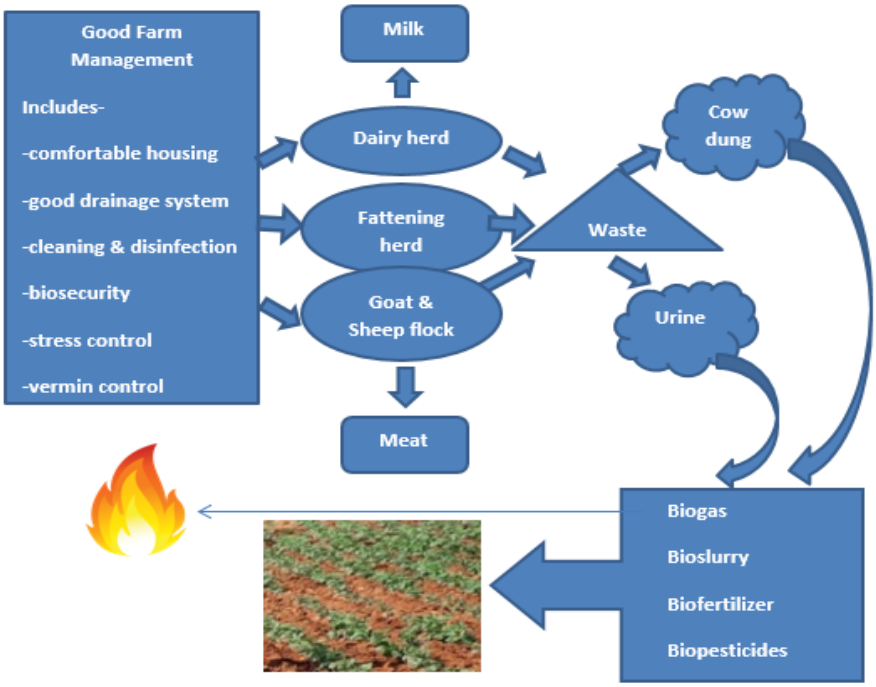

Fig. 2: Eco-farming approach

Dabi Moulik Unnayan Sangtha is implementing the sub-project entitled "Safe Meat and Dairy Product Market Development" at three upazilas in Naogaon district and two upazilas in Bogura district of Bangladesh. This sub-project is jointly funded by the Palli Karma-Sahayak Foundation (PKSF), IFAD and DANIDA under Rural Microenterprise

Transformation Project (RMTP) of PKSF. The sub-project will enable rural producers to expand sustainable micro-enterprises through efficient production methods and strong market connectivity, implemented for the overall business development of small entrepreneurs. The project is providing support to produce and distribute safe dairy and meat products following the Global Good Agricultural Practices (GAP) and Hazard Analysis on Critical Control Points (HACCP) protocols. Traceability and certification of those products will be introduced for the branding of dairy and meat products and help equip the participants with a valuable business tool for compliance of product quality. The objective of the sub-project is to increase the income, food security and nutrition situation of marginal, small farmers and small entrepreneurs in the project area through value chain activities. The project is very significant in the current situation of Bangladesh for the perspective of safe milk and milk products and meat production and marketing. The baseline study was conducted with the following objectives:

- to measure current perception, attitude, knowledge and behaviour
- to explore further existing support system and linkage of the project participants with local government institute and service providing agencies
- to serve the purpose of ensuring that the project indicators are SMART (specific, measurable, achievable, relevant, and targeted) and can be used for the study as well as future project monitoring and learning
- The baseline data will consider various socio-economic indicators including income, gender, nutrition etc. as per project log-frame

METHODS OF STUDY

Document review

Before going to baseline study for this study, the necessary documents were reviewed for pre-assessment information of the program, which helped us for the development of details methodology, work planning, and questionnaire formation.

Methods of data collection

There were two approaches followed in collecting data for this baseline study; quantitative and qualitative approaches. Household study (HHS) was the quantitative approach of data collection conducted by trained enumerators. FGD, KII and SWOT were the methods for qualitative approach of data collection conducted by the consultant. The details of those methods are described here below.

Development of questionnaires

In the HHS, questionnaire was prepared in accordance with the set indicators of the project log-frame as per the objective of the project. The questions were mostly formed by close ended (answer either 'yes' or 'no') and multiple answers or multiple choice questions which can be described in statistical way. However, open ended questions are effective for acquiring qualitative information and are particularly good for determining people's estimation and feelings. In KII and FGD, both close and open ended questions were included. Besides, as per the project intervention, all questions were made relevant to the dairy, beef fattening, goat and sheep farming issues. The questionnaire was finalized after pre-test (field testing).

Sample size for baseline study

The standard statistical procedure to determine sample size followed by the consultant was as follows which was adopted by (Robb, 1963).

$$n = \frac{z^2 \text{ X } pq \text{ X } N}{e^2 (N-1) + z^2 pq}$$

Where, N = Total number of project participant households under RMTP sub-project (24,000); P (probability of success) = 0.50; q (probability of failure) = (1-p) = 0.50; z = 1. 645: z is the area under standard normal curve under certain confidence limit (at 90% confidence interval); e = 0.05 within *95% Confidence level* i.e., desired level of precision. After taking a value of 0.5 for either p or q (because such value of p and q maximize the sample size), and a confidence limit of 90% (of which value of z is 1.645) with a 5% error level, required sample size for HHS has been estimated as 268. After estimating total sample size, it was proportionately segregated into dairy, fattening, goat and sheep keeper farmers. While conducting HHS, the enumerators visited the project areas and randomly chosen the required number of samples (i.e HHs) from the enlisted project participants following simple random sampling technique for taking direct interviews from the respondent farmers. The sample distribution of different livestock keepers for

HHS under project areas are illustrated in Table 1. Besides, the sample distribution of KII and FGD under project areas are illustrated in Table 2.

Table 1. Sample distribution for HHS

District	Upazila	Dairy cattle keeper	Fattening cattle keeper	Goat keeper	Sheep keeper	Total
Naogaon	Naogaon Sadar	26	09	18	02	55
	Atrai	30	06	16	02	54
	Raninagar	33	07	11	01	52
Bogura	Adomdighi	32	04	16	02	54
	Dupchacia	38	01	13	01	53
	Total	159	27	74	08	268

Table 2. Sample distribution for KII and FGD

Tools		Upazilas under Naogaon			Bogura		Total
		Naog. Sdr	Atrai	Raninag.	Adomdig.	Dupcha.	
KII	ULO/VS/LEO	01	01	01	01	01	05
	LSP/AISP/Paravet	02	02	02	02	02	10
	Feed seller	01	01	01	01	01	05
	Medicine seller	01	01	01	01	01	05
	Milk Trader/Goala	01	01	01	01	01	05
	Milk prod. producer	01	01	01	01	01	05
	Animal Trader/Bepari	02	02	02	02	02	10
	Butcher	01	01	01	01	01	05
	Fodder Producer/Trader	01	01	01	01	01	05
FGD		01	01	01	01	01	05

Approach of data collection

During study, the purpose of the study was clearly explained to all respondents prior to taking interview from them. The respondents were abstained from interview from any person who denied or showed any reluctance in providing information. Verbal consent of each of the respondents was taken before interview. The study team was highly committed to the respondents to keep the privacy of their information and source of data as well as put heartiest attempt to be unbiased in collecting data.

Household study (HHS)

In this event, enumerators randomly visited respondents' house from door to door for direct interviewing with the structured questionnaires.

Focus group discussion (FGD)

In this technique information was collected from a group of around 12 project participant farmers of dairy, beef fattening, goat and sheep keeper farmers, mixed with different age and sex.

Key Informant Interview (KII)

In this technique information was collected by direct interviewing with loosely structured questions from different stakeholders related to livestock farming. The interviewers included in the KII were ULO/VS/LEO, LSP/AISP/Paravet, Feed Seller, Medicine Seller, Milk Trader/Goala, Milk Product Manufacturer, Animal Trader, Butcher, Fodder Producer and Fodder Trader.

SWOT Analysis

A SWOT analysis is a way of optimizing sustainability and viability of any business operation, research or social interventions by identifying strengths, weaknesses, opportunities and threats using an objective approach. The consultant performed this tool by taking interviews with potential stakeholders, visual and insight observations on the study areas.

Training to the enumerators

During conducting baseline study, three (03) enumerators had taken part into this study who had previous experience to conduct such type of study. For better understanding of the goal of this sub-project, the consultant deliberated a daylong debriefing session (at the chamber of the consultant) to the enumerators to make them clear understanding about the questions to be asked to the interviewers and the techniques how to collect information more accurately. Besides, a consultation meeting with consultant, enumerators and sub-project stuffs was held at the office of Dabi Moulik Unnayan Sangtha for debriefing about the project activities, goals, questionnaires and study planning prior to initiate baseline study.

Data screening and punching

All the questionnaires filled in the printed paper by the enumerators were checked and crosschecked by the consultant prior to go for data punching in the excel spreadsheet.

Data analyses

After checking and cross examination, all data were imputed in MS excel worksheet and analyzed by pivot table for frequency analysis. Further statistical analysis was performed by SPSS software. Results were tabulated and presented precisely in accordance with the objectives of the project.

Report writing

After analyzing field data, a comprehensive report was formulated which reflects the present scenario of dairy, beef fattening, goat and sheep farming and safe meat and milk product marketing in the study areas, identifies shortfalls, made recommendations thereof, that would be the guidelines for implementing the project activities and interventions fruitfully.

RESULTS DISCUSSION

A. Household Study (HHS)

General Information of the Respondent

During baseline study interviews were taken in five upazilas from the dairy, fattening, goat and sheep keeper farmers who were project participant under RMTP. According to selection criteria of the project participant farmers, they were categorized into three groups; ultra-poor transitional-poor and enterprising-poor (Table 1 in Annex I). As shown in Fig. 3 that interviews were taken from 62.1% enterprising-poor, 18.6% transitional-poor and 19.3% ultra-poor farmers. The occupation of the head of the participant HH family were mostly multiple. The occupations of the project participant farmers in Naogaon and Bogura are presented in Table 2 (Annex I). Among participant farmers, the highest about 84% family head were occupied in livestock followed by agriculture (72.5%), wage based works (36%) and small business (26%). Besides, the occupation according to project participant farmers' category is illustrated in Table 3 (Annex I). As presented in Fig. 4 that the highest about 87% enterprising-poor participants were engaged in agriculture, followed by livestock (86%) and business (30%). Among transitional-poor participants, highest about 78% of them were occupied in livestock, followed by agriculture (54%) and wage-based works (50%). And among ultra-poor participants, highest about 83% of them were occupied in livestock, followed by wage-based works (71%) and agriculture (42%). The education level of project participant farmers in two districts is illustrated in Table 4 (Annex I), which shows that the highest about 31% family head had primary education, followed by JSC (22%), ability to sign (19%) and illiterate (11%). The education levels of different categories of project participant farmers are elaborately given in Table 5 (Annex I). As can be seen in Fig. 5 that the highest about 32% enterprising-poor, 28% transitional-poor and 31% ultra-poor project participant farmers had primary level of education and none of them had graduate and post-graduate education, except that of enterprising-poor.

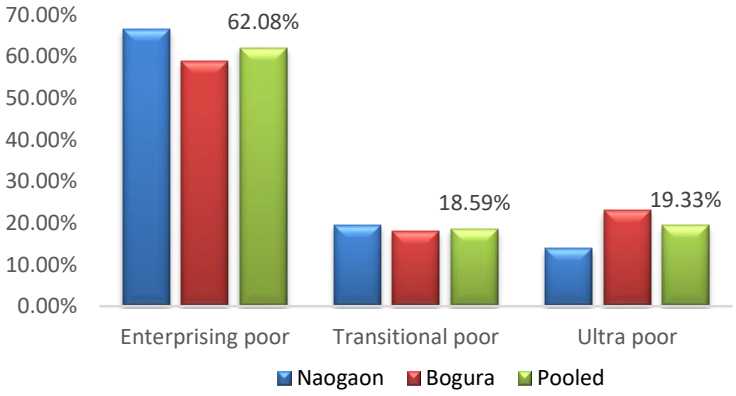

Fig. 3: Farmers' category

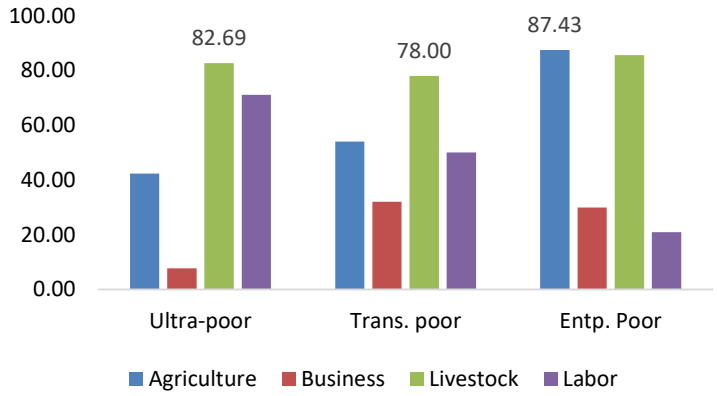

Fig. 4: Occupation of different category farmers

The ages of the project participant respondents in both districts are in detailed given in Table 6 (Annex I). Among the interviewers, highest about 51% in Naogaon and 48% in

Bogura with an average mean of about 50% respondents were aged between 36 to 50 years old. The age of the people is very important as it contributes in social and economic actitities in a country. However, people aged from 15 to 65 years old is called as demographic dividend. The average family size of the project participant HHs in Naogaon and Bogura were 4.23 and 4.66 members, respectively with an overall mean of 4.40 (Table 7 in Annex I). Larger family size in the rural areas gives privilege of the HHs to earn more income from agriculture, livestock or other non-agricultural works. However, family size has been decreasing over time. The structure of family size in Naogaon and Bogura districts is given in Table 7 (Annex I), which shows that most of the family (about 58%) bears 4 to 5 members. As can be seen in Fig. 6 that the highest about 63% HHs in Naogaon and 51% HHs in Bogura had family members from 4 to 5. The male and female ratio of the project participant HH family was 50.8:49.2 (Table 7 in Annex I).

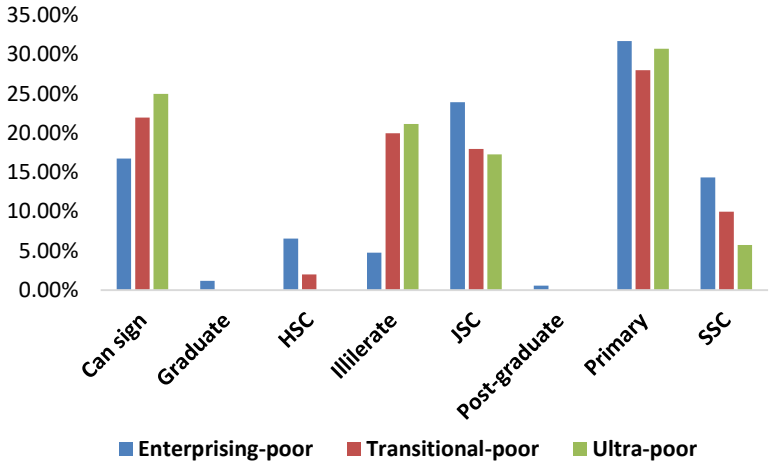

Fig. 5: Education of different categories of farmers

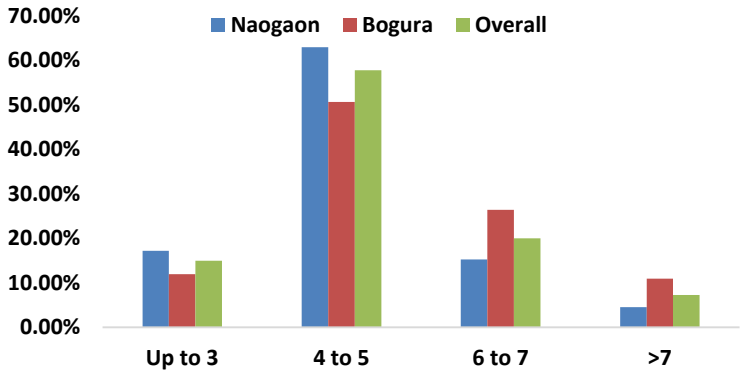

Fig. 6: Status of number of family member in the HH

In the study areas, the male headed project participant HHs in Naogaon and Bogura were 97% and 99%, respectively, while overall mean of 98% irrespective of districts (Table 7 in Annex I). Although, all project participant families had single or multiple earning members, besides about 5% of them in Naogaon and about 1% of them in Bogura had female earning members. Irrespective of sex and district, the overall average earning members in the project participant families was 1.40 (Table 7 in Annex I). In the study areas, the project participant farmers in Naogaon owned an

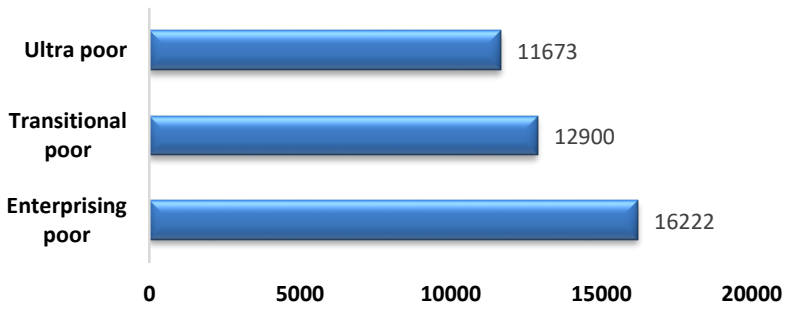

Fig. 7: Monthly income (BDT) of different category farmers

average of 73.57 decimal lands, while it was 91.2 decimals in Bogura including homestead lands. Irrespecive of district, the average 11.18 decimal homestead lands and 94.38 decimal cultivable lands belonged to project participant farmers with an average of 80.65 total lands per family (Table 8 in Annex I). The monthly incomes from primary and secondary sources of the project participant farmers in both study districts are depicted in Table 9 (Annex I), which shows an average total monthly income of BDT 14,725/-. Fig. 7 shows the monthly total income in different categories of project participant farmers, which indicating higher income of enterprising-poor farmers than other categories of farmers. The monthly total income was segregated into dairy, fattening, goat and sheep keeper farmers as expressed in Fig. 8, which shows that monthly total incomes of goat and sheep keeper farmers are almost similar and lower than dairy and fattening keeper farmers, fattening cattle keeper farmers had higher income than dairy cattle keeper farmers. It is very usual that subsistence farmers normally keep goat and sheep.

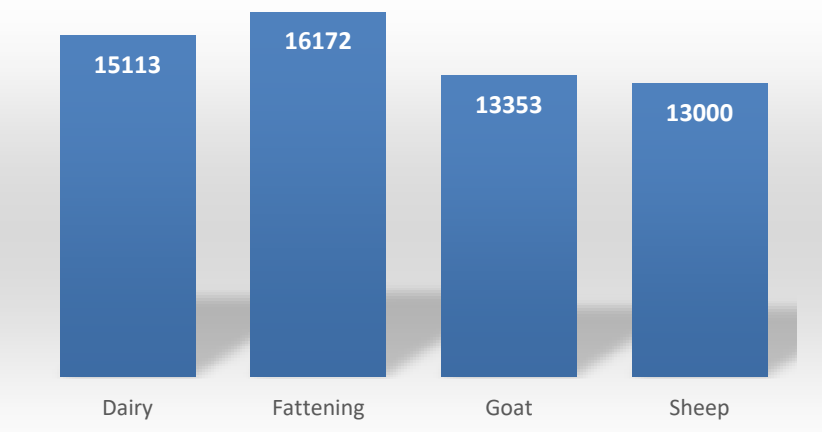

Fig. 8: Income level of different livestock keeper farmers)

Livestock Species and Management

As an agro-based country, livestock is one of the valued components of rural agriculture farming in Bangladesh. As a cultural heritage, most of the rural people in Bangladesh rear different livestock species. As a purposive study, interviews were taken from dairy & fattening cattle, goat and sheep keeper project participant farmers from the study areas under the project. In this study, the breeds or types of the mentioned domestic animals and their management systems were investigated as elaborately given in Table 10 (Annex I). Irrespective of study area and farmers' category, the breeds of cattle, goat and sheep kept by the farmers are precisely presented in Fig. 9. This figure shows that most of the dairy and fattening cattle keeper

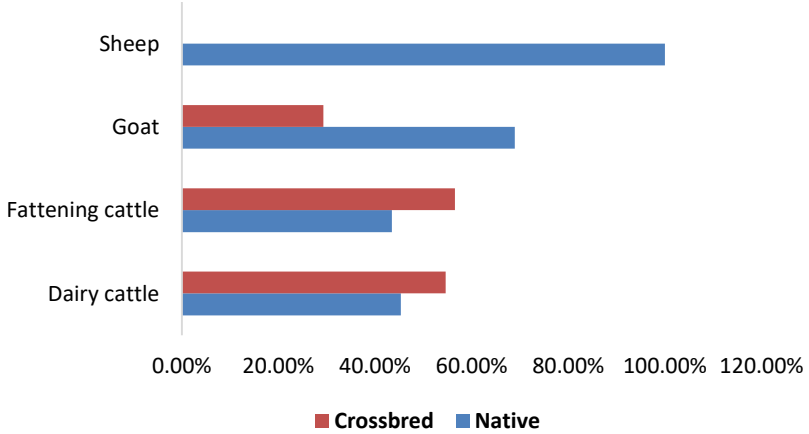

Fig. 9: Breeds of animals kept by the farmers

farmers (about 55 and 57%, respectively) used to keep crossbred cattle, whereas about 69% goat keeper farmers keep indigenous or native types called Black Bengal Goat (BBG). On the other hand, all sheep keeper farmers keep native type. Indigenous species is especially choiced by the rural poor due to lower invest and maintenance cost. Besides, indigenous species are disease resistant, regular breeder, prolific and they can be survived with low quality and quantity of feeds and fodders. However, indigenos stocks are suitable for poor and subsistence farmers, while in other hand, crossbred stocks are suitable for commercial farms. The management system of the said species is presented in Fig. 10, which shows that all fattening cattle keeper farmers rear their cattle in intensive or fully confinement, while both intensive (80%) and semi-intensive management systems are followed by dairy cattle farmers. Among goat keeper farmers, 49% of them followed semi-intensive management system, 20% followed extensive or grazing system. About 57% sheep keeper farmers followed extensive system, while 43% semi-intensive. It may be mentioned here that animal management system is shifting from extensive to intensive due to scarcity of grazing or fallow land which is decreasing gradually for changing cropping pattern and rapid urbanization. Rotational cropping pattern causes to restrict animals to graze in the post-harvest lands.

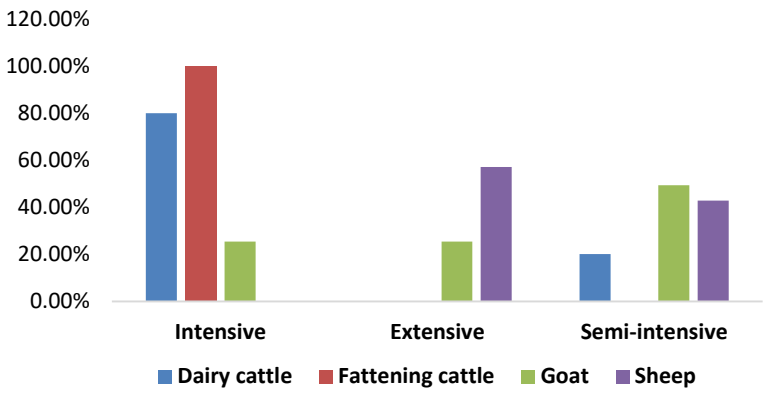

Fig. 10: Management system of animals

Livestock Population

Livestock population depends on type of farm (commercial, subsistence etc.) or ability of owners to maintain (financial or infrastructure). In rural areas, most of the farmers keep different livestock species with very few population. The population structures according to stage of production of dairy, fattening, goat and sheep among the project participant farmers in both districts were investigated in this study which is given in details in Table 11 (Annex I). A comparison of total population size of dairy, fattening, goat and sheep between districts is illustrated

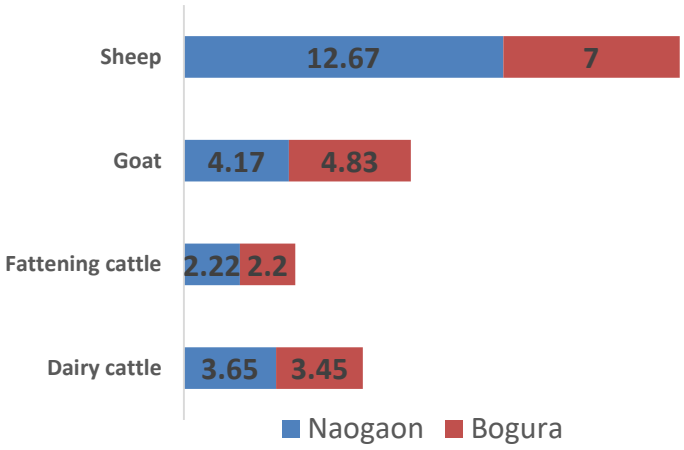

Fig. 11: Average total population in two districts

in Fig. 11, which entails that the diference of average total fattening cattle population per project participant HH between the districts under the project areas is negligible. The averages total population of dairy cattle and sheep per HH in Naogaon district are higher than the average total population kept per HH in Bogura district. On the other hand, the total average goat population size per project participant HH in Bogura is higher than that of Naogaon. Irrespective of study locations the average total numbers of dairy cattle, fattening cattle, goat and sheep per HH was estimated as 3.56, 2.21, 4.49 and 9.83, repspectively (Table 11 in Annex I). Though, the population size per HH of sheep keeper farmers is much higher than other species, but very few farmers keep it with large flock size. The population size of the said animals according to farmers' category is illustrated in Table 12 (Annex I), which shows that enterprising-poor farmers had higher number of animals than others, which is due to financial capability.

Feeds and Feeding Behavior

The feeds and feeding behavior as practiced by the project participant farmers under the project areas in two districts were investigated in this study and the detailed findings are given in Table 13 (Annex I). However, Fig. 12 infers the percent of farmers who provided different kinds of feeds for dairy cows, fattening cattle, goats and sheep. Only 20% dairy farmers let their animals to graze for feeding grass in the communal field or fallow lands, while no fattening farmers let their animals to graze. All sheep keeper farmers let their animals to graze, whereas, about 81% goat keeper farmers let their goats to graze. More than 90% cattle keeper farmers provided straw to their animals, while straw is also provided to goat and sheep by 42 and 17% farmers, respectively. Cultivated fodders are supplied to dairy cattle, fattening cattle and goat by about 30, 48 and 7% farmers, respectively, while no farmers supply it to sheep. Cut & carry local green grasses are provided to all studied animals by 33% (sheep) to 73% (goat). Concentrate feeds are supplied to the dairy cattle, fattening cattle, goat and sheep by about 91, 96, 78 and 50% farmers, respectively, although all farmers should provide concentrate feeds for optimum production.

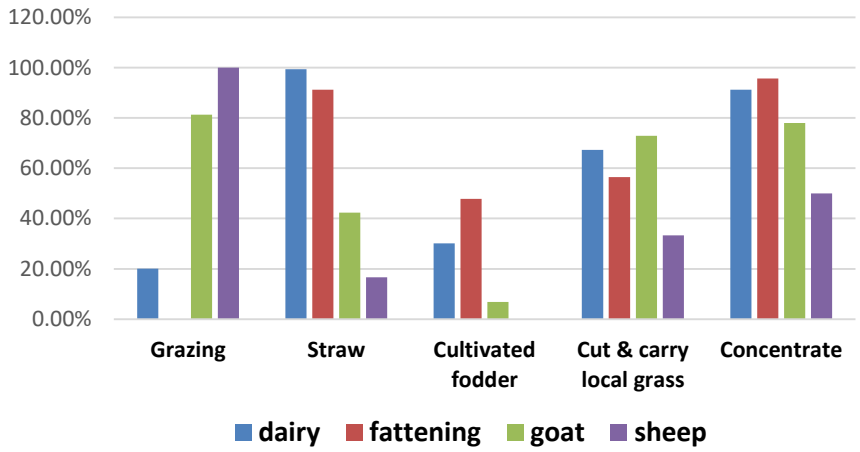

Fig. 12: Feeding system of livestock

Different feed ingredients contain different types of nutrients which are essential for optimum production from the animals. Thus, to formulate a balanced ration different feed ingredients should be included in the animal diets. The types of feed ingredinets most commonly used by project participant farmers for different livestock species in two districts under the project areas were investigated as depicted in Table Table 13 (Annex

I). Fig. 13 shows the types of diferent concentrate feed ingrdients provided by the farmers irrespective of study areas. The pattern of feeding habit to dairy and fattening cattle, goat and sheep as shown in Fig. 13 also entails that most of the farmers used to feed their animals by only energy sources of feed ingredients (wheat bran, rice bran, maize and broken rice). Oil cake was the sole protein source ingredient, though a very few farmers provided it to animals, which imply that the project participant farmers were not providing balanced feed to their animals. However, pellet feed is a balanced concentrate feed which was given to dairy and fattening cattle by about 14% and 31% farmers, respectively, while none of them to goat and sheep. Irrespective of study areas and farmers' category, the average daily allowance of concentrate mix feeds supplied to dairy cow, fattening cattle, goat and sheep was quantified as 1.57, 2.26, 0.30 and 0.230 kg per head, respectively. The daily allowances of concentrate mix feed what the dairy and beef keeper farmers supplied to their animals are likely to be below than the actual requirements for those animals. The amounts of concentrate mix feed supplied to animals by different categories of farmers are depicted in Fig. 14, which shows that transitional-poor farmers supplied more concentrate mix feed as compare to others. This indicates that transitional-poor farmers are more carefull to their animals than those of ultra-poor and enterprising poor farmers.

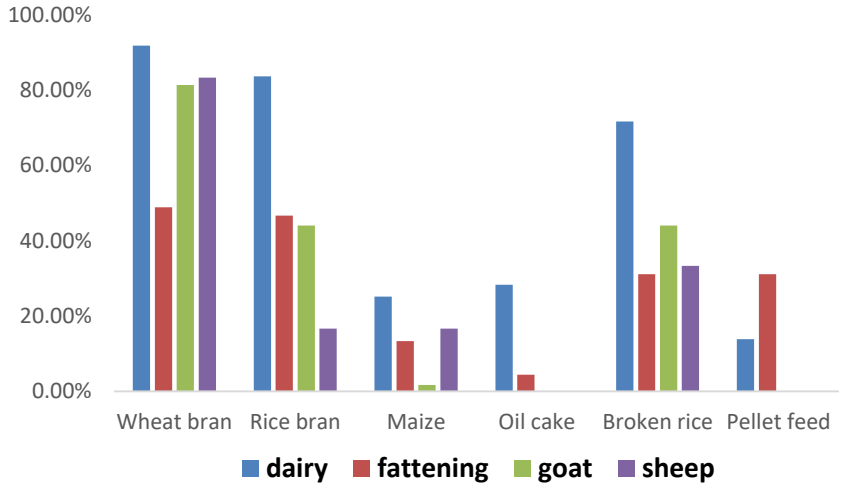

Fig. 13: Types of concentrate feed ingredients provided to animals

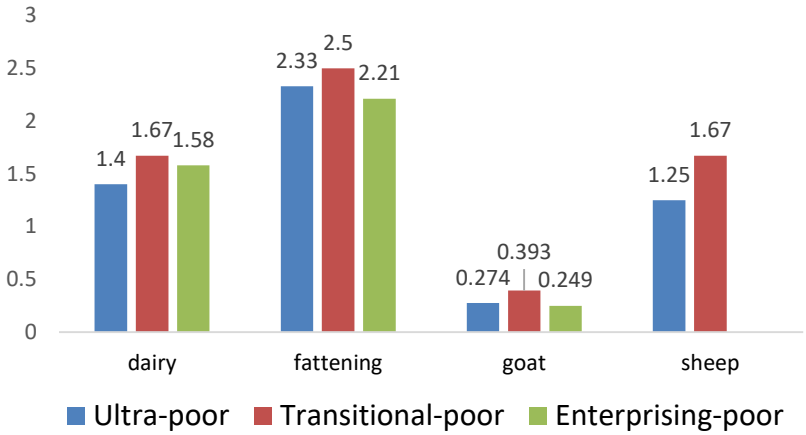

Fig. 14: Quantity of concentrate supplied to animals by different categories farmers

Unethical uses of some drugs are most alarming threats in dairy and beef fattening industry, which cause human health hazard in regards to safe foods. The indiscriminate usages of antibiotics, growth hormones and steroids have been a concern of threat in Bangladesh in beef fattening program. During study, it was investigated whether any of the farmers followed this mal-practice. During investigation all fattening cattle keeper project participant farmers denied on using growth promoter for boosting up growth of

animals, except those of conventional vitamin-mineral and calcium-phosphorus supplements. On the other hand, about 2% dairy farmers confessed that they used special drugs for enhancing milk and milk fat of cows, although farmers did not know what type of medicine they were using for that purpose (Table 13 in Annex I).

Production of Feeds & Fodder

It has been estimated that feeds incurred more than 70% of the total production cost of dairy and beef fattening program. To minimize feeding cost, massive production of HYV fodders is essential. However, to ensure year round availability of fodders, both seasonal (like maize, oat, Jumbo, cowpea, red/black gram etc.) and perennial (like Napier, German, Para etc.) fodders should be cultivated. How many project participant farmers cultivate different types of fodders in both districts under study areas were investigated as depicted in Table 14 (Annex I), which shows that about 34% project participant farmers in Naogaon and about 19% project participant farmers cultivated HYV fodders who allocated averages of 13.2 and 9.1 decimal lands, respectively. Types of fodder most commonly cultivated by the farmers under the investigated areas are graphically represented in Fig. 15, which entails that Napier was massively cultivated in those areas (82.5%). Napier is a robust fodder and popular for the farmers due to its' vigorous growth and can easily be havested frequently (5 to 6 harvest per year).

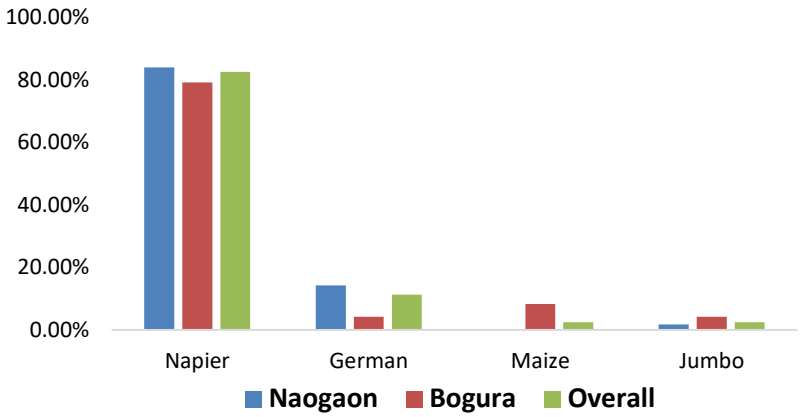

Fig. 15: Types of fodders cultivated for cattle

About 6% farmers sold their cultivated fodders (either surplus or commercial purpose) to the fodder traders or other livestock keeper farmers. On the other hand, about 25% participant farmers used to purchase fodders from either fodder traders or fodder producers for feeding their animals. Indeed, the fodder buyers either do not cultivate fodder or they have shortage of fodder for their animals. Basically, in rainy season the demand of fodder becomes higher as reported by about 84% farmers. Due to stunted growth of Napier in winter season, the demand of fodder in that season also rise as reported by 16% farmers (Table 14 in Annex I). Rice straw is a common feedstuff widely used in everywhere, although the quality is very poor. However, this feed can fill the stomach of the cattle in low input production system. In the study areas, about 82% participant farmers had to purchase rice straw indicating that they do not cultivate paddy in their lands or if they cultivate, the amount of straw produced by them are not adequate for feeding their animals. On the other hand, only 4% paddy producer farmers sold their rice straw (Table 14 in Annex I). Actually, rice cultivating farmers sold their surplus straws after feeding their own animals. Moreover, rice straw is an important alternative

feedstuff when green grasses are not available, especially during winter and in raniy season when grass fields undergo into water bodies.

Animal Performance Evaluation

It is very difficult to investigate actual production and reproduction potential of animals maintained *ex-situ*, because farmers who keep few animals in traditional system do not maintain animals' records obtained everyday or periodically. Hence, in this study the production and reproduction potential of cattle, goat and sheep was estimated on the basis of farmers' experience and observation. The productive and reproductive traits of deshi (native) and crossbred cows in two study districts were analyzed (as given in Table 3), which revealed that the average daily milk yields peaked to 1.9 and 6.4 kg, respectively for native and crossbred cows. Irrespective of district, the average lactation lengths of native and crossbred cows were estimated as 5.54 and 6.82 months, respectively. In the full lactation, the daily average milk yield of native and crossbred cows were 1.24 and 4.74 kg, respectively irrespective of district. The study shows that all milk production parameters of native cows were better than those of crossbred cows. Higher milk production potential of crossbred cows as compare to native cows is well evidenced, which is due to better genetic potentiality of crossbred cows. The daily average milk yield of native cows as obtained in this study is not agreed with earlier findings of 1.88 and 2.4 kg in the same genotype as reported by (Khan et al., 2001) and (Rahman et al., 2001). Similarly, daily average milk yield of crossbred cows as estimated in this study is not agreed with their studies (7.0 and 6.0 kg, respectively). (Khan et al., 2001) and (Rahman et al., 2001) in their studies reported lactation lengths in native cows to be 221 and 250 days, respectively which are higher than this study. Similarly, lactation length of crossbred cows as obtained in this study is lower than 282 and 375 days as reported by (Khan et al., 2001) and (Rahman et al., 2001). Actually, differences for study location, sampling population, management system and quality and quantity of feed supply might cause of variations among studies.

Table 3: Productive and reproductive performance of deshi and crosbred cows in two districts

Traits	Range	Bogura		Naogaon		Overall	
		Deshi	Cross	Deshi	Cross	Deshi	Cross
Peak milk yield (ltr/day)	1.5-20.0	1.89	6.70	1.91	6.02	1.91	6.41
Lactation length (mo)	4-10	5.50	6.86	5.55	6.76	5.54	6.82
Daily milk yield (ltr/day)	1-15	1.23	4.96	1.24	4.45	1.24	4.74
Age of showing first heat of heifer (mo)	12-40	26.50	19.51	23.06	16.58	23.76	18.36
Service per conception (nos)	1-7	1.43	1.43	1.78	1.32	1.71	1.39
Post-partum heat period (d)	21-210	65.36	63.65	53.17	60.10	55.68	62.22
Calving interval (mo)	12-24	14.36	16.57	15.36	17.33	15.17	16.88

The performance of reproductive traits of both genotypes of cows in both districts are also given in Table 3, which shows that crossbred cows attained puberty earlier than

native cows which is due to better genetic potentiality of crossbred cows. Moreover, the heifers of both gentypes in Naogaon attained puberty earlier than those heifers of both genotypes in Bogura. The age at puberty (when heifer shows first heat in her life) as investigated in this study for both genotypes are lower than earlier reports of (Ali et al., 2006), who found it to be 42 and 40 months, respectively for the same genotypes. The numbers of service per conception for both genotypes of cows as investigated in Bogura are similar, while crossbred cows in Naogaon required fewer numbers of service than that of native cows. Irrespective of location, the overall numbers of service required for each conception of native cows as investigated in this study is slightly higher, but lower in crossbred cows than (Rahman et al., 2001) who reported as 1.6 numbers for both native and Friesian crossbred cows. However, comparatively lower numbers of service per conception (1.16 in native and 1.25 in Friesian crossbred) were reported by (Ali et al., 2006).

The postpartum heat periods as found in this study were not varied too much between genotypes as well as between districts. Earlier, higher postpartum heat periods were reported by (Rahman et al., 2001) in both native (141 days) and Friesian crossbred cows (216 days). Later on, (Ali et al., 2006) reported postpartum heat periods of 113 and 107 days, respectively for native and Friesian crossbred cows which are also higher than what obtained this study. Similarly, the estimated calving intervals in this study were found very closer between genotypes and also between districts. The calving intervals of native and crossbred cows as estimated in this study are not in accordance (higher) with (Ali et al., 2006) who reported 376 days (or 12.53 month) for native cows and 369 days (or 12.3 month) for Friesian crossbred cows. However, the same estimate of 466 days (or 15.53 months) as reported by (Rahman et al., 2001) in native cows is well agreed, but the same estimate of 579 days (or 19.3 months) in crossbred cows as found in their study is higher than this study. The differences on study location, feeding, management, smaple size and methods of estimation among studies could be attributed due to variations among investigations. Although, the study revealed the superiority of crossbred cows over native cows in terms of milk yield and age at puberty, but it was evidenced that a native cow can produce more calves than crossbred counterpart in their lifetime. This is due to reproductive disorders (repeat breeding, anestrous) most often occurred in crossbred cows. Due to interaction between genotype and environment, crossbred cows cannot perform better in terms of reproductive characters in hot and humid environment prevailing in Bangladesh. However, the adaptability of native cows in hot and humid environment favored them to express their full genetic capability of reproductive traits, despite getting poor level of nutrition. However, by providing better nutrition, both productive and reproductive performance of native cows could be enhanced. Earlier, positive attributes of native cattle were also reported by (Bhuiyan, 1997).

The situation of beef fattening in the study areas was also investigated and some key indicators related to performance evaluation of fattening animals were analyzed as presented in Table 4. The investigation reveals that fattening farmers start their fattening program by collecting animals ranged from 6 to 24 months which averaged around one year of age. The farmers of Bogura usually collect younger animals than the farmers in Naogaon. The average duration of fattening program varied from 6 to 24 months depending on type of animals (native or crossbred) and the age of animals when started

for fattening. Normally, the younger animals require more times to sell after fattening. However, project participant fattening farmers used to fatten animals for an average of 12 months in case of crossbreds and about 14 months for native cattle (Table 4).

Table 4. Performance of fattening bull

Traits	Range	Bogura		Naogaon		Overall	
		Deshi	Cross	Deshi	Cross	Deshi	Cross
Age of bull when collect (mo)	6-24	6.5	8.67	15.75	13.25	13.90	12.0
Duration of fattening (mo)	6-24	6.00	21.33	13.33	11.5	12.00	14.18
Daily weight gain (g/d)	166.7-777.8	638.9	471.3	374.4	526.0	422.5	511.1

One of the noticeable indicators by which the performance of fattening animals can be evaluated is body weight gain. Feed conversion efficiency is another indicator which is not possible to investigate during field study. However, the daily live body weight gain of fattening animals as investigated in this study was based on farmers' hypothetical observation. It was found that the average daily weight gain (ADG) of crossbred fattening animals was higher than that of native counterpart, which is due to potentially higher live weight of crossbred cattle. The ADG potential of fattening cattle for both genotypes varied between districts. Moreover, irrespective of district, the ADG of native fattening animals as obtained in this study is lower than that of native Kedah-Kelantan (KK) cattle (0.583 kg/d at the age from 18 to 24) in Malaysia as reported by (Mak et al., 1984), while this is better than (Islam et al., 2021) who reviewed 0.291 kg/d for the same genotype based on their meta-data analysis. Earlier, (Akhter, S., Haque, K.S., Jali, M.A., Islam, 2004) studied growth rate of two native cattle genotypes, where they estimated 0.225 kg ADG in Pabna cattle and 0.217 kg ADG in Red Chittagong Cattle (RCC). Their estimates are lower than this study. The ADG of crossbred fattening cattle as estimated from the project participant farmers is lower than a recent study of (Musa et al., 2022) who found 0.650 kg ADG in a 90 days trial period for Friesian cross bull in Ethiopia. The variations of ADG among studies could be exploited due to differences for genetic, breed, age of fattening animal, duration of fattening, feeding and management etc.

Table 5: Production and reproduction performance of goat

Traits	Range	Bogura		Naogaon		Overall	
		Native	Improved	Native	Improved	Native	Improved
Age at puberty (mo)	4-13	8.50	9.73	8.46	7.50	8.47	9.38
Post-partum heat period (d)	20-90	47.21	43.36	30.17	30.00	36.45	41.31
Kidding interval (mo)	6-9	7.43	7.00	6.46	6.50	6.82	6.92
Littre size (nos)	1-3	2.29	2.27	2.00	2.50	2.11	2.31
Milk yield (ltr/d)	0.3-1.5	0.563	0.656	0.300	-	0.391	0.656

The productive and reporoductive performance of native and improved goats in the project participant farmers of both districts are given in Table 5, which shows that native goats attained puberty comparatively earlier than those of improved goats irrespective of district. However, the overall age at puberty as obtained in this study is in the line of the previous reports ((Amin MR, 2001; Halim et al., 2011; Ray et al., 2016) who reported 234 to 249 days (7.8 to 8.3 month). Actually, sexual maturity depends on hormonal

activity, development of reproductive organs, photoperiod and nutritional status of the goat.

The postpartum heat periods of both types of goat looked alike in both districts as shown in Table 5. Irrespective of district, the native goat showed postpartum estrous 5 days earlier than those of improved goats. However, the native goats are popular for their fecundity as they give birth kids twice in a year. This is possible if they come into estrous after 35 days of kidding. In that sense the postpartum heat period of native goat as obtained this investigation is likely good. However, both longer and shorter postpartum heat period as compare to this study were also reported by many researchers. The kidding intervals of native and improved goats had not shown to be differed in both districts as investigated in this study (Table 5). However, these estimates closely agreed with earlier reports of (Faruque et al., 2010) and (Hasan et al., 2014) who reported it to be 181 days (6.03 month) and 190 days (6.33 month), respectively. The average litter sizes for both types of goat in Bogura did not vary, while in Naogaon, litter size of improved goats were higher than it's counterpart. Moreover, the overall litter size of improved goat was better than native goat. The average litter size (around 2 per kidding) of native goat as investigated in this study is well agreed with earlier reports (Husain, 1993; Majumder, 2011), where they reported it to be 2.03 and 1.93. The average daily milk production of native goat is lower than improved goat which is completely due to genetic. Bascically, the amount of milk produced by does of both types is not sufficient for proper nourishment of their multiple kids. Thus, goat milk is not extracted in Bangladesh and hence the literatures on milk production of goat are not available to compare with this study.

The productive and reproductive performance of native sheep as investigated from the project participant farmers in two districts are depicted in Table 6, which shows that there is no difference of age at puberty between districts. Earlier, (Sarder et al., 2015) studied on sheep performance in Rajshahi who reported age at puberty to be 252 days (8.4 month), which is well agreed with this study.

Table 6: Production and reproduction performance of native sheep

Indicator	Range	Bogura	Naogaon	Overall
Age of showing first heat (mo)	6-12	8.00	8.00	8.00
Post-partum heat period (d)	21-45	22.33	29.67	26.00
Lambing interval (mo)	5-12	8.67	6.00	7.33
Littre size (nos)	2-3	2.33	2.33	2.33
Milk yield (ltr/d)	0.300-0.500	0.375	-	0.375

The postpartum heat period of native shep as obtained in Bogura is about 8 days earlier than that what obtained in Naogaon (Table 6). However, the overall postpartum heat period as investigated from this study is higher than 16.26 days as reported by (Sarder et al., 2015). The lambing interval as found in Naogaon is about 2.5 months shorter than Bogura (Table 6), which could be due to variations for genetic or management among flocks. However, duration of lambing interval is an important trait, as it is closely associated with lifetime lamb production; lower the lambing interval the higher the lifetime lamb production. Irrespective of district, the overall lambing interval as observed

in this study is higher than expected interval of 6.0 month, which enables ewes giving birth lambs twice in a year. Earlier, (Sarder et al., 2015) in their investigation reported lambing interval of 5.4 month for native sheep which is not in accordance with this study. This variation could be due to the any of the following reasons; genetic difference, feeding and management, location, sample size etc. As can be seen in Table 6 that there is no difference for litter size in native sheep between districts. The average litter size of native sheep as obtained in this study is comparatively better than that of 1.85 as investigated by (Sarder et al., 2015) in their study. The prolificacy of goat/sheep depends on litter size concurring lifetime kid/lamb production. The daily milk production of sheep in this study was assumed to be 0.375 kg based on the sheep keeper farmers's observation. However, this amount of milk is not sufficient for the proper nourishment of multiple lambs. That is why goat and sheep keeper farmers in Bangladesh do not extract milk for human consumption. Hence, literatures on daily milk production in sheep is not available to compare with this.

In the summing up, the variations of performance in cattle, goat and sheep as compared with other studies in terms of genotype and location are obviously due to genetic difference or variations for feeding, management, sample size and methods of estimation. However, the wider variations (range) of performance traits as investigated in this study shows that there is much heterogenity within and among populations. Thus, genetic improvement may be possible by selection and breeding.

Production Cost, Marketing, Revenue & Savings

One of the utmost crucial issues in livestock industry is higher cost of production. Feed cost incurred major cost for livestock production. To become profitable in livestock farming, feed cost should not be more than 50 to 60% of the total production cost required. However, feed cost is increasing day by day, while price of animal and products have not been increasing proportionately. Price hiking of feeds, input supply and services minimizes profit margin from this industry. To sustain dairy and fattening industry, cut off production cost is much challenging at this moment. Hence, there is no alternative ways of facing this problem unless cost effective feeding technologies are launched. The annual production cost of dairy, fattening, goat and sheep per head HH in Naogaon and Bogura under the study areas were estimated as given in Table 15 and Table 16 (Annex I). Irrespective of areas, the overall annual production cost per head of dairy cow, fattening cattle, goat and sheep were also estimated which averaged BDT. 25855/-,

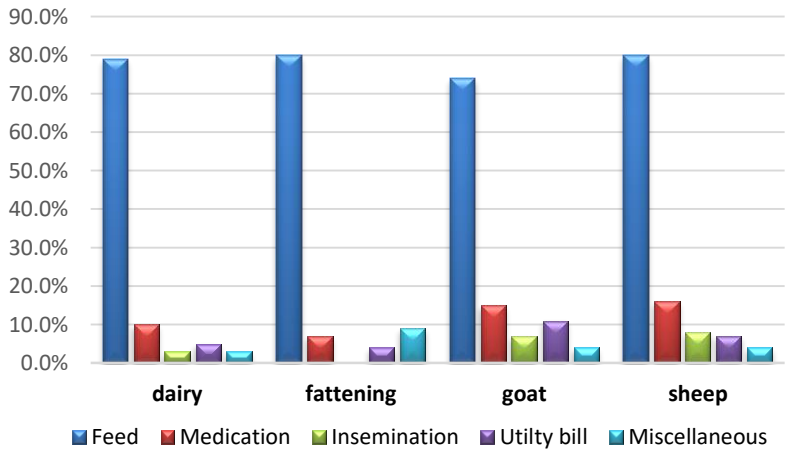

Fig. 16: Sharing of total production cost for livestock

28873/-, 2918/- and 1854/-, respectively. The shares (%) of total production cost for major items in dairy, fattening, goat and sheep are graphically presented in Fig. 16, which implies that around 80% cost is incurred for feeding, except that of goat which required 74% of the total production cost. This indicates that higher feeding cost is the main reason to cut off profit margin in livestock production.

The revenue from livestock industry comes by selling animals and milk. The annual selling of cattle, goat and sheep in the study areas are given in Table 17 (Annex I). The investigation reveals that dairy keeper farmers sold an average of 1.38 cows and 1.59 calves and fattening cattle keeper farmers sold an average of 1.67 animals in last one year. Similary, a goat keeper farmer sold an average of 2.07 adult goat and 1.50 kids and sheep keeper farmers sold an average of 6.14 adult sheep and 4.25 lambs. By selling animals, the average revenues earned in a year were estimated as BDT 1.91 lacs, 1.72 lacs 0.26 lac and 0.45 lacs by dairy, fattening, goat and sheep keeper farmers, respectively. The annual revenue earned by selling animals helped farmers for paying extra family expenditure required for children education, house construction or repair, land purchase or leasing etc.

As a perishable product, milk marketing is a very difficult task for dairy farmers, because the raw milk need to be marketed immediately after milking. In this investigation project participant farmers used to sell their milk to different types of buyers. Besides, farmers also sold their live animals to different clients. The milk and animal marketing strategy of the project participant farmers under the study areas in both districts was investigated and the findings are illustrated in Table 18 (Annex I). As can be seen in Fig. 17 that most of the farmers used to sell their milk to the goala or milkman and local consumers (mostly neighbors) with an average selling price of BDT 53.0 per kg, irrespective of areas and marketing channel (Table 18 in Annex I). On the other hand, cattle, goat and sheep were also marketed through various ways; where most of the project participant farmers (about 71%) sold their animals to the local animal markets (called as 'Hat'), while about 26% farmers sold their animals to the animal brokers (called as 'Bepari') from their house gate. The study also reveals that about 81% farmers confessed that they got fair price by selling their milk and animals (Table 18 Annex I).

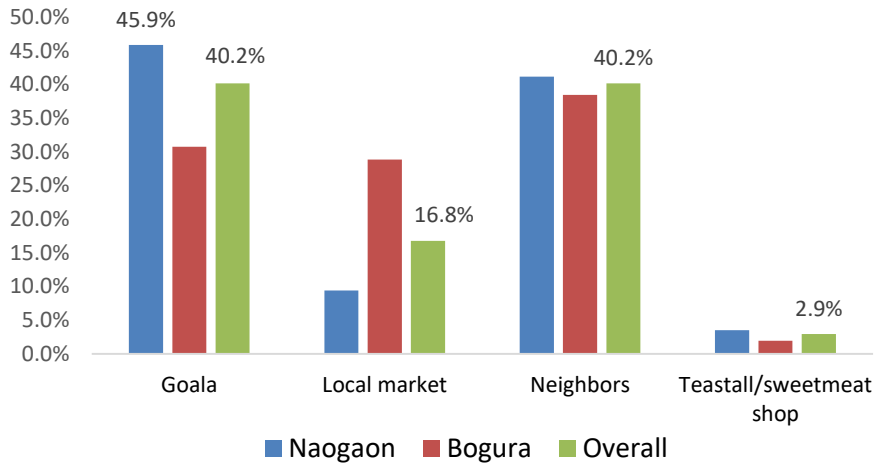

Fig. 17: Milk marketing channel

The utilization of income earned from dairy, fattening, goat and sheep farming in the study areas were investigated in this study as depicted in Table 19 (Annex I). The ways

how the incomes from livestock production were spent by the project participant farmers are graphically presented in Fig. 18 which shows that the highest about 70% farmers spent their income for family expenditure. About 10% farmers saved money with an average amount of BDT. 44344/- per year which was utilized for different purposes as shown in Fig. 18.

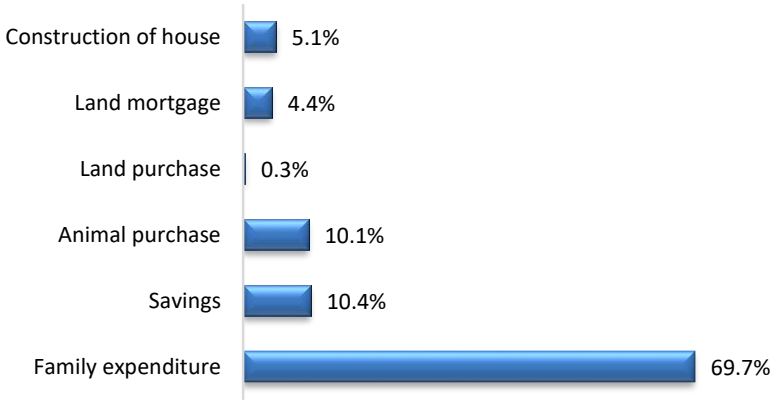

Fig. 18: Utilization of income from livestock farming

Among farmers who purchased animals from that savings, about 82% of them purchased cattle with an average number of 1.4 animals and rest 18% of them purchased goat with an average number of 5.3 goats in last one year. The amout of land taken as mortgage or purchased from the savings in last one year was about 37 decimals (Table 19 in Annex I).

Input Supply and Services & Linkage

The availability as well as quality of input supply and services are inseparable pre-requisites for profitable livestock farming. Hence, the availability and quality of input supply and services in the study areas under two districts were investigated as depicted in Table 20 (Annex I). From the study it was investigated that irrespective of study areas about 64% project participant farmers availed animal feeds and about 99% farmers confessed that the quality of animal feeds was good. About 70% participant farmers said that high yielding fodders were available in their areas. About 90% farmers availed vaccine, medicine & anthelmantics and among them about 98% reported that the quality of those inputs were good. To bred cows, bull semen were available as reported by 98% farmers and among them about 90% farmers agreed that the quality of bull semen were good.

The availability and demand of bull semen of different genotypes in two districts under the project areas are presented in Table 20 (Annex I). As presented in Fig. 19, that Friesian bull semen reveled as the most available and demandable to the farmers for breeding their cows. The availability and demand of Sahiwal bull semen is next to Friesian. Among the goat keeper farmers, all of them stated that breeding bucks

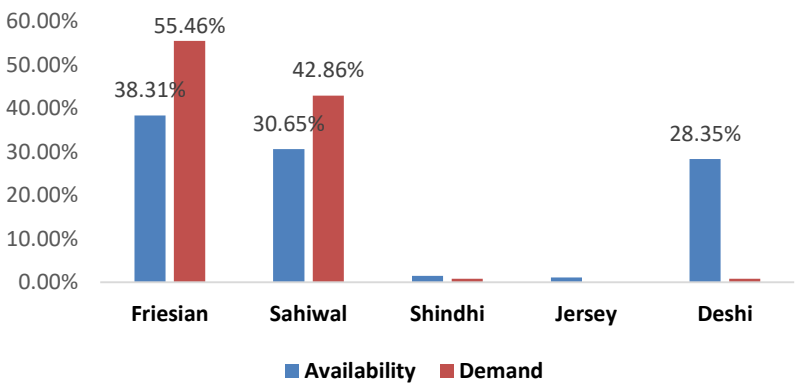

Fig. 19: Availability & demand of bull semen

were available to bred their does, while about 89% claimed the quality of bucks to be good. Besides, about 51% goat keeper farmers reported that native bucks (BBG) were available, while the highest demand of buck was reported by about 55% goat keeper farmers in favor of improved/crossbred bucks. On the other hand, all sheep keeper farmers kept native sheep and the ram of that type was availability in the study areas, while they had no alternative choice of breeding ram except the existing type i.e. native ram (Table 20 in Annex I).

The availability, source and quality of veterinary and artificial insemination services in the study areas were investigated and findings are depicted in Table 21 (Annex I), which shows that without considering areas, about 95% project participant farmers honestly said that veterinary treatment and other services (like de-worming, vaccination) were available for their animals, while about 70% farmers were satisfied for good services. Those services were mostly (about 66%) provided by private veterinary service providers (VSPs). The investigation also shows that about 99% project participant dairy farmers confessed that artificial insemination (AI) service was available for breeding their cows, whereas, about 84% farmers were satisfied on that service. The study also revealed that government agency provided about 51% AI service in the study areas, while the coverage of that service from private organizations (BRAC, ADL, Lal teer etc.) was about 49% as can be seen in Table 21 (Annex I).

The study further revealed that about 32% of the project participant farmers had linkage with financial service to get credit (loan) for different purposes, while about 36% of them taken loan for livestock farming with an average amount of BDT 72151/-, irrespective of purpose and study location (Table 22 in Annex I). In the study areas, most of the credit service was provided by NGOs (about 93%). However, about 44% farmers complained that the amount of loans what they were enjoying was not sufficient, thus need more amount of loans.

For establishing good marketing networks, development of linkages among all stakeholders working in livestock sub-sector is essentially important. From this study, it was investigated that about 61%, 56%, 74%, 35% and 0.4% project participant farmers had linkage with quality input suppliers (feed, vaccine, medicine, anthelmintics etc. seller), experienced VSP & AISP, local milk trader/goala, financial service provider and product marketing through online channel, respectively (Table 23 in Annex I). The results indicate that there are much scopes of opportunity to develop a healthy marketing channel in the project areas.

Training & Skill of the Farmers

For profitable livestock farming, development of knowledge and professional skills of the farmers are very essential. Hands-on training, model farm visit, technology demonstration help farmers to develop their knowledge and efficiency. In this study, it was investigated to know how many project participant farmers in the study areas received training on dairy, fattening and goat & sheep as depicted in Table 24 (Annex I),

which shows that an average of 39% project participant farmers got training on any of the said species.

However, Fig. 20 shows that among training receiver farmers, most of them had taken part on dairy related training. Fig. 20 also shows that more farmers in Bogura attended training on dairy and goat & sheep than the farmer in Naogaon. On the other hand, more farmers in Naogaon received training on fattening than farmers in Bogura. As depicted in Table 24 (Annex I), that most of the farmers got training from NGOs (73%). Among training receiver farmers, about 50% of them had taken part in training once in their life. The average duration of training got by the farmers was 4.43 days. Among the farmers who received training, all of them reported that they earned knowledge from training and all of them also followed the knowledge in their practical farm management what they earned from the training program.

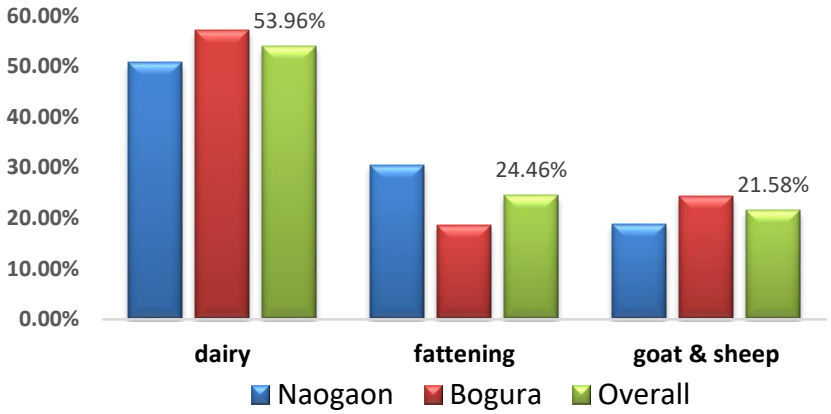

Fig. 20: % farmers accessed to training on different livestock species

Farm Management & Hygiene

Good housing facility is important to provide animals in comfortable environment, which includes type of house, floor condition, drainage system, lighting, ventilation and aeration. Proper ventilation and aeration make animals comfortable in hot weather, especially needed for crossbred cattle. Sufficient lighting in animal houses facilitates anti-darkness in cloudy weather and at night for good animal management, feeding, cleaning etc. Sufficient ventilation and lighting facilities also help to prevent damp condition in animal houses which causes unhealthy environment favorable for propagating microorganisms and out breaking of different diseases. Regular cleaning of animal house and manger is very much essential to remove microorganism remain in the surface of the floor and manger. Besides, good floor condition is essential as it helps to clean floor clearly as well as to reduce heavy load of organism remain on the floor. All these facilities and practices are related with Good Livestock Management Practices (GLMP) that comply Good Agricultural Practices (GAP). The key points related to farm management, cleanliness & hygiene and farm waste management as investigated in the study areas are presented in Table 25 (Annex I), which shows that only 0.74% project participant farmers were awareness on GAP and all of them confessed that they followed GAP on their farm management. The main house where the animals are kept at night is normally cleaned once in a day at moring time after the animals are shifted to another place in the homestead premises. The frequency of cleaning of the animals' standing place at day time is varied upon farmers' consciousness and their available time as can be seen in Table 25 (Annex I). About 32% cattle keeper farmers cleaned their animals'

standing place once in a day and about 33% farmers did that practice twice in a day, while rest of the farmers did that practice thrice or more in a day.

In this investigation, it was observed that highest about 67% project participant farmers left their farm wastes (cow dung) in to the open place outside the farm, while a very few (1.5%) farmers disposed those wastes properly (left in to the closed pit). Indeed, proper disposal and farm wastes is necessary as to keep environment free from pollution and to avoid outbreak of diseases. The utilization of farm wastes as investigated in the study areas is demonstrated in Fig. 21, which shows that most of the farmers (around 92%) preserved farm wastes for self-utilization. As given in Table 25 (Annex I) that about 65% cattle keeper farmers used cowdung for fertilizing their croplands and about 35% farmers used it as fuel (by making stick or cake) for cooking. The study also revealed that no farmers were adopted with farm waste recycling technology like production of biogas or any type of compost.

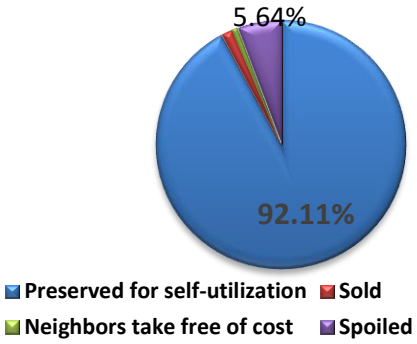

Fig. 21: Utilization of farm wastes

Cleanliness of udder, milking place, milk utensils and milkers' hand must be washed and cleaned properly with strong cleanging agents to ensure hygienic milk production. The cleaning and hygienic milk production in the study areas were investigated as given in Table 25 (Annex I), where about 99% dairy farmers confessed that they used to clean cows' udder before milking and all of them also reported that they also used to clean milkers' hand before milking. For cleaning udder of cows and milkers' hand, the cleaning agents used by most of the dairy farmers (about 63%) was only water, while about 37% dairy farmers used both water and detergent/soap. The ways how cowshed/paddock was cleaned and disinfected by the cattle keeper farmers in the study areas is demonstrated in Fig. 22 which clearly indicates that very few farmers disinfected their cowshed and paddock followed by sweeping with broom and washing with detergent. Fig. 22 also shows that most of the farmers used to clean their cowsheds and paddock by brooming and washing. Record keeping (of animals, AI, vaccination, de-worming, disease & medication, feeding, finance etc.) in the farm is important for livestock farm operation. It enables farmers to evaluate animal performance for making

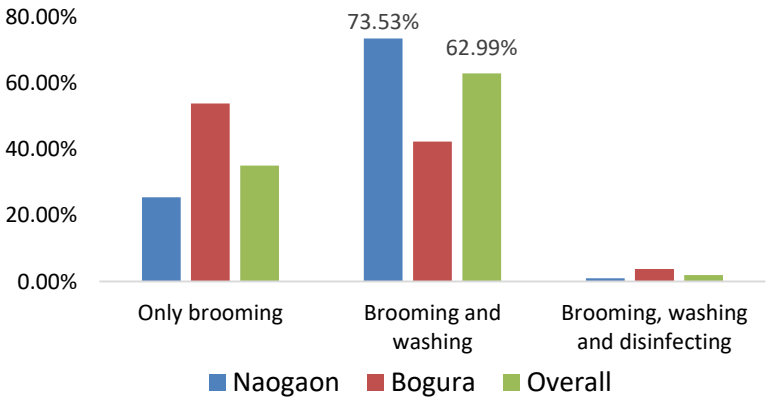

Fig. 22: Ways of cleaning cowshed & paddock

decision on selection or culling animals as well as to estimate profitability of the farm. In this investigation, only about 4% project participant farmers in the study areas were found who used to keep farm records.

Preventive Animal Health Care Management

The information regarding preventive health care management through vaccination and de-worming were investigated in this study and the details findings are depicted in Table 26 (Annex I). The types of vaccines the project participant farmers normally vaccinate to their animals and how much farmers vaccinated those vaccines to their animals are shown in Fig. 23. As can be seen in Fig. 23 that cattle keeper farmers normally vaccinate 5 types of vaccines, while most of them (about 30%) vaccinated LSD as it was acutely prevalent since last few years. On the other hand, PPR is more prevalent in goat and sheep. As a result about 77% goat keeper farmers and about 86% sheep keeper farmers vaccinated their animals against that disease. However, the goat pox vaccine was used by only 7% goat keeper farmers. Besides, about 16% goat keeper farmers and about 14% sheep keeper farmers vaccinated FMD vaccine to their animals (Fig. 23). The investigation also revealed that irrespective of study areas, about 91% dairy farmers and 86% fattening cattle farmers vaccinated their animals regularly. On the other hand, about 73% goat keeper farmers and 67% sheep keeper farmers vaccinated their animals regularly (Table 26 in Annex I). The percent of farmers de-wormed their cattle, goat and sheep in two districts under the study areas are presented in Fig. 24, which shows that irrespective of study areas about 97% dairy farmers, 81% fattening farmers, 90% goat farmers and 83% sheep farmers regularly de-wormed their animals. Fig. 24, also shows that regular de-worming to fattening cattle, goat and sheep

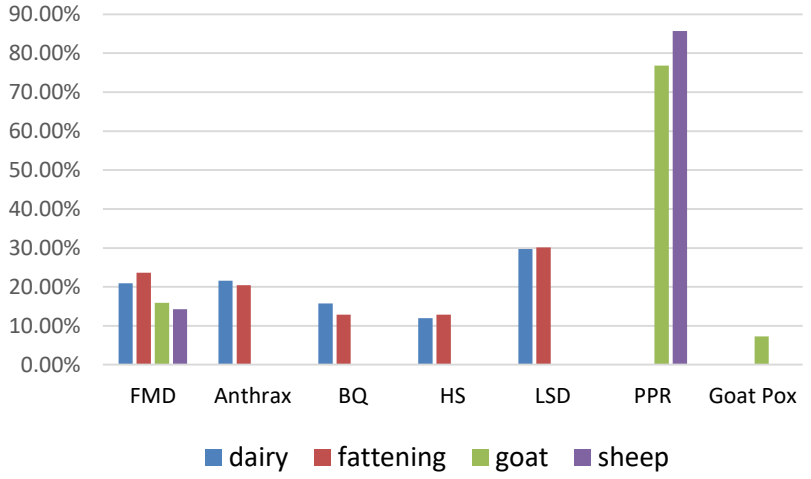

Fig. 23: Vaccination practiced for different species

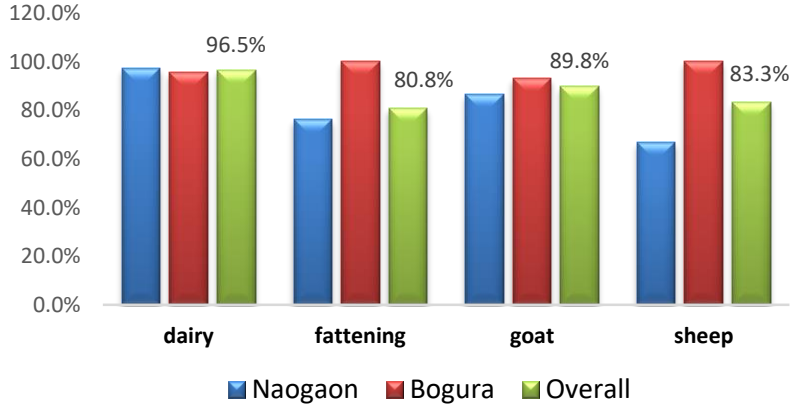

Fig. 24: % farmers de-wormed animals regularly

in the study areas under Bogura district was practiced by more farmers than those of farmers in the study areas under Naogaon district.

The time interval of de-worming dairy cattle, fattening cattle, goat and sheep in both districts under the study areas was investigated as depicted in Table 26 (Annex I). As we know that the interval of 4 to 6 months is required to de-worm cattle, goat and sheep. However, in some cases de-wormed may be required more frequently. Fig. 25 shows how frequently project participant farmers de-wormed their animals. As we can see that the highest about 51% dairy farmers de-wormed their animals thrice in a year, while in case of fattening cattle the highest about 43% farmers practiced it quarterly. On the other hand, most of the goat keepers (50%) and sheep keepers (60%) de-wormed their animals twice in a year.

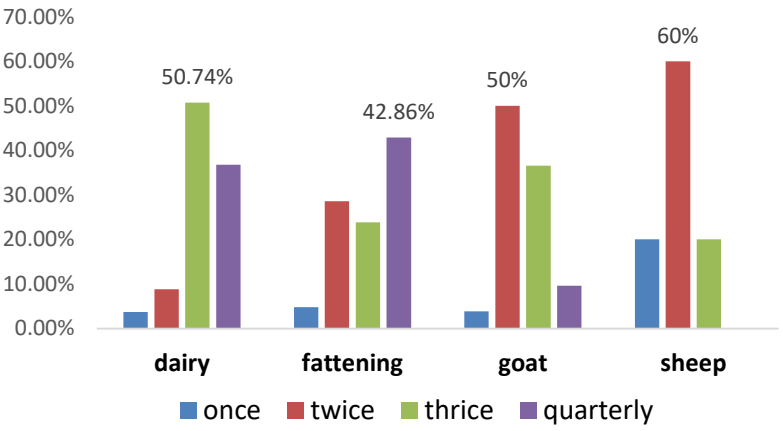

Fig. 25: Frequency of de-worming in different species

Disease Prevalence & Mortality

The information regarding disease outbreak and mortality in cattle, goat and sheep were investigated in this study and the analytical results are depicted in Table 27 to Table 30 (Annex I). The project participant farmers under the study areas were asked whether they had any incidence of diseases in dairy cattle, fattening cattle, goat and sheep in the last one year. About 37% dairy farmers, 31% fattening farmers, 20% goat farmers and 60% sheep farmers noticed that their animals were affected by different diseases. In this study it was investigated that the numbers of adult dairy cows, fattening cattle, goat and sheep affected by diseases in last one year under the study areas were averaged as 1.57, 1.13, 1.50 and 3.0 per project participant HH, respectively. For young animals (calves, kids and lambs) the same estimates were 1.34, 4.0 and 2.0, respectively. Irrespective of study areas, the most prevalent diseases occurred in dairy and fattening cattle are graphically presented in Fig. 26, which implies that LSD was the most prevalent disease in cattle (both dairy and fattening) followed by FMD. On the other hand, PPR was the most acute disease occurred in 67% both in goat goat and sheep (Table 29 and Table 30 in Annex I). The mortality in

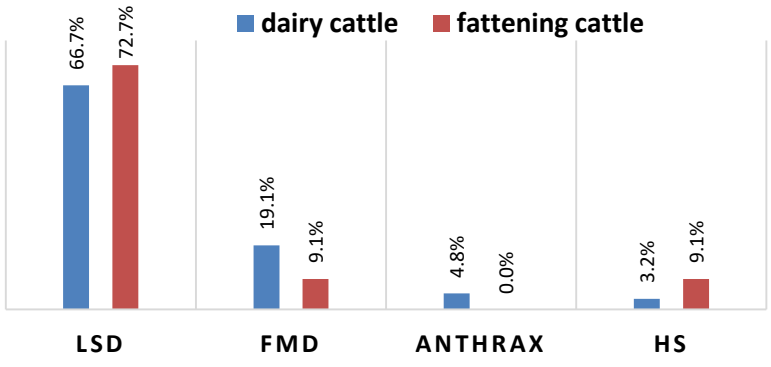

FIG. 26: PREVALENCE OF DISEASES IN CATTLE

dairy & fattening cattle, goat and sheep in the study areas were investigated by calculating % of animal dead cases found among the project participant HHs. The study revealed that the average dead cases found in dairy cattle, fattening cattle, goat and sheep were 19%, 0%, 27% and 33%, respectively (Table 27 to Table 30 in Annex I) irrespective of study areas. By affecting different diseases, the numbers of adult dairy cows, fattening cattle, goats and sheep were 1.0, 0.0, 2.0 and 0.0, respectively and the numbers of dairy calves, kids and lambs were 1.43, 9.0 and 2.0, respectively as given in Table 27 to Table 30 (Annex I). The causes of death in dairy cattle is graphically represented in Fig.27, which shows that about 23% dairy cows were died due to FMD and same percent due to anthrax diseases. The study also shows that among dead goats, about 67% of those were died due to PPR disease and rest were due to other reasons like bloat, pneumonia and diarrhea (Table 29 in Annex I). On the other hand, among dead sheep, all of those were died due to PPR (Table 30 in Annex I). The seasonal variations of animal mortality in the study areas were also investigated in this study which are depicted in Table 27 to Table 30 (Annex I). However, Fig. 28 shows that cattle were died of diseases mostly during rainy season as well as all sheep were died in this season. On the other hand, all goats were died in winter. The investigation on seasonal variations of animal mortality will be helpful for the farmers to become alert in that season when death of animals occurred more.

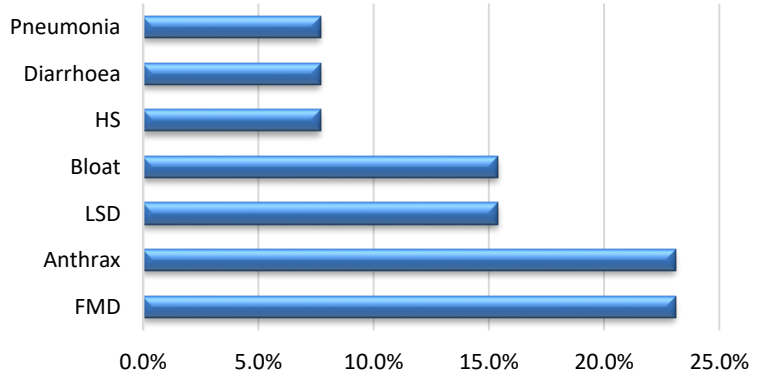

Fig. 27: Causes of death in dairy cows

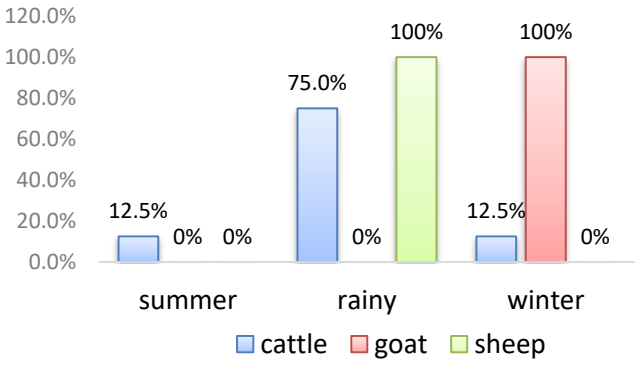

Fig. 28: Season when animals died more

The project participant farmers were asked to state the trend of disease prevalence and mortality of animals over time based on their practical observation which is depicted in Table 26 (Annex I). Irrespective of study areas, about 72% farmers disclosed that the disease prevalence and mortality of animals had been decreased over times, whereas about 24% farmers reported that prevalence of diseases and mortality remained unchanged over time.

Employment and Working Hour for Livestock Management

The employment generation and contribution of time spend by male and female family members in livestock farming was investigated as presented in Table 31 (Annex I). Most

of the project participant farmers had few numbers of animals, thus need not required to recruit wage-based labours. However, some farmers recruited regular wage-based workers who had large numbers of cattle and ability to pay wages and some of them deployed wage based labor occationally. In this study it was found that about 2.5% dairy farmers and about 2.2% fattening farmers recruited labors with average monthly wages of BDT. 8,125/- and 10,000/-, respectively for their animal production and management. No goat and sheep keeper farmers had wage-based labors for rearing their animals. The farmers who have no recruited workers have to maintain their farms by themselves. Usually, both male and female family members spare times to work jointly for maintaining their animals as a traditional culture in rural areas. From this study it was observed that female family members usually spend more times than male family members for dairy cattle (average 4.0 and 2.7 hours in a day) and goat rearing (average 2.9 and 2.0 hours in a day). The daily average hours spent by male and female family members for management of fattening animals are 3.45 and 3.33, respectively. While in case of sheep keeper HHs, male and female family members spent equal times (3.25 hours/day) for managing their sheep.

Nutrition Status of the Farmer

To lead a healthy life for all human beings, balanced nutritious foods must be included in the regular diets. To ensure intake of all nutrients required for the human body, it is essential to add 10 categories of foods in their 24-hours diet, as given in Table 7.

Table 7: Daily intake of different food items in two districts

Food items	% intake by the farmers		
	Naogaon	Bogura	Oveall
1. Crop, root, tuber (potato) etc.	100	100	100
2. Cowpea, peas, lentil etc.	63.89	59.63	61.34
3. Peanut, seed etc.	20.37	21.74	21.19
4. Milk and milk products	56.48	40.99	47.21
5. Meat (red or white) and fish	79.63	83.85	82.16
6. Egg	22.22	19.88	20.82
7. Deep green vegetables	28.70	45.96	39.03
8. Vit-A enriched vegetables	27.78	17.39	21.56
9. Other vegetables	17.59	19.88	18.96
10. Fruits	47.22	39.75	42.75

In this study it was investigated to find how many project participant farmers usually consume those categories of foods. For this instance, farmers were asked to know what types of foods they had taken in their last 24-hours meals. The study revealed that all peoples usually intake first item of food by taking rice, flour and potato, which are very common, available and comparatively cheaper, thus enable all categories (poor, rich) of peoples to consume. After first item of food, about 61% HHs used to include pulse in their everyday's meal. About 82% HHs consumed either meat or fish. As can be seen in Table 7 that, about 43% farmers included any kind of local or foreign fruit in their 24-hours diet. Due to hiking price, only about 21% HHs included egg in their 24-hours diet. Table 7 also shows that the food intake trends between two districts are almost alike with a bit variation, except those of milk (or product) and vegetables. Table 8 entails the food

intake trends of different categories farmers. 100% farmers of all categories consumed crop, root, tuber (potato) etc. type foods. Table 8 shows that very few differences were observed among the food intake pattern of different categories of farmers for item 2 and item 5, while comparatively higher % of ultra-poor farmers consumed item 3 (peanut, seed etc. like food) than those of transitional-poor and enterprising-poor farmers.

Table 8: Daily intake of different food items according to different categories of farmers

Food items	% intake by the farmers		
	Ultra-poor	Transitional-poor	Enterprising-poor
1. Crop, root, tuber (potato) etc.	100	100	100
2. Cowpea, peas, lentil etc.	63.46	62.00	60.48
3. Peanut, seed etc.	24.55	16.00	15.38
4. Milk and milk products	36.54	38.00	53.29
5. Meat (red or white) and fish	76.92	80.00	84.43
6. Egg	21.15	16.00	22.16
7. Deep green vegetables	42.31	46.00	35.93
8. Vit-A enriched vegetables	17.31	26.00	21.56
9. Other vegetables	19.23	24.00	17.37
10. Fruits	40.38	34.00	46.11

Enterprising-poor farmers consumed more milk and milk products than other two categories of farmers. Transitional-poor farmers consumed fewer eggs compared to ultra-poor and enterprising-poor farmers. Most of the ultra-poor farmers rear chicken in the backyard system, which enables them opportunity to consume egg without purchasing. On the other hand, comparatively better financial solvency of the enterprising-poor farmers enables them to purchase eggs. Vitamin-A enriched vegetables are consumed by fewer ultra-poor farmers as compare to other categories farmers, which is due to higher market price. However, due to better financial ability, more % of enterprising-poor farmers consumed fruit than other two categories farmers. The total items of food (among 10) as consumed by the project participant farmers in their 24-hours diet in both districts are depicted in Table 9. The investigation entails that none of the farmers used to intake all of 10 food items at a time in their regular diets in a day. However, highest total of 4 food items were consumed by most of the farmers (about 40%), irrespective of district. The study also revealed that only around 2% farmers consumed a total of 8 food items in their regular diets in a day.

Table 9: Number of food item intake in a day in two districts

Number of food items	% intake by the farmers		
	Naogaon	Bogura	Overall
2-items	0.93	1.24	1.12
3-items	5.56	16.15	11.90
4-items	47.22	34.78	39.78
5-items	28.70	32.30	30.86
6-items	12.04	13.04	12.64
7-items	3.70	0.62	1.86
8-items	1.85	1.86	1.86

Table 10 shows the pattern of total items of food (among 10) as consumed by the project participant farmers in their 24-hours diet according to farmers' category. The study shows that there is no differences among farmers of three categories for intake of highest numbers of food items in their regular 24-hours diets, although highest about 48% ultra-poor farmers consumed 4-items of foods followed by transitional-poor and enterprising-poor farmers.

Table 10: Number of food item intake in a day according to different categories of farmers

Number of food items	% intake by the farmers		
	Ultra-poor	Transitional-poor	Enterprising-poor
2-items	1.92	2.00	0.60
3-items	11.54	14.00	11.38
4-items	48.08	38.00	37.52
5-items	28.85	32.00	31.14
6-items	9.62	14.00	13.17
7-items	0.00	0.00	2.99
8-items	0.00	0.00	2.99

B. Focus Group Discussion (FGD)

In focus group discussion, all participants were livestock keeper project participant farmers represented from different locations, age groups and sexs. A structured questionnaire was prepared to view the overall scenario of dairy, fattening, goat and sheep production under the study areas. The salient findings as found from the FGD is discussed here below:

From discussion with all participants, it was observed that about 70% farmers were rearing dairy cows among which about 55% of those were crossbred cows. Among crossbreds, about 55% were Friesian cross, 40% were Sahiwal cross and rest 5% were other crosses. The rearing system of dairy cows was mostly stall feeding (80%) followed by semi-intensive (15%) and extensive (5%). The breeding system of cows was mostly artificial insemination (AI) which is followed by 85 farmers, while only 15% followed natural breeding. About 25% farmers were rearing fattening cattle among which about 40% were native, 30% were Sahiwal cross and 30% were Friesian cross. The rearing system of fattening cattle was mostly stall feeding (94%) followed by semi-intensive (3%) and extensive (3%). About 70% farmers keep goat, among which 65% were native goat and 35% were crossbreds. Around 10% farmers kept sheep, where about 95% sheep were native and rest 5% were garole type.

The availability and quality of necessary inputs and services required for dairy, beef fattening, goat and sheep farming were investigated during conducting FGD. The degree of availability and quality of necessary inputs and services were analyzed based on the information taken during baseline study which are summarized in Table 11 and Table 12.

Table 11: Availability of input supply and services

SL No	Name of input and service	Degree of Availability (% response)		
		Available	Less available	Not available
1	Bull Semen	80	20	-
2	Breeding Buck	75	20	5
3	Breeding Ram	95	-	5
4	Pasture/Grazing land	20	5	75
5	Animal Feed (Concentrate)	95	5	-
6	Dry Roughage (Straw)	100	-	-
7	Green Grass (Fodder)	-	50	50
8	Feed/Feeding Technology	-	15	85
9	Vaccine	55	45	-
10	Anthelmatics	80	20	-
11	Veterinary Medicine	100	-	-
12	Veterinary Treatment Service	90	10	-
13	Artificial Insemination Service	95	5	-
14	Animal Insurance Facility	-	-	100
15	Loan Facility	20	20	60
16	Farm Mechanization Equipments	-	-	100

It is very usual that the farmers'perceptions on the availability and quality of inputs and services could be varied from man to man or place to place. Moreover, it is not usual that the availability of inputs and services will be equal in everywhere. Thus, the analytical values as given in Table 11 and Table 12 are though apparent, but as a whole, it may be considered as the overall scenario prevailing in the study areas. Table 11 clearly indicates that the emphasis should be given to ensure the availability of green grass, feeds and feeding technologies, animal insurance and loan/credit facility and farm mechanization equipments. Besides, the availability of vaccine should be increased more.

Table 12: Quality of input supply and services

SL No	Name of input and service	Degree of Quality (%response)			
		Very good	Good	Roughly	Poor
1	Breed of Dairy Cattle	-	40	60	-
2	Breed of Fattening Cattle	-	50	50	-
3	Breed of Goat	-	25	75	-
4	Breed of Sheep	-	5	80	15
5	Bull Semen	-	60	35	5
6	Breeding Buck	-	55	45	-
7	Breeding Ram	-	25	55	20
8	Animal Feed (Concentrate)	-	25	50	25
9	Vaccine	-	40	55	5
10	Anthelmantics	-	65	35	-
11	Veterinary Medicine	-	35	60	5
12	Veterinary Treatment Service	-	35	60	5
13	Artificial Insemination Service	-	35	60	5

Table 12 shows the degree of quality of necessary inputs and services required for dairy, beef fattening, goat and sheep farming. However, it is true that the degree of quality of

none of the inputs and services (as given in Table 12) are very good in context of Bangladesh. Besides, the level of satisfaction of the following inputs and services may be varied from man to man depending on the knowledge, experience and perception of the peoples as well as performance of the inputs and services. Table 12 reveals that the quality of dairy cattle, goat and sheep breeds, breeding rams, animal feed (concentrate), vaccine, veterinary medicine, veterinary treatment services and artificial insemination (AI) services in the study areas must be improved. Further, the qualities of bull semen, breeding buck and anthelmantics need to be improved more.

The availability and quality of fluid milk, milk products and meat of cattle, goat and sheep in the study areas were investigated during FGD. According to the observation of the FGD participants, the degree of availability and quality of those products are summarized in Table 13 and Table 14. Table 13 undoubtedly reveals that the importance should be given to ensure the availability of buffalo and sheep meat in the study areas. Among red meats, buffalo meat is better than beef due to low fat and cholesterol contained in buffalo meat. Thus, buffalo farming should be promoted in the project sites. Besides, the availability of cow milk, milk products and goat meat should be increased more by promoting dairy and goat farming in the project areas.

Table 13: Availability of Animal Products

SL No	Name of Animal Products	Degree of Availability (% response)		
		Available	Less available	Not available
1	Cow Milk (Fluid of Frozen)	50	50	-
2	Milk Products	50	50	-
3	Cattle Meat (Beef)	100	-	-
4	Buffalo Meat (Buff)	-	70	30
5	Goat Meat (Chevon)	70	30	-
6	Sheep Meat (Mutton)	-	25	75

Table 14 infers that the quality of milk products and cattle, buffalo and sheep meat in the study areas should necessarily be improved by motivating milk and meat processors. Further, the quality of goat meat need to be improved more.

Table 14: Quality of Animal Products

SL No	Name of input and service	Degree of Quality (%response)			
		Very good	Good	Roughly	Poor
1	Cow Milk (Fluid of Frozen)	-	95	5	-
2	Milk Products	-	35	50	15
3	Cattle Meat (Beef)	-	40	60	-
4	Buffalo Meat (Buff)	-	15	80	5
5	Goat Meat (Chevon)	-	70	30	-
6	Sheep Meat (Mutton)	-	5	35	-

The problems related to the following important issues as identified during conducting FGD are enlisted below:

Breeds

- The quality of breeds are not up to the mark of expectation

- The progeny produced by AI are mixed and low productive

Breeding and reproduction

- No pure breeding is followed
- Required more services for each conception (RB)
- Animals do not show heat timely (Anestrous)
- Conception is not retained (Abortion)

Feeds and Feeding

- High cost of feeds,
- Feeds are adulterated

Health and Diseases

- The prevailing diseases are allergy, FMD, LSD, HS, fever, swelling, foot rot, bloat, PPR
- Diseases are not properly cured despite administering medicines frequently

Veterinary Treatment

- Quality of veterinary treatment is not satisfactory
- Veterinary medicine and treatment cost is very high
- Lack of experienced and quality veterinarian
- Veterinarians in the livestock hospital are not always availble

Milk arketing

- Lack of milkman for milking cows
- Milk market is not available
- Milk marketing is not easy
- Lack of milk preservation facilities
- Low price of milk

Animal Marketing

- No local market is available
- Market is far away
- Lack of buyers in the market
- Have to sell to the traders with low price
- Over dominancy of the animal traders in the market
- Fair price is not obtained from the animal traders

Although, most of the farmers are not well concerned on good farming practices, some problems related to overall farm management, waste management and disposal of dead animals have been identified during conducting FGD which are enlisted below:

- Animals are reared with traditional system
- Lack of housing facility and adequate space for keeping animals
- Lack of cleanliness and drainage facility

- Lack of space and facilities for disposing farm wastes
- Lack of adequate lighting and ventilation facilities in the animal house
- Lack of knowledge on disposal of dead animals
- Lack of knowledge and training
- Lack of caretakers to maintain animals
- Lack of financial support to ensure good management practices

Though, most of the farmers are not well acquainted with problems regarding environment & climate change and natural disaster, some of the problems as noticed by the farmers during FGD are enlisted here:

- Decreasing production of animal feeds causes scarcity of feeds
- Prevailing health problems (illness and weakness), diseases (like LSD, fever, sneezing, cold) and reproductive disorder
- Rising ambient temperature causes higher gas production in the cattle house
- Flood
- Mosquito hazard

C. Key Informant Interviews (KII)

In this method interviews were taken from the key persons directly and indirectly involved in cattle, goat and sheep production, processing, marketing, input supply and services. Interviews were taken from livestock service providers (veterinary treatment and artificial insemination) both in government agencies and private professionals, input suppliers, traders, milk and meat processors etc. The focus was given for obtaining factual information from the interviewers. The replies as obtained from the interviewers are discussed here below:

Livestock Service Provider

Upazila Livestock officer (ULO), Veterinary Surgeon (VS) and Livestock Extension Officer (LEO) are the key persons who are providing animal health and veterinary treatment services in upazila level. The services provided by the government through upazila livestock office are veterinary treatment, artificial insemination, vaccination and de-worming. Although, all types of livestock species are given treatment there, but most of the clients are cattle and goat keeper farmers. According to their field observation, about 30 to 70% farmers keep dairy cows and 20 to 65% keep fattening cattle depending on the areas. Both dairy and beef fattening farming are profitable as reported by them. Depending on the areas, about 30 to 60% cattle are native or indigenous type and rest are crossbreds of diferent genetic combinations. About 30 to 60% farmers keep goat depending on the locations. Most of the goats were indigenous types. Depending on the areas, 5-25% farmers of the study areas keep sheep. They reported that most of the farmers in their areas do not vaccinate and de-wormed their animals regularly. Most of them reported that they had taken initiative to motivate farmers for production of hygienic and safe milk and meat following global GAP and HACCP protocols. To expand livestock services through upazila livestock offices, more veterinary equipment, vaccine, veterinarians and associate stuffs are needed.

As per observation and experience of the ULO/VS/LEO, the following diseases were prevailing in the project areas:

- LSD and FMD (in cattle)
- PPR (in goat)
- PPR, pneumonia, ecto-parasite and diarrhoea (in sheep)

The problems as experienced by the farmers related to production and marketing of animals along with possible causes as observed by the ULO/VS/LEO in the project areas are as follows:

- Milk marketing and shortage of green grasses are major problems for dairy farming
- High cost of feeds is a major problems for beef fattening farm
- Insufficient vaccines, improper treatment, lack treatment services at right time and lack of maintaining biosecurity in the farm are the problems in animal health.
- Lack of quality semen, repeat breeding (RB), unconsciousness of the farmers and mal-nutrition cause problems in breeding and reproduction of cows
- Very high price of feeds and inadequate feeding are major problems in feeds and feeding
- Lack of milk collection point, imbalance marketing and price fluctuation are major problems in milk marketing
- Lack of biosecurity and reluctant of the farmers to follow good farm management dispite of having knowledge obtained by training are major problems in overall farm management

The major constraints for developing milk and meat production as reported by them in the project areas are given below:

- Using 100% exotic bull semen
- Lack of awareness of the farmers
- Price hiking of animal feeds
- Lack of milk collection centre
- Price fluctuation of milk
- Lack of slaughterhouse
- Market syndicate of middlemen

The possible remedies for those constraints are given below:

- Need to use below 75% exotic bull semen
- Need to cultivate fodders in fallow land
- Government subsidy is needed in this sector
- Need to monitor feed markets
- Need to increase production of milk products

According to their perception, the possible ways to motivate related stakeholders for production of safe and hygienic milk, meat and milk products are summarized as follows:

- By giving more training and building awareness of the farmers
- By adopting modern technology

The private livestock service providers (LSPs) are playing an important role in livestock development by providing primary veterinary treatment services, vaccination, de-worming and atficial insemination services together with government agencies. In livestock sector, government LSPs cannot simply meet-up the full demand of all livestock keeper farmers.

Table 15: Brief Profiles of Livestock Service Providers

SL No	Indicators	Quack	LSP (Quack cum AISP)
1	Age (yrs)	31 to 48	27 to 38
2	Education	SSC to BA	SSC to BBS
3	Professional experience (yrs)	3.3 to 23	4 to 15
4	Professional certificate course (month)	0 to 3	2 to 6
5	Short training (total days)	10 to 57	0 to 15
6	Monthly income from this occupation (,000)	8 to 15	5 to 12

The gap of mass people demands is meeting up to some extent by local LSPs who are recruited by government agencies (as a volunteer), NGOs and some independent service providers. Two categories of LSPs are mainly working in livestock sector as paravet or quack, who mainly gives veterinary treatment services, vaccination and de-worming and AISP, who gives artificial insemination services. However, some LSPs provide all of these services. The brief profiles of these service providers are shown in Table 15. It is very usual that all peoples may not be equally satisfied upon the services provided by the service providers. Moreover, the efficiency of a service provider can be evaluated based on the level of satisfaction of the service receivers. In this study, the types of complaints farmers most oftenly complain to the LSPs are given below:

- Side effect after treatment (loss of appetite)
- Death of animal caused by improper treatment
- Repeat breeding (RB)
- Service is not provided timely
- Diseased animals are not recovering despite higher cost of treatment
- Cows are becoming heat few days after insemination
- Offsprings are not up to the level of expectation of the farmers
- Animals are recovering completely from diseases
- Animals are not fattening
- Animal are not becoming heat
- High cost of medicine
- Vaccine is not effective
- Medicines are not working strongly against diseases

The ways of approaching farmers against those complaints are given below:

- By giving next treatment free of cost
- By approaching farmers very politely
- By telling them for regular vaccination and de-worming
- By telling them for seeking treatment service at right time
- By referring recognized veterinarians if diseases are very complex
- By telling them that there might be other problems

- By giving advice for adequate supply of balanced ration
- By giving advice to keep farm environments clean
- By giving advice to take care animals properly to reduce cost of medication
- By giving advice to vaccinate animals followed by providing multivitamins

The problems faced by the farmers regarding production and marketing of milk and animals along with possible causes prevailing in the project areas as reported by the LSPs are given below:

Dairy production

- Low production due to inferior breed and inadequate supply of feeds, scarcity of green grasses and improper management,

Beef cattle production

- Performance of beef cattle is not satisfactory due to lack of quality breed, scarcity and lack of balanced feed and high cost of feed

Animal health and disease

- Outbreak of LSD, FMD, Pneumonia, Diarrhoea, PPR, BQ, Bloat and Fever which were due to improper management, adverse environment

Breeding and reproduction

- The reproductive problems prevailing in the project areas were RB, Anestrous, Delayed heat, Metritis, Prolapse, dystocia and low quality bull semen

Feeds and Feeding

- Unbalanced, poor quality and inadequate supply of feeds which was due to scarcity and higher price of feeds
- Traditional feeding system (feeding boiled broken rice) causes difficultuly to animals
- Scarcity of green grasses

Milk marketing

- Difficult to sell due to fewer consumers
- Low market price due to price fully controlled by milk traders/goala

Beef fatten cattle, goat and sheep marketing

- Bad transport and communication facilities
- Injury of animals caused during transportation due to vehicle
- Low market price of fatten cattle due to animal traders/brokers who control market price

Overall farm management

- Poor housing, farm environment and management and lack of proper cleanliness and biosecurity due to lack of experience and unconsciousness of the farmers and financial insolvency
- No manger (separate for feeding and drinking) is provided

Farm waste management

- Poor farm waste management which is due to lack of adequate space, unconsciousness of farmers and financial insolvency

Weather, climate and environment

- As a consequence of adverse environment, changing weather and climate causing higher prevalence of diseases

According to the observation and experience of the LSPs, the following constraints were prevailing for improving production of milk and meat in the study areas:

- Lack of quality feeds and breeds of cattle, goat and sheep
- Lack of green grasses and high price of feeds and medicines
- Milk marketing and low price
- Over dominancy of market traders/brokers leading to lowering and fluctuating milk and animal price
- Lack of knowledge of the farmers for selection of quality breeds
- Lack of nearby market for selling milk and animals
- Lack of communication for marketing prodcuts
- Lack of modern technology and facilities for manufacturing milk products
- Lack of knowledge of the farmers

Based on the suggestions as given by the LSPs, the possible ways how the aforesaid constraints for improving dairy and beef fattening programs and goat and sheep production are as follows:

- Need to develop linkage between farmers and milk product manufacturing companies
- Need to manufacture milk products
- Need to create facilities for transporting animals
- Need to allot lands for cultivate HYV fodders
- Need to adopt feeding technology (like silage)
- Need to develop quality breed
- Need to ensure reasonable price of feeds and medicines
- Need to create markets and ensure fair priceof milk and animals
- Need to provide advice and training to the farmers
- Need to build public awareness supported by GOs and NGOs levels
- Need to provide financial supports to the farmers and other stakeholders
- Need to arrange demonstration and knowledge sharing

As per suggestions of the LSPs for the roles of farmers and LSPs to produce safe and hygienic milk, meat and milk products are as follows:

Role of farmers

- Need to keep farm environment clean
- Need to follow regular vaccination and de-worming
- Need to adopt technology
- Need to follow withdrawal period of milk and meat after administering antibiocs or drugs strickly

- Need to follow animal quarantine of newcomer animals
- Need to take step of animal treatment at right time
- Need to take training on good farm management

Role of LSPs

- Giving advice, motivation and building awareness to the farmers

Input supplier

Feeds and fodder, medicine, vaccine and anthelmantics are inseparable inputs necessary for livestock farming. Thus, input suppliers play a vital role in livestock farm operation. This business opens the avenue for employment generation. Interviews were taken from feed and medicine sellers and fodder producers. The brief profile of input suppliers are depicted in Table 16. Feed sellers are important stakeholders in livestock production system. They mainly provide concentrate feeds for cattle, poultry and fishes. In the serveyed areas feed sellers provide various types feed ingredients, but wheat bran were sold more. However, ready cattle feed (pellet) were also sold to some extent. Most of the feed seller stacked feed sacs on wooden frame in the concrete floor.

Table 16: Brief Profiles of Input Supplier

SL No	Indicators	Feed seller/dealer	Medicine seller	Fodder Producer
1	Age (Yrs)	28 to 38	29 to 48	26 to 61
2	Education	HSC to BSc.	SSC to MSc	9th to HSC
3	Professional experience (Yrs)	1 to 12	2 to 14	1 to 30
4	Total investment (Lac)	2 to 50	1 to 12	1.5 to 1.78
5	Monthly income (Thousand)	8 to 25	7 to 15	10 to 32

None of the feed seller had knowledge how to preserve feed safely in accordance with HACCP point of view. The feed sellers used to use trap, insecticide or spray to prevent rodents and insects for the protection feeds. All feed sellers claimed that they did not sell date expired feeds. However, if feed expired its' shelf life, they returned it or destroyed or at least used for fish feed. Sometimes feed sellers get complaints from their clients for quality and price of feed. About 60% feed sellers claimed that the quantity of feed selling had been decreased than the quantity of sold earlier. Price hiking of feed is the main constraint at this moment in this business.

Medicine sellers are also important stakeholders in livestock sub-sector who play important roles in animal health and disease management. In this study, medicine sellers reported that medicines for the treatment of LSD, FMD, anthrax, milk fever, mastitis, pneumonia, bronchitis, diarrhea and fever were selling more. For increasing milk production, most of the dairy keeper farmers used vitamin-mineral powder, Ca, P and amino acids supplements. On the other hand, Ca, P and amino acids preparation were using for increasing weight gain in fattening cattle. The medicine sellers returned their date expired medicines to the pharmaceutical companies, otherwise destroyed. Most of the medicine sellers kept their medicine at the open rack in non-air conditioned room and they do not have knowledge on HACCP. About 60% medicine sellers claimed that sometines their customers complain on the quality of medicine and higher price. About

60% medicine sellers noticed that the sell volume of their medicines had been decreased than what sold in the earlier. The major problems faced by the medicine sellers were; credit selling, higher cost of medicine, delayed supply of emergency medicine, poor quality of medicine and competitive market.

The study areas are not rich in fodder cultivation and trading. Very few farmers cultivate HYV fodders, thus are not available everywhere to purchase. Fodder producers are playing important roles to meet-up the scarcity of green grasses which enables farmers for reducing feed cost required for concentrate and dry roughage feedstuffs. Napier, Pakchong and Maize fodders were cultivated by the farmers in the study areas. However, demand of Napier was higher. Some peoples cultivate fodders for feeding their animals, while others for commercial purpose. Their cultivated fodders are sold to the cattle keeper farmers and fodder traders @ BDT. 25 to 30 per bundle, each weigh about 5 to 6 kg. Depending on the locations, Napier/Pakchong producers sold their cultivated fodder 4-8 times per year. In the fodder land, cow dung, urea, potash, phosphate and zinc were applied after each harv. For cultivation of Napier/Pakchong, irrigation is required in winter and dry summer. The fodder cultivators reported that the problems existed in Napier/Pakchong were insect in leaf, drying leaf and yellowish leaf. All fodder producers were agreed that fodder cultivation is more profitable than other cash crops.

Traders

Traders are business communicators between producers and consumers. Different traders working in livestock sector are creating many opportunities of employment. Thus, to expand market opportunities, more traders are required. Market traders can contribute livestock sector by developing marketing channels to ensure reasonable price. Under the investigation of this study, the brief profiles of market traders are given in Table 17.

Table 17: Brief Profiles of Traders

SL No	Indicators	Cattle Trader	Sheep/goat trader	Milk trader/Goala	Fodder
1	Age (yrs)	33 to 50	32 to 62	32 to 62	29 to 60
2	Education	7^{th} to SSC	8^{th} to HSC	6^{th} to 8^{th}	Sign to HSC
3	Professional experience (yrs)	4 to 25	7 to 40	25 to 45	1 to 2
4	Monthly income (Thousand)	10 to 50	13 to 21	5 to 10	2 to 20

Animal traders are playing key roles for marketing of cattle, goat and sheep. It was investigated that most of the farmers do not take their animals for selling in the market to avoid aggravation and dominancy of the animal brokers usually prevailing in the markets. Henece, they are obliged to sell animals to the traders/brokers from their house gate, despite getting lower price. In the study areas, the animal traders usually collect animals either directly from the animal producers (animal keeper farmers) or from different markets (hat-bazar). Most of the traders reported that they usually able to collect animals (cattle, goat and sheep) according to their expectation. The collected animals were mostly sold in different hat-bazars. Other than hat-bazar, very few animals are sold to the butchers, commercial farms and other animal traders. Most of them can not usually sell all of their collected animals in one market day. In that case, they usually take back of their unsold animals in to their house and agin take those animals for selling to another

markets. All interviewed animal traders reported that their purchased animals were affected with different diseases and problems (but not always) like cold stress, fever, injury, FMD, LSD, bloat, diarrhea and sweeling of leg. This is due to stress caused by frequent transportation from one market to another. In these instances, most of the traders usually let those animals getting rest and treatment before selling thereafter. Most of the animal traders reported that they had faced the incidence of animal dead before marketing. The animal traders reported that they judge animals on the basis of dentition (age), soundness of health, good body conformation, healthy, skin, color, horn, ear, eye, free from deformities of body parts, good stature, udder and teat (for cow). It was investigated that animals are usually transported by traditional vehicles (local name; 'Nosimon' or 'Votvoti') and all animal traders confesed that sometimes their animals get injured during loading and unloading. Most of the animal traders noticed that the trend of animal marketing had been increased than earlier. The problems in animal trading as reported by the traders were: lack of market facilities (space, veterinary treatment service, communication & distance), higher market tolls, necessity of big investments, poor quality transport vehicles, higher transport cost, more sellers than buyers, keeping diseased animals in the market etc.

Milkman (goalas) or milk traders are inseparable part in dairy industry who are playing important roles in milk collection and distributions. They directly collect milk from dairy keeper farmers and commercial farms. At present, they collect milk from the farmers under the project areas at the rate of BDT 45.0 to 50.0 per kg. This price is not fair at all for profitable dairy farming in the current context. After collection, they sell it to the sweetmeat shops at the rate of BDT 60.0. They are able to sell all volumes of milk what they collect everyday, although most of them cannot collect required amount of milk as per their demand. As a perishable product milk cannot be kept for a longer period, hence need to market it immediately after milking. In the study areas, milkmen normally complete their milk selling by 6 to 12 hours after milking. This duration is likely to be higher to maintain the quality of milk. Anyhow, they might have use any milk preservatives. Usually, milkmen judge milk quality on the basis of fat content by pouring hand into the milk. It was investigated that the demand of milk had been increased as reported by all milkmen. All milkmen agreed that milk price fluctutates depending on the supply and demand during festivals.

The fodder traders are playing an important role for year round supply of green grasses to the livestock keeper farmers. Recently, this trade has opened a new avenue of employment generation. In the study areas, fodder traders usually collect fodders directly from the fodder producers. Fodder traders normally sell Napier and Pakchong fodders to their clients, while the Napier has more demand. In the study areas, Napier and Pakchong fodder are sold to the customers at the rate of BDT 20.0 to 30.0 per bundle (each of 5 to 6 kg weight). The fodder traders reported that the demand of fodder becomes higher in winter and rainy seasons. In winter, the green grasses grow very slowly or inhibited, while in rainy season, grass fields undergo to the waterbodies and there are scarcity of rice starw. As a result, the demand of cultivated fodders appears to be higher in both seasons. The fodder traders stated that the sell volumes of fodder had been increasing, which was due to increasing the publicity of cultivated fodders, growing awareness and tended peoples to provide fodders to the animals. According to the fodder traders, the

major problems what they were experiencing are unavailability of sufficient lands for fodder cultivation and insuffient supply of fodders for marketing.

Product Processor

Livestock product processors are providing their invaluable services to manufacture various types of milk products and raw red meats which are essential for human health. Lots of value added products are prepared from milk and meat. Among them, most common value added milk products available in everywhere are sweetmeats and yogurt or dahi. The butchers are meat processors as they process fresh raw meat by slaughtering large and small ruminants in the abattoir. In this study, interviews were taken from the sweetmeat shop keepers and butchers (both cattle and goat). The brief profiles of products processors are presented in Table 18.

Table 18: Brief Profiles of Product Processors

SL No	Indicators	Milk products	Butcher (cattle/buffalo)	Butcher (goat/sheep)
1	Age (yrs)	18 to 55	28 to 55	30 to 35
2	Education	5^{th} to HSC	Can sign to JSC	5^{th} to HSC
3	Professional experience (yrs)	0.25 to 22	10 to 40	12 to 30
4	Monthly income (Thousand)	8 to 20	8 to 20	15

In the study areas, there were two categories of milk product processors; cheese maker who soley produce cheese from milk and sell it to the sweetmeat processors and another one who manufacture sweetmeats from cheese and yogurt from milk. The cheese makers collect milk from milk market at the rate of BDT. 65.0 per kg and sold their prepared cheese to the sweetmeat shop keepers at the rate of BDT. 230.0 to 250.0 per kg depending on the demand. The sweetmeat shopkeepers usually judge milk quality by looking color, fat content, water content, smell and falvor when they purchase milk. Most of them prepare sweetmeats and yogurt by recuited employees. They sold their products to the retail consumers. They reported that very few customers seldom complain on the quality of products. To ensure quality of milk products, the sweetmeat shopkeeper normally try to collect good quality cheese, suger, expert manufacturer and keep their shop clean. None of the sweetmeat shopkeepers had no knowledge on HACCP for manufacturing safe and hygienic milk products. Most of the sweetmeat shopkeepers claimed that their products selling had been decreasing than what they had been selling earlier. Most of the sweetmeat shopkeepers reported that they had competition in that business which was mainly on sell volume. According to their opinion, the main challenges in this business to keep up their reputation are; manufacture of quality milk products, good behaviour with clients, amount of investment and increasing competitors.

To process raw meat in the abattoir, the butchers in the study areas mainly collect animals to be slaughtered from the markets (hat-bazar). Normally, animals to be slaughtered are kept in the slaughter-house from 8 to 48 hours before slaughtering. Most of the butchers claimed that animals are usually inspected for health status prior to slaughter. Pre-slaughter inspection is conducted by veterinarian in some places, whereas by butcher themselves in some places. It was investigated that no butchers in the study areas had knowledge on HACCP for safe and hygienic meat processing. The butchers claimed that their meat is usually kept in the abattoir for selling maximum up to 8 hours after

slaughtering animals. In that case, when meats are not completely sold, they preserve those in the refrezerator or sometimes give those to the hotels. Most of the butchers noticed that they had separate places for slaughtering animals and post-slaughter wastes are normally disposed in the pit or go through in to the water bodies. Most of the abattoirs are cleaned by washing with water and detergent followed by disinfectants at least once in a day. Few butchers reported that their clients sometimes make complain on meat for toughness and higher fat content. Most of the butchers asserted that meat selling trend had been decreased over time, which could be due to price hiking and to avoid cholesterol intake by the proconscious peoples.

D. SWOT Analysis

"Safe Meat and Dairy Product Market Development Sub-project"

Strengths

- Project intervention
- Skilled manpower
- Financial and logistic supports
- Linkage and collaboration of different stakeholders

Weaknesses

- Lack of knowledge and awareness of the related stakeholders
- Lack of training and motivation related to this topic
- Lack of financial ability to develop infra-structure
- Lack of rules and regulations
- Lack of strong linkage and collaboration among stakeholders
- Reluctant of the farmers and stakeholders to follow GAP and HACCP
- Dis-continuation and short-term project intervention

Opportunities

- Awareness of the peoples for food safety and public health concern
- Increasing demand of safe meat, milk and milk products

Threats

- Market syndicate
- Over dominancy of the traders for controlling market price of products
- Dis-honesty of the market traders (tendency to deprive farmers for profit sharing)
- Huge gaps of market price from producers to consumers levels
- Indiscriminate use of unethical veterinary drugs to enhance milk and meat yields
- Indiscriminate using of antibiotics and steroids for treatment of diseases
- Lack of biosecurity and preventive measures for animal production
- Favourable environment and climate to outbreak and spread diseases
- Favourable environment for propagation of harmful pathogens and contaminants

E. Value Chain Mapping

The animals and milk marketing channels in Bangladesh differ among different areas. However these also depend on farming structures. Due to lower amount of milk, subsistence farmers usually sell their milk by taking into the market place or directly to the local consumers for getting higher price. On the other hand, most of the traditional dairy farmers sell milk to the contract milkman/goala. Commercial farmers usually sell their milk through multi-channels; milk traders, milk product manufacturer, local consumers. In case of animal marketing, marginal farmers usually sell their cattle, goat and sheep mostly to the animal traders/brokers who take animals from their housegate, while very few farmers sell their animals to the butchers or take their animals in to the nearby animal markets. In this study, milk and milk products, cattle, goat and fodder value chain and marketing channels under the project areas were investigated and described here below:

Milk Value Chain & Marketing

The existing milk value chain and marketing channel as investigated in this study is presented in a flow diagram (Fig. 29) which entails how milk produced from farmers' house is dispersed to the ultimate consumers through different pathways. Firstly, milk produced from farmers' house is delivered to four users; 40% farmers sell their milk to the milkman or goala, 40% to the local consumers, 17% take into local markets and 3% to teastall and sweetmeat shops. Secondly, milkman/goalas sell their fluid milk to the sweetmeat shopkeepers, where value added milk product (yogurt) is prepared and sold to the consumers. Thirdly, cheese (chana) makers collect fluid milk from the market, prepare value added milk product (cheese) and sold to the sweetmeat shopkeepers, where further value added milk product (sweeymeat) is prepared and sold to the consumers.

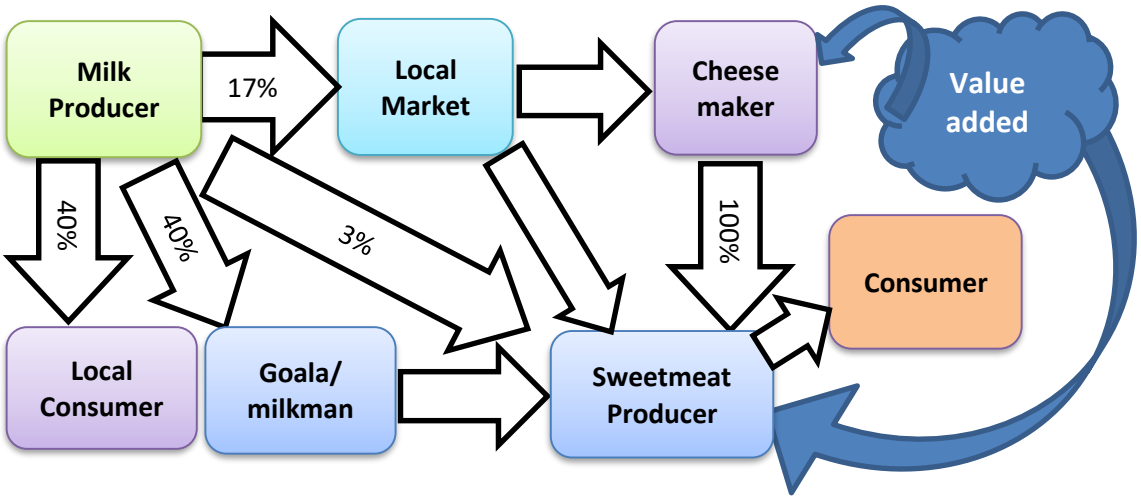

Fig. 29: Milk Value Chain & Marketing

Fattening Animal Value Chain & Marketing

The existing fattening animal value chain and marketing channel as found in this study is presented in a flow diagram (Fig. 30) which tells how fattening cattle produced from farmers' house is marketed through different channels. The live animals (beef cattle)

produced from farmers' house is marketed in to three pathways; 71% take into local market/hat, 24% farmers sell their animals to the cattle traders (called bepari) and 5% take in to outside market. The cattle traders marketed their animals (collected from farmers and markets) to the local and outside markets and to the butchers. In the local markets, most of the animals are taken for selling by the animal traders (who collected those from farmers as well as different markets) with very few by the beef cattle producers themselves. The butchers collected animals from two sources; directly from the animal producers and from local markets. After value adding at the abattoir (slaughtering, de-hiding, cut-up meat etc.) the raw beef meats are supplied to the consumers, hotels, restaurants, and fast-food shops. Further, after value adding in the the hotels, restaurants and fast food shops, the cooked beef and processed meat products are sold to the consumers.

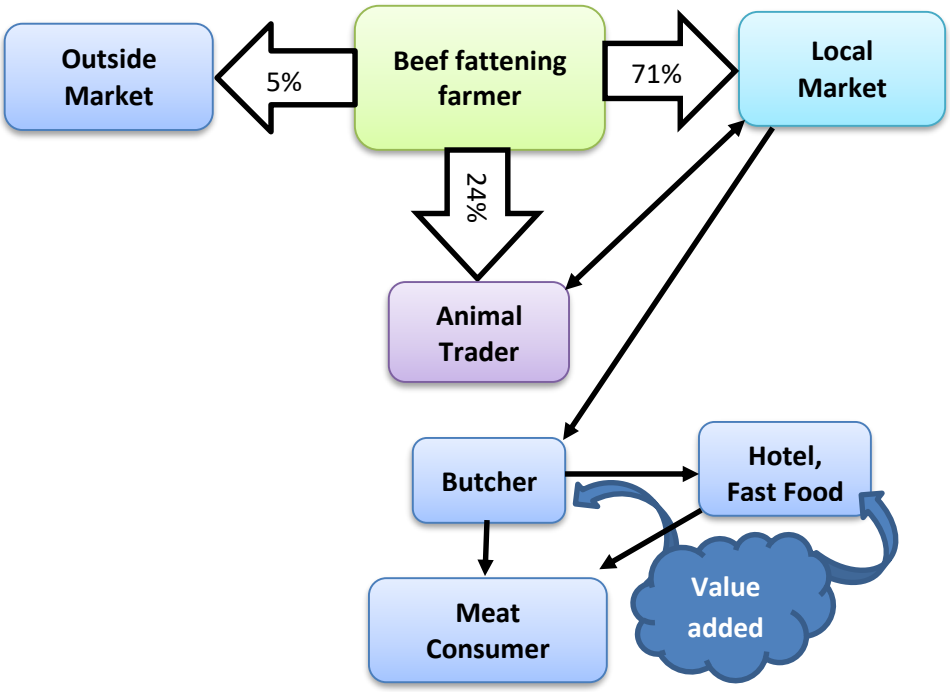

Fig. 30: Fattening Cattle Value Chain & Marketing

Goat and Sheep Value Chain & Marketing

The goat and sheep value chain and marketing channel as existed in the study areas are given in a flow diagram (Fig. 31) which shows how goat and sheep produced from farmers' house is marketed through different marketing channels and value added goat and sheep products (processed chevon and mutton) is sold to the consumers. The goat and sheep produced from farmers' house is marketed into three channels; about 24% goat/sheep keepers sell their animals to the goat-sheep traders (called them as bepari) who take animals from their housegates, 71% goat/sheep keepers take animals to the local markets (hat-bazar) and 5% take animals to outer animal markets. The goat-sheep traders marketed their animals to different markets from where other local and outer traders, individual customers, goat/sheep rearing farmers and butchers can buy those animals. The goat-sheep butchers collect animals mainly from local markets (hat-bazar) and a few of them from goat-sheep traders (bepari). After value adding at the abattoir

(slaughtering, de-hiding, cut-up meat etc.) the raw meats (chevon and mutton) are supplied to the consumers, hotels, restaurants and fast food shops. Again, after value adding in the the hotels, restaurants and fast food shops, the cooked meats and processed meat products are sold to the consumers. The study also reveals that animal traders are dominant market actors who are playing uncompetitive roles in animal trading and controlling market price of animals.

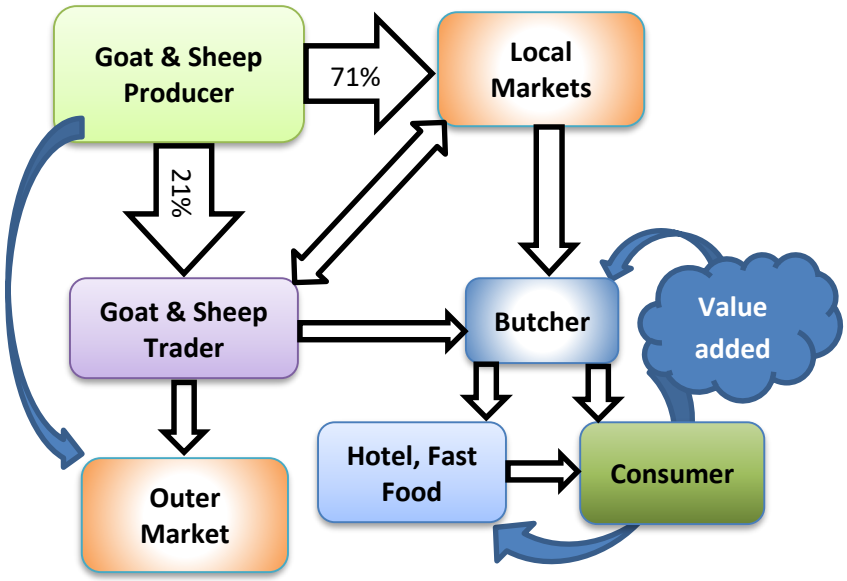

Fig. 31: Goat and Sheep Value Chain & Marketing

Fodder Value Chain & Marketing

The prevailing value chain and marketing of fodder in the study areas is very simple as has been shown in the flow diagram (Fig. 32). In the study areas, the fodder producers usually sell their cultivated HYV fodders (mainly Napier and Pakchong) directly to the local animal keeper farmers and a few of them sell to the fodder traders. At the time of harvest the fodder traders sold those to the livestock keeper farmers followed by chopping and bunching (value adding).

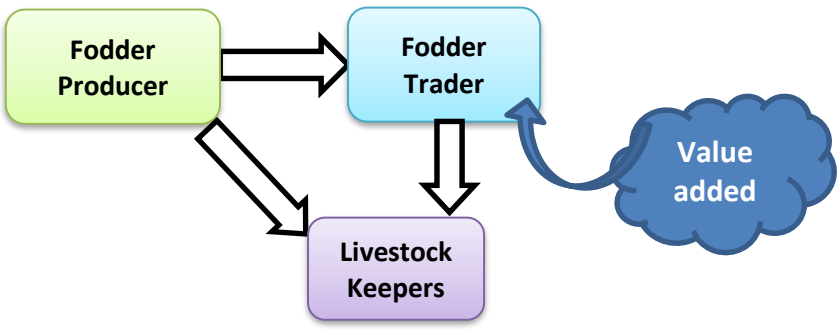

Fig. 32: Fodder Marketing Channel

F. Current Status of Project Performance Indicator and Target of Achievement

Sl No	Performance Indicator	Measurement unit	Baseline status	Target for achievement
1	The income of 70% entrepreneurs will be increased to minimum 50%	BDT/month	14725/-	22088/- (70% members)
2	30% project participant farmers will add nutritious foods in their daily diet	% intake of 10 food items	0	30%
3	The sell volume of safe meat and milk products of 80% entrepreneurs under the project will be increased to 30%			
	Meat (cattle/buffalo)	Animal/month	26	34 (80% entp.)
	Meat (goat/sheep)	Animal/month	20	26 (80% entp.)
	Sweetmeats	Kg/day	15	20 (80% entp.)
	Yogurt	Kg/day	13	17 (80% entp.)
	Chana	Kg/day	25	33 (80% entp.)
	Ghee	Kg/day	0	30 (80% entp.)
4	The profit margin of 80% entrepreneurs under the project will be increased to 20%			
	Animal feed sub-dealer	BDT/month	14200/-	17040/- (80% entp.)
	Veterinary medicine seller	BDT/month	9150/-	10980/- (80% entp.)
	Fodder Trader	BDT/month	8553/-	10264/- (80% entp.)
	LSP	BDT/month	11400-	13680/- (80% entp.)
	Dairy keeper	BDT/year	79922/-	95906/- (80% entp.)
	Fattening keeper	BDT/year	23955/-	28746/- (80% entp.)
	Goat keeper	BDT/year	15914/-	19097/- (80% entp.)
	Sheep keeper	BDT/year	25755/-	30906/- (80% entp.)
	Animal Trader (cattle)	BDT/month	22800/-	27360/- (80% entp.)
	Animal Trader (Goat/sheep)	BDT/month	17533/-	21040/- (80% entp.)
	Milk Trader/Goala	BDT/month	7000/-	8400/- (80% entp.)
	Butcher (cattle)	BDT/month	20000/-	24000/- (80% entp.)
	Butcher (goat/sheep)	BDT/month	15000/-	18000/- (80% entp.)
	Milk product manufacturer	BDT/month	15167/-	18200/- (80% entp.)
5	All entrepreneurs under the project will be engaged in the activities of production of safe animal products (milk & meat) by using quality/new inputs and GAP	%	0	100
6	13% producer group (PG) will be linked with formal and informal buyers as contract farmers	%	0	13
7a	60% members under the project will gain knowledge as well as doing practice on GAP	%	0.74	60
7b	58% members under the project will adopt environment friendly smart technology	%	0	58

Sl No	Performance Indicator	Measurement unit	Baseline status	Target for achievement
8a	Prevalence of animal diseases will be decreased (20% expectation)			
	Dairy cattle	% HH	37.95	30.36
	Fattening cattle	% HH	27.59	22.07
	Goat	% HH	20.78	16.62
	Sheep	% HH	60.00	48.00
8b	Animal mortality will be decreased @ in;			
	Adult cattle (1%)	%	5.24	5.19
	Calves (3%)	%	9.05	8.78
	Adult goat (3%)	%	6.37	6.18
	Kids (5%)	%	23.68	22.50
	Adult sheep (3%)	%	0.00	-
	Lambs (5%)	%	20.00	19.00
8c	Inter calving interval of cows will be decreased to an average of 3 months			
	Native	Month	15.17	12.17
	Crossbred	Month	16.88	13.88
8d	Lactation lengths of cows will be reached to an expected level of 210 days			
	Native	Day	166	210
	Crossbred	Day	205	210
8e	In the cluster, the number of animal will be increased to 15%			
	Dairy cattle	Av. Number	3.56	4.09
	Fattening cattle	Av. Number	2.21	2.54
	Goat	Av. Number	4.49	5.16
	Sheep	Av. Number	9.83	11.30
8f	In the cluster, the milk production will be increased to at least 30%			
	Native	Ltr/day	1.50	1.95
	Crossbred	Ltr/day	5.50	7.15
9a	Good livestock management practice (GLMP) will be followed	%	0.74	-
9b	Farm and product manufacturing unit will be mechanized	%	0.00	-
9c	ICT based technology for livestock business will be adopted	%	0.00	-
9d	By adopting ICT based technology in the livestock related business, the overall production cost of safe animal & products will be reduced to 10%			
	Dairy	BDT/yr/head	25855/-	23270/-
	Fattening	BDT/yr/head	28873/-	25986/-
	Goat	BDT/yr/head	2918/-	2626/-
	Sheep	BDT/yr/head	1854/-	1669/-

Sl No	Performance Indicator	Measurement unit	Baseline status	Target for achievement
	Meat (beef)	BDT/Kg	355/-	320/-
	Meat (chevon)	BDT/Kg	750/-	675/-
	Meat (mutton)	BDT/Kg	700/-	630/-
	Milk	BDT/Kg	45/5	41/-
	Sweetmeats	BDT/Kg	170/-	153/-
	Yogurt	BDT/Kg	140/-	126/-
	Cheese	BDT/Kg	200/-	180/-
	Ghee	BDT/Kg	950/-	855/-
10	By strengthening local manufacturing sub-units, linkage of PG with local, regional and national market, creating new markets and development of market management, the price of products will be increased to 10%			
	Price of adult dairy cattle	BDT/head	85310/-	93841/-
	Price of dairy calves	BDT/head	46387/-	51026/-
	Price of fattening bull	BDT/head	103217/-	113539/-
	Price of adult goat	BDT/head	10102/-	11112/-
	Price of kids	BDT/head	3613/-	3974/-
	Price of adult sheep	BDT/head	4828/-	5311/-
	Price of lambs	BDT/head	3618/-	3980/-
	Price of milk	BDT/ltr	53/-	58/-
	Price of meat (beef)	BDT/Kg	650/-	715/-
	Price of meat (chevon)	BDT/Kg	825/-	900/-
	Price of meat (mutton)	BDT/Kg	750/-	825/-
	Price of sweetmeats	BDT/Kg	190/-	210/-
	Price of yogurt	BDT/Kg	185/-	203/-
	Price of channa	BDT/Kg	240/-	264/-
	Price of ghee	BDT/Kg	1000/-	1100/-
11a	In the cluster, livestock related enterprise and entrepreneurs will be increased to 10%			
	Enterprise	Numbers	15	17
	Entrepreneur	Numbers	1000	1100
11b	As a result of expansion of the cluster, the employment generation will be increased to 15%			
	At farm level	%	1.37	1.58
	At enterprise level	nos/entp.	0.90	1.03
12	The advance entrepreneurs will be increased to 25%	Number	586	733

Limitations and Opportunities

The limitations for livestock farming as investigated in this study from the project particpant farmers are given below:

Insufficient capital

Most of the people in the study areas were not capable to operate their farm providing all facilities required for GAP with their own capital. The lack of capital forces farmers to maintain their small-scale farm with poor housing, management and less amount and poor quality feeds. They even provide improper care of their animals only because of their limited allocation of money to maintain the farm. The ultimate impact for this limitation is the result of low productivity of animals.

Scarcity of land

Most of the livestock keeper farmers had very limited amount of agricultal lands. As a result they cannot afford to spare lands for HYV fodder cultivation. Thus, most of the farmers are highly dependent on cut and carry local grasses or sometimes they have to buy cut and carry cultivated fodder. The shortage of green grasses results low productivity of dairy cows.

Lack of technology

Technology related to livestock farming minimizes farm operational hassle and cost of production. However, the project participant farmers under the study areas do not know how to preserve cultivated fodders by making silage and hay which would minimize shortage of green grasses during the periods when those are scarced for stunting growth as well as undergoes water due to heavy rainfall. Besides, farmers do not know how to utilize low quality roughages or crop residues by improving their digestibility by adding nutrients or additives. The project participant farmers under the project areas were not adopted with feeding technologies like TMR, UMS, UTS, UMMB etc.

Technology transfer

Very few technologies have been developed to utilize non-conventional feed stuffs and crop residues for feeding livestock. But, due to absenece of proper dissemination, their implementation is not being done by the farmers. Further, most of the trainings given to the farmers are not relevant to the technologies developed so far. Need based and sustainable modern technological trainings are necessary for farmers.

Keeping farm records

Farm record is an inseparable part of profitable livestock farming. The records of individual animal performance, breeds & breeding, vaccination, de-worming, disease & medication, feeding, income & expenditure etc. should be maintained. This enables farmers to evaluate animal performance for making decision on selection or culling animals as well as to estimate profitability of the farm. Very few farmers in the study areas maintained it, though all records were not maintained by them.

Opportunities

Despite lots of limitations as investigated in the study areas, the following opportunities have been identified from this study:

Fodder cultivation and preservation

Based on the study it is quite encouraging that about 28% project participant farmers used to cultivate HYV fodders for feeding their animals. Although, most of the farmers were interested to cultivate fodders, but they had not enough lands to do it. If they availed adequate land facility, that will enable farmers to provide quality and quantity of feeds to their cows. Also they will be able to preserve fodder by making silage or hay when there are abundant supply of fodders in wet season. This will ensure spontaneous supply of fodders throughout the year.

Introducing feeding technologies

Most of the project participant farmers under the project areas were not well known about different feeding technologies. As a result, urea-molasses-straw (UMS), urea treated straw (UTS), urea-molasses-multinutrient block (UMMB), total mixed ration (TMR), mineral block (MB) etc. feeding technologies can be introduced.

Introduction of promising animal gentic resources

High producing animals are normally susceptible to diseases, exhibit frequent reproductive complexity and are vulnerable to adverse climatic condition prevailing in Bangladesh. Therefore, it becomes difficult for poor farmers to bear high cost of rearing and disease management. Some potential indigenous cattle genetic resources like Red Chittagong cattle (RCC), Munshiganj cattle (MC), Pabna cattle etc. have highier resistance to diseases, high adaptability, require low cost of production. Those could be replaced with local native cows for poor subsistence farmers in the project areas.

Formation of producer groups

Producer group (PG) can play a vital role for milk collection, preservation, processing and marketing to ensure fair price of milk for the sake of farmers' welfare. PG can establish milk chilling and freezing plants, manufacturing different dairy products, create specialized milk market place, promoting and selling milk and milk products. Besides, beef fattening, goat and sheep keeper farmers can establish another PG who can sell their animals through proper channel or online platform.

CONCLUSION

Most of the the project participant farmers under the program areas mainly depend on agriculture. However, agriculture alone cannot meet the full expenses required for a family in rural people. Consequently, they have to seek another source of income. It is likely to be a family tradition that most of the rural people keep domestic animals and poultry as an additional income source for their family that help them to bear some extra family expenditure required for children education, maintenance or construction of house, land purchase or mortgage etc. Those expenses are met-up by selling milk, calves, goats and sheep. After falling down poultry industry, dairy and beef fattening is a one of the prospective agricultural sectors in Bangladesh. As small ruminants, goat and sheep are especially suitable for landless, ultra-poor and poor farmers for low investment and ease management. The study areas are resourcefull for those species, but the project participant farmers supplied concentrate feeds to their animals are not well balanced and adequate. The supplied diets contained inappropriate ratios of essential nutrients and serious shortage of protein enriched ingredients. Consequently, performance of dairy and fattening cattle in terms of milk and meat production is not up to the level of expectation. Besides, they are deprived from a substantial amount of profit due to low market price of products, especially milk. Despite having lots of unaviodable limitations and constraits associated with dairy, beef fattening, goat and sheep farming, uninterrupted supply of necessary inputs, services and minimizing marketing hassle may lead this business more profitable and create more employment opportunities. For the sake of women entrepreneurship development, training, communication, motivation, linkage with other stakeholders, skill developments should be provided by GOs and NGOs. More access to ICT, quality vaccines, semen and other vet products can help the LSPs getting more clients, providing quality services, income and improve their socio-economic conditions. However, greater emphasis on improving their entrepreneurial quality, strengthening their professional association, influencing policy on certification or recognition of their services, mentoring and integration of production and marketing support are essential for their sustainable business expansion. However, product producers, market actors and service providers under the program areas were not well concerned of producing safe meat, milk and milk products in accordance with environment friendly "Good Livestock Management Practices (GLMP)" following global GAP. Besides, livestock input suppliers and product processors do not follow HACCP rules during product processing and manufacturing, as they were not accustomed with this protocol. Through RMTP project, Dabi Moulik Unnayan Sangtha can access to their participant farmers, microentrepreneurs, product processors, input and service providers for developing their professional skills, increasing income level, developing women empowerment and building awareness for safe meat, milk and milk product market development. However, implementation of the project under a comprehensive approach, it may be expected that the ongoing value chain program will contribute to reduce poverty of the ultra-poor farmers as well as increasing income levels of the transitional-poor and enterprising-poor farmers associated with this program. Besides, it is anticipated that the nutritional status of project participant farmers will also be improved after successful completion of this sub-project.

Recommendations

Based on the findings of from the HHS, FGD and KII, the following recommendations are given:

Selection of best adapted breeds

Selection of animal breeds those are best suited to the local environment will greatly reduce the risks to productivity posed by animal health and welfare problems, ability to adapt to climatic extremes, feed quality, local parasites (especially ticks) and their acquired resistance to endemic disease.

Introducing stress tolerant fodder varieties

Steps should be taken to produce perennial fodders in highland, drought tolerant fodders in drought prone areas, water tolerant fodders in low-land. Adoption of round-the-year fodder production model (including perennial and seasonal fodders) is necessary.

Adoption of feeds and feeding technology

Steps should be taken to improve digestibility of crop residues like rice and wheat straw, triticale, maize stover and many other processes. These have been developed and tested in order to improve its nutritional value. These processes include physical treatments (grinding, extrusion), chemical treatments (urea, NaOH, CaO, ammonia, sulfuric acid), and biological treatments with microorganisms (fungi, bacteria) or mushrooms such as *Pleurotusostreatus*. Chemical treatments have been widely used and can efficiently increase lignin solubilization and hydrolysis of cellulosic fractions.

Regular vaccination and de-worming

Vaccination is a useful tool to limit outbreak of diseases by increasing the immunity of the animal population to specific pathogens. Cattle, goat and sheep farmers are required to vaccinate their stocks against serious contagious diseases like FMD (twice in a year), Anthrax, BQ, LSD, HS and PPR (once in a year). Besides, shuttle de-worming program should be followed at a regular interval (thrice in a year).

Vermin control and bio-security

To ensure quality and safe meat, milk and milk products, vermin control measures may be required in the milking shed, feed and water storages and animal housing areas. Farm premises should be kept clean and hygiene providing regular cleaning, washing and disinfection with strong disinfectants, using foot-bath in front of the farm-gate. Foreign animals, predators and unauthorized peoples should be avoided to access in the farm premises.

Disposal of farm wastes

Waste storage compound such as manure heaps, slurry stores and farm dumps should be sited appropriately with regard to sight and smell, and the risk to the environment from pollution and vermin. Biogas plant, disposal pit, vermin-compost, tri-compost, cow dung cake and fuel stick, well drainage system etc. technologies should be established as to

keep environment free from pollution. Dead animals must be buried in deep ground pit or incinerated properly.

Stress mitigation

Need to protect animals from adverse weather and the consequences thereof. This includes stress factors such as weather extremes, unseasonal change and others causing cold or heat stress. Need to consider structure of shade or alternative means of cooling system such as exhaust fan, sprinkler/sprays cooling pad etc.

Animal quarantine and isolation

Where the health status of newcomer animal is unknown, they should be kept under quarantine or separate to the existing animals for an appropriate length of time (14 to 21 days). Where possible keep sick animals isolated from the healthy one to minimize the spread of contagious disease.

Safe use of medicine and chemical

Veterinary medicines pose risks to humans, animals and food safety and are subject to special handling on their supply and use. Use only approved veterinary medicines, at the recommended dose according to the label directions, or as prescribed or advised by a veterinarian. Relevant withholding periods must be followed. Store chemicals and veterinary medicines securely to ensure they are not used inappropriately or do not unintentionally contaminate milk and feed. Check and observe product expiry dates.

Avoid unethical use of drugs

Now-a-days, many dairy and fattening cattle keeper farmers are used to administer unethical drugs to stimulate growth, milk yield and milk fat content, which have residual effect for human health when meat, milk and milk products of those animals are consumed. This must be avoided by motivating suppliers and users of those harmful drugs.

Smart animal identification and recording

All livestock species should be easily identifiable. The system of identification should be permanent, allowing individual animals to be uniquely identified from birth to death. This will enable animal breeders to develop superior breeding stocks for producing progeny with higher genetic worth.

Access to credit and insurance facilities

Expansion of livestock operations among smallholders and commercial livestock producers, as well as input suppliers (feed mills, drug producers, etc.) and processors of livestock products is thus expected to increase the demand for finance throughout the sub-sector, and will be needed to help facilitate continued horizontal and vertical integration. Dairy and beef fattening production is always under the risks of various diseases, sudden accident and death and if happens may create very miserable condition of the farmers, especially ultra-poor farmers to maintain their livelihoods. Livestock insurance can provide protection against loss of livestock from accident or disease.

Common service center

The common service centre will be accessible to all categories of farmers that will enable front end service delivery points at the rural level for delivery of veterinary health service, medicine, feeds and fodder, seed/cutting of fodder, chopping, grinding and mixing facilities and advices.

Capacity and awareness building

The project participant farmers, medicine and feed sellers, LSPs, AISPs, milkmen, animal transporters, animal traders/brokers, fodder producers and traders, milk product manufacturers, butchers should be motivated through frequent discussion and consultation meeting and well- trained.

Field visit, demonstration and campaign

Giving opportunity to the project participant farmers to visit model farms will be helpful for knowledge sharing. Group meeting and discussion on burning issues related to livestock helps farmers to find out soulution against problems. Result oriented demonstration of modern farm and different technologies regarding dairy, beef, goat and sheep will encourage farmers to adopt those technologies. Routine campaign for de-warming and vaccination will help to reduce disease incident. Arranging cattle, goat and sheep show/fair will encourage farmers to keep superior animals in their herds/flocks.

Abide animal welfare

Livestock keepers and traders must follow the rules of animal welfare maintained from production up to marketing to the users. “Five freedoms” in animal welfare as mentioned by (FAO and IDF, 2011) must be followed which are as follows:

- Animals are free from hunger, thirst and malnutrition
- Animals are free from discomfort
- Animals are free from stress, pain, injury, disease and parasitic infestation
- Animals are free from fear and frightening
- Animals are in normal pattern of behavior

However, animal welfare is most often violated when they are transported from farm-house to the market places for selling to the consumers. In that case, the producer and animal tarder will jointly ensure that animal welfare rules were strictly followed during animal transportation as well as during animal loading-unloading. The following checklist should be monitored to abide animal welfare during animal transportation:

- The animal transport vehicle must have enough space for standing animals
- Transport vehicle must have canopy to protect stress from sunlight and rain water
- Transport vehicle must have sloping ladder for ease loading and un-loading of animals
- Transport vehicle must have bedding materials
- Transport vehicle must have fitness and route permit
- The animals must not be stressed, frightened or injured during transportation
- The animals must not be thirsted or hungered during transportation

Product certification

Dairy, fattening, goat and sheep producer farmers have to sell their animals for earning profit. If they want to access premium markets, they must have take product certification from the legal entity (veterinarian/livestock specialist). The legal entity will give product certification subject to pre-inspection of the animal in physical condition as well as the following issues producers must have to keep in their records:

- The animal is physically sound and fit
- No unethical drugs or medicines were administered for the purposes of any kind of diseases or fattening or increasing milk and milk fat content
- Animals were vaccinated and de-wormed regularly
- Animals are anyhow not injured or stressed
- Animals are free from ecto and endo parasites, ticks etc.
- Whether animal possess or previous history of contagious, venereal or vertically transmissible zoonotic diseases
- Animals have libido and physically fit in case of breeding males (bull, buck and ram)
- Cows have pedigree and performance records (reproduction, breeding, milking etc.)

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Annexure

Annex I: Result Tables in Details

Table 1: Category of the interviewed project participant farmers

Occupation	Measurement unit	Naogaon	Bogura	Overall
Ultra-poor	%	22.98	13.89	19.33
Transitional-poor	%	18.01	19.44	18.59
Enterprising-poor	%	59.01	66.67	62.08

Table 2: Occupation of the head of the household family in two districts

Occupation	Measurement unit	Naogaon	Bogura	Overall
Agriculture (crop)	%	29.77	32.02	30.66
Livestock rearing	%	35.77	34.78	35.38
Day laborer	%	18.54	10.67	15.41
Business	%	8.09	15.42	11.01
Fisheries	%	1.31	0.79	1.10
Service	%	1.83	0.79	1.42
Remittances	%	3.66	2.77	3.30
Others	%	1.04	2.77	1.73

Table 3: Occupation of the head of the household family in different project participant categories

Occupation	Measurement unit	Ultra-poor	Transitional-poor	Enterprising-poor
Agriculture (crop)	%	42.31	54.00	87.43
Livestock rearing	%	82.69	78.00	85.63
Day laborer	%	71.15	50.00	20.96
Business	%	7.69	32.00	29.94
Fisheries	%	1.92	-	3.59
Service	%	3.85	4.00	2.99
Remittances	%	5.77	6.00	8.98
Others	%	7.69	8.00	1.80

Table 4: Education level of the head of the project participant household family in two districts

Education level	Measurement unit	Naogaon	Bogura	Overall
Illiterate	%	13.66	6.48	10.78
Able to sign	%	19.25	19.44	19.33
Primary	%	31.68	29.63	30.86
Class-viii (JSC)	%	20.50	23.15	21.56
SSC	%	12.42	11.11	11.90

Education level	Measurement unit	Naogaon	Bogura	Overall
HSC	%	1.24	9.26	4.46
Graduate	%	1.24	-	0.74
Post-graduate	%	-	0.93	0.37

Table 5: Education level of the head of different project participant categories HHs

Education level	Measurement unit	Ultra-poor	Transitional-poor	Enterprising-poor
Illiterate	%	21.15	20.00	4.79
Able to sign	%	25.00	22.00	16.77
Primary	%	30.77	28.00	31.74
Class-VIII (JSC)	%	17.31	18.00	23.95
SSC	%	5.77	10.00	14.37
HSC	%	-	2.00	6.59
Graduate	%	-	-	1.20
Post-graduate	%	-	-	0.60

Table 6: Age of the project participant farmers in two districts

Age category	Measurement unit	Naogaon	Bogura	Overall
18-35 years	%	28.57	26.85	27.88
36-50 years	%	50.93	48.15	49.81
51-60 years	%	17.39	23.15	19.70
Above 60 years	%	3.11	1.85	2.60

Table 7: Family size, sex ratio, family headed and earning member

Indicator	Measurement unit	Naogaon	Bogura	Overall
Family size				
Up to 3 person	%	17.18	11.93	14.95
4 to 5 person	%	63.0	50.70	57.77
6 to 7 person	%	26.44	15.27	20.02
More than 7 person	%	10.93	4.55	7.26
Average family size	Number	4.23	4.66	4.40
Sex ratio among the family members				
Male	%	51.10	50.50	50.84
Female	%	48.90	49.50	49.16
Headed by the family				
Male	%	96.89	99.07	97.77
Female	%	3.11	0.93	2.23
Earning members				
Male	%	100	100	100
Female	%	4.97	0.93	3.35
Total average	Number	1.33	1.46	1.39

Table 8: Land size owned by the farmers

Land category	Measurement unit	Naogaon	Bogura	Overall
Homestead	Decimal	11.04	11.40	11.18
Cultivated	Decimal	89.89	100.22	94.38
Total	Decimal	73.57	91.20	80.65

Table 9: Monthly income from primary and secondary sources of income

Income source	Measurement unit	Naogaon	Bogura	Overall
Primary source	BDT	12099/-	12102/-	12100/-
Secondary source	BDT	3456/-	4400/-	3831/-
Total	BDT	14516/-	15037/-	14725/-

Table 10: Livestock breed and rearing system

Indicator	Measurement unit	Naogaon	Bogura	Overall
Type of dairy cattle reared by the farmers				
Indigenous	%	63.64	23.29	45.34
Cross	%	36.36	76.71	54.66
System of dairy cattle rearing				
Confinement	%	69.41	92.75	79.87
Both confinement & grazing	%	30.59	7.25	20.13
Type of fattening cattle reared by the farmers				
Indigenous	%	44.44	40.00	43.48
Cross	%	55.56	60.00	56.52
System of fattening cattle rearing				
Grazing	%	-	-	-
Confinement	%	100	100	100
Type of goat reared by the farmers				
Native (Black Bengal)	%	86.21	51.72	68.97
Improved (exotic/cross)	%	13.79	44.83	29.31
Both types	%	-	3.45	1.72
System of goat rearing				
Grazing	%	11.90	44.83	25.35
Intensive	%	23.81	27.59	25.35
Both (Semi-intensive)	%	64.29	27.59	49.30
Type of sheep reared by the farmers				
Indigenous	%	100	100	100
Garole	%	-	-	-
System of sheep rearing				
Grazing	%	50.00	66.67	57.14
Semi-Intensive	%	50.00	33.33	42.86

Table 11: Population statistics of different livestock species

Species	Type	Measurement unit	Naogaon	Bogura	Overall
Dairy Cattle	Dairy cow	Average nos	1.41	1.61	1.49
	Pregnant cow	Average nos	1.47	1.33	1.40
	Dry cow	Average nos	1.21	2.00	1.54
	Heifer (above 12 m)	Average nos	1.33	1.55	1.43
	Heifer calf (below 12m)	Average nos	1.28	1.18	1.24
	Bull calf	Average nos	1.15	1.07	1.12
	Total dairy cattle	Average nos	3.65	3.45	3.56
Beef cattle	Adult bull	Average nos	2.22	2.20	2.21
	Total beef cattle	Average nos	2.22	2.20	2.21
Goat	Lactating doe	Average nos	2.20	1.40	1.72
	Pregnant doe	Average nos	1.56	1.83	1.69
	Dry doe	Average nos	1.55	2.00	1.67
	Kids (below 3m)	Average nos	1.67	1.78	1.70
	Growing kids (above 3m)	Average nos	1.40	1.83	1.71
	Castrated male goat	Average nos	1.18	1.86	1.55
	Buck	Average nos	1.00	1.00	1.00
	Total goat	Average nos	4.17	4.83	4.49
Sheep	Lactating ewe	Average nos	5.00	1.50	3.25
	Pregnant ewe	Average nos	3.00	2.50	2.80
	Dry ewe	Average nos	-	1.50	1.50
	Lambs (below 3m)	Average nos	5.00	1.50	2.67
	Growing lambs (above 3m)	Average nos	6.50	2.00	4.25
	Castrated male sheep	Average nos	-	1.00	1.00
	Ram	Average nos	1.00	1.00	1.00
	Total sheep	Average nos	12.67	7.00	9.83

Table 12: Total population size per household for different livestock species according to different categories of farmers

Species	Average number of animals per HH		
	Ultra-poor	Transitional-poor	Enterprising-poor
Dairy cattle	2.52	3.12	3.85
Fattening cattle	1.67	1.50	2.39
Goat	4.81	3.38	5.00
Sheep	9.67	10.00	-

Table 13: Feeds and feeding of animals

Indicator	Measurement unit	Naogaon	Bogura	Overall
Types of feeds provided to the dairy cattle				
Grazing	% provide	29.55	8.45	20.13
Rice straw	% provide	98.86	100.0	99.37
Cultivated HYV fodder	% provide	40.91	16.90	30.19
Cut and carry local grass	% provide	63.64	71.83	67.30
Concentrate	% provide	86.36	97.18	91.19
Types of feeds provided to the beef cattle				
Rice straw	% provide	88.89	100.0	91.30
Cultivated HYV fodder	% provide	50.00	40.00	47.83
Cut and carry local grass	% provide	50.00	80.00	56.52
Concentrate	% provide	94.44	100.00	95.65
Types of feeds provided to the goat				
Grazing	% provide	96.67	65.52	81.36
Rice straw	% provide	66.67	17.24	42.37
Cultivated HYV fodder	% provide	6.67	6.90	6.78
Cut and carry local grass	% provide	66.67	79.31	72.88
Concentrate	% provide	80.00	75.86	77.97
Types of feeds provided to the sheep				
Grazing	% provide	100.00	100.00	100.00
Rice straw	% provide	33.33	-	16.67
Cut and carry local grass	% provide	-	66.67	33.33
Concentrate	% provide	66.67	33.33	50.00
Types of concentrate feeds provided to the dairy cattle				
Wheat bran	% provide	86.36	98.59	91.82
Rice polish	% provide	77.27	91.55	83.65
Maize	% provide	19.32	32.39	25.16
Oilcake	% provide	18.18	40.85	28.30
Broken rice	% provide	72.73	70.42	71.40
Ready feed	% provide	15.91	11.27	13.84
Amount of concentrate feed given	Kg/head	1.41	1.75	1.57
Types of concentrate feeds provided to the beef cattle				
Wheat bran	% provide	42.50	100.0	48.89
Rice polish	% provide	42.50	80.80	46.67
Maize	% provide	10.00	40.00	13.33
Oilcake	% provide	-	40.00	4.44
Broken rice	% provide	30.00	40.00	31.11
Ready feed	% provide	30.00	40.00	31.11
Amount of concentrate feed given	Kg/head	2.40	1.80	2.26
Types of concentrate feeds provided to the goat				
Wheat bran	% provide	80.00	82.76	81.36
Rice polish	% provide	36.67	51.72	44.07
Maize	% provide	3.33	-	1.69
Broken rice	% provide	40.00	48.28	44.07

Indicator	Measurement unit	Naogaon	Bogura	Overall
Amount of concentrate feed given	Kg/head	0.294	0.305	0.300
Types of concentrate feeds provided to the sheep				
Wheat bran	% provide	66.67	100.00	83.33
Rice polish	% provide	-	33.33	16.67
Maize	% provide	33.33	-	16.67
Broken rice	% provide	33.33	33.33	33.33
Amount of concentrate feed given	Kg/head	0.250	0.220	0.232
Whether farmers use any special drugs for fattening cattle	% said "yes"	0.00	0.00	0.00
Whether farmers use any special drugs for enhancing milk and milk fat	% said "yes"	2.38	1.69	2.10

Table 14: Fodder production, marketing and demand

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether HYV fodders are cultivated	% cultivate	34.16	19.44	28.25
Land used for fodder cultivation	Decimal	13.15	9.10	12.03
Type of fodders cultivated by the farmers				
Napier	% cultivate	83.93	79.17	82.50
German	% cultivate	14.29	4.17	11.25
Maize	% cultivate	-	8.33	2.50
Jumbo	% cultivate	1.79	4.17	2.50
Others	% cultivate	-	4.17	1.25
Whether cultivated fodder is sold	% said "Yes"	7.84	-	5.56
Whether green grass is bought	% said "Yes"	38.64	8.57	25.32
The season when the demand of fodder rises				
Rainy season	% response	81.36	86.67	83.65
Winter season	% response	18.64	13.33	16.35
Whether rice straw is bought	% said "Yes"	82.42	81.97	82.24
Whether rice straw is sold	said "Yes"%	-	8.57	3.66

Table 15: Annual production cost (per HH) for different livestock species in Naogaon

Line items	Measurement unit	Dairy cattle	Fattening	Goat	Sheep
Feed	BDT	41360/-	70333/-	5364/-	5300/-
Medication	BDT	5192/-	5167/-	1136/-	1433.-
AI service	BDT	1229/-	-	785/-	1500/-
Utility (electricity, water)	BDT	2563/-	2955/-	1300/-	750/-
Labour wage (if recruited)	BDT	74333/-	-	-	3600/-
Miscellaneous	BDT	537/-	833/-	369/-	500/-
Total	BDT	52417/-	78417/-	7759/-	7333/-

Table 16: Annual production cost (per HH) for different livestock species in Bogura

Line items	Measurement unit	Dairy cattle	Fattening	Goat	Sheep
Feed	BDT	55803/-	37840/-	8925/-	12833/-
Medication	BDT	7077/-	6400/-	1721/-	2433/-
AI service	BDT	1629/-	-	785/-	767/-
Utility (electricity, water)	BDT	3493/-	3275/-	705/-	933/-
Labour wage (if recruited)	BDT	60000/-	-	-	-
Miscellaneous	BDT	563/-	2000/-	406/-	500/-
Total	BDT	70170/-	71660/-	11500/-	17133/-

Table 17: Number of animal sold and price earned in last one year

Type of animal	Naogaon		Bogura		Overall	
	Average sold (nos)	Average earn, BDT	Average sold (nos)	Average earn, BDT	Average sold (nos)	Average earn, BDT
Adult cow	1.2	98850/-	1.5	131214/-	1.38	117729/-
Calf	1.45	63350/-	1.69	80931/-	1.59	73755/-
Fattening bull	1.78	190811/-	1.36	123643/-	1.67	172373/-
Adult goat	1.36	12682/-	2.74	28783/-	2.07	20911/-
Kids	1.50	5713/-	1.50	4250/-	1.50	5420/-
Adult sheep	8.00	30000/-	5.40	29500/-	6.14	29643/-
Lambs	1.50	3750/-	7.00	27000/-	4.25	15375/-

Table 18: Milk and animal marketing

Indicator	Measurement unit	Naogaon	Bogura	Overall
To whom milk is sold				
Goala from farm-house	%	45.88	30.77	40.15
Consumers in the local market	%	9.41	28.85	16.79
Neighbors	%	41.18	38.46	40.15
Tea stall/sweetmeat	%	3.53	1.92	2.92
Milk price	BDT/Litter	54.0	51.0	53.0
Place where farm animals are sold				
Local animal market	%	76.02	62.73	70.82
Outside reputed market	%	3.51	6.36	4.63
From house (Animal Traders/brokers)	%	20.47	30.91	24.56
Whether farmers get right price of products	% said “Yes”	82.58	77.67	80.62

Table 19: Savings and increasing assets from livestock farming

Indicator	Measurement unit	Naogaon	Bogura	Overall
To what purposes the income earned from livestock is spent				
Spent for household expenditure	% said 'yes'	77.98	60.40	69.72
Savings	% said 'yes'	4.17	17.45	10.41
Animal purchase	% said 'yes'	7.14	13.42	10.10
Land purchase	% said 'yes'	-	0.67	0.32
Land mortgage	% said 'yes'	4.17	4.70	4.42
Construction of house	% said 'yes'	6.55	3.36	5.05
If farmers had saving, yearly amount	BDT	39167/-	45538/-	44344/-
Yearly savings from the farming	BDT			
If animals are purchased, types of animals purchased by the farmers in last one year				
Cattle	% said 'yes'	100.0	72.73	82.35
Goat	% said 'yes'	-	27.27	17.65
Number of animals purchased by the farmers in last one year				
Cattle	Average nos	1.25	1.50	1.39
Goat	Average nos	-	5.33	5.33
If land is purchased or taken as mortgage, then amount in last year	Decimal	26.43	45.38	36.53

Table 20: Availability of necessary inputs supply

Inputs	Measurement unit	Naogaon	Bogura	Overall
Whether cattle feeds are available	% said "yes"	60.87	68.52	63.94
Whether quality of cattle feeds are good	% said "yes"	98.99	100.0	99.42
Whether HYV fodders are available	% said "yes"	82.61	50.00	69.52
Whether vaccine, anthelmintic & medicine are available	% said "yes"	90.68	87.96	89.59
Whether quality of vaccine, anthelmintic & medicine are good	% said "yes"	97.95	96.84	97.51
Whether bull semen is available	% said "yes"	97.73	98.53	98.21
Whether quality of bull semen is good	% said "yes"	90.70	89.55	90.00
Degree of availability of different bull semen				
Friesian	% said available	33.88	42.14	38.31
Sahiwal	% said available	33.88	27.86	30.65
Shindhi	% said available	-	2.86	1.53
Jersey	% said available	-	2.14	1.15
Deshi	% said available	32.23	25.00	28.35
Highest demand of bull semen				
Friesian	% response	50.98	58.82	55.46
Sahiwal	% response	49.02	38.24	42.86
Shindhi	% response	-	1.47	0.84
Deshi	% response	-	1.47	0.84
Whether breeding bucks are available	% said available	100	100	100
Whether quality of bucks are good	% said "yes"	93.33	85.19	89.47
Degree of availability of different breeding bucks				

Inputs	Measurement unit	Naogaon	Bogura	Overall
Native (Black Bengal)	% said available	53.85	47.50	51.09
Improved (exotic/cross)	% said available	46.15	52.50	48.91
Highest demand of breeding buck				
Native (Black Bengal)	% response	53.33	35.71	44.83
Improved (exotic/cross)	% response	46.67	64.29	55.17
Whether breeding rams are available	% said available	100	100	100
Whether quality of rams are good	% said "yes"	100	100	100
Degree of availability of different breeding rams				
Native	% said available	100	100	100
Garole	% said available	-	-	-
Highest demand of breeding ram				
Native	% response	100	100	100
Garole	% response	-	-	-

Table 21: Availability and quality of veterinary treatment and AI services

Services	Measurement unit	Naogaon	Bogura	Overall
Whether vet. treatment service is available	% said available	93.17	98.15	95.17
Availability of different veterinary treatment service providers				
Govt. VSP	% said available	32.89	34.86	33.72
Private VSP (Quack/paravet)	% said available	67.11	65.14	66.28
Quality of treatment services				
Good	% response	67.33	72.64	69.53
Roughly	% response	32.67	27.36	30.47
Whether AI service is available	% said available	100	98.57	99.35
Availability of different AI service providers (AISP)				
Government AISP	% said available	61.18	37.68	50.65
Private AISP (BRAC, Talteer, ADL etc.)	% said available	38.82	60.87	48.70
Both service	% said available	-	1.45	00.65
Quality of AI services				
Good	% response	78.82	89.55	83.55
Roughly	% response	21.18	10.45	16.45

Table 22: Credit and insurance for livestock farming

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether any loan taken in the current year	% said 'yes'	29.19	36.11	31.97
Source from where loan was taken				
NGO	% response	93.48	92.31	92.94
Bank (govt and private)	% response	6.52	7.69	7.06
Amount of loan taken	BDT	85745/-	55769/-	72151/-
Purpose of loan taken				
Livestock farming	% said 'yes'	36.17	36.84	36.46
Other than livestock farming	% said 'yes'	63.83	63.16	63.54
Whether farmers needed more loans	% said 'yes'	36.59	52.94	44.00

Table 23: Linkage of farmers with market access and services

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether farmers had linkage with quality input services (feed, vaccine, medicine etc)	% said "yes"	51.55	75.00	60.97
Whether farmers had linkage with expert LSPs who give treatment and AI services	% said "yes"	48.13	66.67	55.60
Whether farmers had linkage with local milk traders/goalas	% said "yes"	79.55	66.20	73.58
Whether farmers had linkage with financial service providers	% said "yes"	35.40	33.33	34.57
Whether farmers had accessed in online animal marketing	% said "yes"	-	0.93	0.37

Table 24: Training and skill development of the farmers

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether farmers got training on livestock	% said "yes"	30.82	50.50	38.58
If farmers received training, then on what species				
Dairy	% received	50.72	57.14	53.96
Beef fattening	% received	30.43	18.57	24.46
Goat and sheep	% received	18.84	24.29	21.58
Sources of training received by the farmers				
Government organization	% received	34.00	15.79	24.30
Non-government organization	% received	64.00	80.70	72.90
Both of the organization	% received	2.00	3.51	2.80
Times of training by the farmers				
Once	% received	44.00	56.14	50.47
Twice	% received	34.00	21.05	27.10
Thrice	% received	14.00	12.28	13.08
More than thrice	% received	8.00	10.53	9.35
Total duration of receiving training	Av. days	2.80	5.86	4.43
Whether knowledge increased after training	% said "yes"	100.0	100.0	100.0
Whether knowledge is implemented	% said "yes"	100.0	100.0	100.0

Table 25: Farm management, cleanliness and hygiene and farm waste management

Indicator	Measurement unit	Naogaon	Bogura	Overall
Awareness of GAP in livestock farming	% said "yes"	1.24	-	0.74
Whether farmers practiced GAP	% said "yes"	100.0	-	100.0
Frequency of animal house cleaning in a day				
Once	% response	33.54	30.56	32.34
Twice	% response	34.78	29.63	32.71
Thrice	% response	26.09	29.63	27.51
More than thrice	% response	05.59	10.19	07.43
Utilization of farm wastes				
Preserved for self-utilization	% response	94.30	88.89	92.11
Sold	% response	0.63	2.78	1.50

Indicator	Measurement unit	Naogaon	Bogura	Overall
Neighbors take free of cost	% response	-	1.85	0.75
Spoiled by going through water bodies	% response	5.06	6.48	5.64
Place where farm wastes are accumulated				
Inside the farm	% response	5.06	1.85	3.76
Open place outside the farm	% response	86.71	37.04	66.54
Open pit outside the farm	% response	6.96	59.26	28.20
Closed pit	% response	1.27	1.85	1.50
To what purpose farm wastes are self-utilized				
Fertilizing land	% response	63.41	68.22	65.27
Fuel	% response	36.59	31.78	34.73
Whether milkers clean udder before milking	% said "yes"	98.82	98.04	98.53
Whether milkers clean hand before milking	% said "yes"	100	100	100
Cleaning agents used for cleaning udder and milkers' hand				
By water	% used	51.16	82.35	62.77
Both water and soap/detergent	% used	48.84	17.65	37.23
Ways how cowshed/paddock are cleaned and disinfected				
Only by brooming	% said "yes"	25.49	53.85	35.06
Both by brooming and washing with water	% said "yes"	73.53	42.31	62.99
By brooming, washing and disinfecting	% said "yes"	0.98	3.85	01.95
Whether farm records (AI, medication, finance etc.) are kept	% said "yes"	1.86	7.48	4.10

Table 26: Preventive animal health care management

Indicator	Measurement unit	Naogaon	Bogura	Overall
Types of vaccines used for dairy cattle				
FMD	% used	18.69	24.06	20.96
Anthrax	% used	21.11	22.17	21.56
BQ	% used	16.96	14.15	15.77
HS	% used	13.84	9.43	11.98
LSD	% used	29.41	30.19	29.74
Types of vaccines used for fattening cattle				
FMD	% used	23.08	26.67	23.66
Anthrax	% used	20.51	20.00	20.43
BQ	% used	12.82	13.33	12.90
HS	% used	12.82	13.33	12.90
LSD	% used	30.77	26.67	30.11
Whether farmers vaccinate cattle regularly				
Dairy	% said "yes"	91.86	90.14	91.08
Fattening	% said "yes"	87.50	80.00	86.21
Types of vaccines used for goat				
FMD	% used	20.51	10.00	15.94
PPR	% used	69.23	86.67	76.81
Goat pox	% used	10.26	3.33	7.25
Whether farmers vaccinate goat regularly	% said "yes"	77.78	68.00	73.08
Types of vaccines used for sheep				

Indicator	Measurement unit	Naogaon	Bogura	Overall
FMD	% used	25.00	-	14.29
PPR	% used	75.00	100.0	85.71
Whether farmers vaccinate sheep regularly	% said "yes"	100.0	33.00	66.67
Whether farmers de-wormed animal regularly				
Dairy cattle	% said "yes"	97.30	95.59	96.48
Fattening cattle	% said "yes"	76.19	100.0	80.77
Goat	% said "yes"	86.67	93.10	89.83
Sheep	% said "yes"	66.67	100.0	83.33
Frequency of de-worming dairy cattle per year				
Once	% response	4.17	3.13	3.68
Twice	% response	5.56	12.50	8.82
Thrice	% response	41.67	60.94	50.74
Quarterly	% response	48.61	23.44	36.76
Frequency of de-worming fattening cattle				
Once	% response	6.25	-	4.76
Twice	% response	25.00	40.00	28.57
Thrice	% response	25.00	20.00	23.81
Quarterly	% response	43.75	40.00	42.86
Frequency of de-worming goat per year				
Once	% response	3.85	3.85	3.85
Twice	% response	57.69	42.31	50.00
Thrice	% response	30.77	42.31	36.54
Quarterly	% response	7.69	11.54	9.62
Frequency of de-worming sheep per year				
Once	% response	-	33.33	20.00
Twice	% response	50.00	66.67	60.00
Thrice	% response	50.00	-	20.00
Changing trend of disease outbreak and mortality over times				
Increased	% response	6.21	1.85	4.46
Decreased	% response	72.05	71.30	71.75
No change	% response	21.74	26.85	23.79

Table 27: Disease outbreak and mortality in dairy cattle

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether disease cases found in dairy cattle	% said "yes"	37.89	38.03	37.95
Number of adult cattle exposed diseases	Av. No/hh	1.57	1.38	1.50
Number of calves exposed diseases	Av. No/hh	1.35	1.31	1.33
Prevalence/load of different cattle diseases				
FMD	% occurred	11.43	28.57	19.05
LSD	% occurred	71.43	60.71	66.67
Anthrax	% occurred	5.71	3.57	4.76
Bloat	% occurred	2.86	3.57	3.17
HS	% occurred	5.71	-	3.17
Others	% occurred	2.86	3.57	3.17
Whether death cases found in cattle	% said "yes"	43.24	56.67	49.25

Indicator		Measurement unit	Naogaon	Bogura	Overall
Number of adult cattle died		Av. No/hh	1.00	1.00	1.00
Number of calves died		Av. No/hh	1.38	1.00	1.19
Causes of death in cattle					
	Anthrax	% caused	16.67	28.57	23.08
	FMD	% caused	16.67	28.57	23.08
	HS	% caused	16.67	-	7.69
	LSD	% caused	16.67	14.29	15.38
	Bloat	% caused	16.67	14.29	15.38
	Diarrhoea	% caused	-	14.29	7.69
	Pneumonia	% caused	16.67	-	7.69
Season when cattle died					
	Winter	% died	-	50.00	12.50
	Rainy	% died	83.33	50.00	75.00
	Summer	% died	16.67	-	12.50

Table 28: Disease outbreak and mortality in fattening cattle

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether disease cases found	% said "yes"	25.00	40.00	27.59
Number of cattle exposed diseases	Av. No/hh	1.40	1.00	1.33
Prevalence/load of different cattle diseases				
FMD	% occurred	11.11	-	9.09
LSD	% occurred	66.67	100.0	72.73
HS	% occurred	11.11	-	9.09
Diarrhoea	% occurred	11.11	-	9.09
Whether death cases found	% said "yes"	40.0	50.0	42.86
Number of fatten cattle died	Av. No/hh	1.00	1.00	1.00

Table 29: Disease outbreak and mortality in goat

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether disease cases found in goat	% said "yes"	20.83	20.69	20.78
Number of adult goat exposed diseases	Av. No/hh	1.33	1.83	1.53
Number of kids exposed diseases	Av. No/hh	1.00	5.50	3.25
Prevalence/load of different diseases in goat				
PPR	% occurred	66.67	66.67	66.67
Others	% occurred	33.33	33.33	33.33
Whether death cases found in goat	% occurred	100.0	100.0	100.00
Number of adult goat died	Av. No/hh	1.11	1.67	1.33
Number of kids died	Av. No/hh	1.00	9.00	3.67
Causes of death in goat				
PPR	% caused	-	100.0	66.67
Others	% caused	100.0	-	33.33
Season when goat died				
Winter	% died	100.0	100.0	100.0
Rainy	% died	-	-	-

Indicator	Measurement unit	Naogaon	Bogura	Overall
Summer	% died	-	-	-

Table 30: Disease outbreak and mortality in sheep

Indicator	Measurement unit	Naogaon	Bogura	Overall
Whether disease cases found in sheep	% said "yes"	50.00	66.67	60.00
Number of adult sheep exposed diseases	Av. No/hh	2.00	4.00	3.00
Number of lambs exposed diseases	Av. No/hh	2.00	2.00	2.00
Prevalence/load of different diseases in sheep				
PPR	% occurred	100.0	50.00	66.67
Pneumonia	% occurred	-	50.00	33.33
Whether death cases found in sheep	% occurred	-	50.00	33.33
Number of adult sheep died	Av. No/hh	-	-	-
Number of lambs died	Av. No/hh	-	2.00	2.00
Causes of death in sheep				
PPR	% caused	-	100.0	100.0
Pneumonia	% caused	-	-	-
Season when sheep died more				
Winter	% died	-	-	-
Rainy	% died	-	100.0	100.0
Summer	% died	-	-	-

Table 31: Employment and time spend for livestock rearing

Indicator	Measurement unit	Naogaon	Bogura	Overall
Wage based labour for dairy cattle	% recruited	3.41	1.41	2.52
Wage based labour for fattening cattle	% recruited	-	20.00	2.22
Wage based labour for goat	% recruited	-	-	-
Wage based labour for sheep	% recruited	-	-	-
Monthly salary for dairy cattle	BDT	9166/-	5000/-	8125/-
Monthly salary for fattening cattle	BDT	-	10000/-	10000/-
Time spent by male family labour for dairy cattle rearing	hour/day	2.15	3.08	2.65
Time spent by female family labour for dairy cattle rearing	hour/day	3.65	4.47	4.01
Time spent by male family labour for fattening cattle rearing	hour/day	3.06	4.80	3.45
Time spent by female family labour for fattening cattle rearing	hour/day	3.18	4.00	3.33
Time spent by male family labour for goat rearing	hour/day	1.00	2.28	2.00
Time spent by female family labour for goat rearing	hour/day	2.92	2.95	2.94
Time spent by male family labour for sheep rearing	hour/day	1.00	4.00	3.25
Time spent by female family labour for sheep rearing	hour/day	3.00	3.33	3.25

Annex II

KII (All Narrative)

ULO/VS/LEO

KII-1 (ULO/VS/LEO)

A. Name, designation and contact number

Name: M.A. Awal, Phone: 01613-018480
Designation: LEO
Upazila: Naogaon Sadar **District:** Naogaon

B. Information related to livestock

1. What are the services provide in your office? Treatment, AI, Vaccination, De-worming
2. In an average how many clients/farmers get livestock services in a day? About 60
3. Which types of animal keeper farmers get more services? Cattle and goat
4. How many farmers keep dairy cow and beef cattle? Dairy 35% and Beef Fattening 65%
5. Which type farming is more profitable? Both dairy and fattening
6. How many farmers keep native and crossbred cattle? Native 60%, Crossbred 40%
7. How many farmers keep goat? 30%
8. Which type of goat is reared by most of the farmers? Native
9. How many farmers keep sheep? 10%
10. Which disease is most prevalent in cattle? FMD
11. Which disease is most prevalent in goat? PPR
12. Which disease is most prevalent in sheep? Pneumonia
13. Do farmers regularly vaccinate their animals? No
14. Do farmers regularly de-worm their animals? Yes
15. In the following issues what types of problems livestock keeper farmers are facing?

15.1 Dairy production: Milk marketing
15.2 Beef fattening: High price of feeds
15.3 Animal health and diseases: Insufficient supply of vaccines
15.4 Breeding and reproduction: Lack of quality bull semen
15.5 Feeds and feeding: High price
15.6 Milk marketing: Imbalance marketing
15.7 Overall farm management: Very poor biosecurity

16. To improve and extend in providing livestock services what are lackings in your office? Veterinary equipments and vaccine
17. Have you taken any initiatives to motivate farmers for production of safe and hygienic milk and meat products following national and international Good Agricultural Practices (GAP) and HACCP? Yes
18. What is your thinking about constraints to improve milk and meat production?
    - Poor milk marketing

- Price hiking of animal feeds.
- Over dominancy of middlemen/brokers

19. How those problems could be minimized?
    - Need to monitor feed market
    - Need to increase manufacturing milk products
20. How the related stakeholders could be motivated to produce safe and hygienic meat, milk and milk products?
    -To build up consciouseness
    -Need to give them sufficient trainings.

KII-2 (ULO/VS/LEO)

A. Name, designation and contact number

Name: Dr. Md. Sadiul Islam, Phone:
Designation: LEO
Upazila: Dupchachia **District:** Bogura

B. Information related to livestock

1. What are the services provide in your office? Treatment, AI, Vaccination, De-worming
2. In an average how many clients/farmers get livestock services in a day? About 45
3. Which types of animal keeper farmers get more services? Cattle, goat, chicken and duck
4. How many farmers keep dairy cow and beef cattle? Dairy 70% and Beef Fattening 30%
5. Which type farming is more profitable? Both dairy and fattening
6. How many farmers keep native and crossbred cattle? Native 30%, Crossbred 70%
7. How many farmers keep goat? 45%
8. Which type of goat is reared by most of the farmers? Native
9. How many farmers keep sheep? 8%
10. Which disease is most prevalent in cattle? LSD
11. Which disease is most prevalent in goat? PPR
12. Which disease is most prevalent in sheep? Ectoparasite
13. Do farmers regularly vaccinate their animals? Yes
14. Do farmers regularly de-worm their animals? Yes
15. In the following issues what types of problems livestock keeper farmers are facing?

15.1 Dairy production:
15.2 Beef fattening:
15.3 Animal health and diseases:
15.4 Breeding and reproduction: Yes
15.5 Feeds and feeding:
15.6 Milk marketing:
15.7 Overall farm management:

16. To improve and extend in providing livestock services what are lackings in your office? Associate stuffs

17. Have you taken any initiatives to motivate farmers for production of safe and hygienic milk and meat products following national and international Good Agricultural Practices (GAP) and HACCP? Yes
18. What is your thinking about constraints to improve milk and meat production?
- Lack of awareness
- Lack of adequate trainings.

19. How those problems could be minimized?
- Need to build awareness
- Need to provide trainings

20. How the related stakeholders could be motivated to produce safe and hygienic meat, milk and milk products?
- Need to give training
- Need to give advice
- To build up consciousness

KII-3 (ULO/VS/LEO)

A. Name, designation and contact number

Name: Dr. Md. Sharif Uddin Mondal, Phone: 01736474834
Designation: LEO
Upazila: Raninagar **District:** Naogaon

B. Information related to livestock

1. What are the services provide in your office? Treatment, AI, Vaccination, De-worming
2. In an average how many clients/farmers get livestock services in a day? About 80-90
3. Which types of animal keeper farmers get more services? Goat
4. How many farmers keep dairy cow and beef cattle? Dairy 30% and Beef Fattening 20%
5. Which type farming is more profitable? Both dairy and fattening
6. How many farmers keep native and crossbred cattle? Native 60%, Crossbred 40%
7. How many farmers keep goat? 60%
8. Which type of goat is reared by most of the farmers? Native
9. How many farmers keep sheep? 25%
10. Which disease is most prevalent in cattle? LSD
11. Which disease is most prevalent in goat? PPR
12. Which disease is most prevalent in sheep? Diarrhoea
13. Do farmers regularly vaccinate their animals? No
14. Do farmers regularly de-worm their animals? No
15. In the following issues what types of problems livestock keeper farmers are facing?

15.1 Dairy production: Very limited milk market
15.2 Beef fattening: Lack of awareness

15.3 Animal health and diseases: Lack of appropriate service in appropriate time, mis-treatment
15.4 Breeding and reproduction: Could not identify the problem
15.5 Feeds and feeding: Inadequate, high price
15.6 Milk marketing: No milk collection centre, falling milk price
15.7 Overall farm management: Lack of biosecurity
16. To improve and extend in providing livestock services what are lackings in your office? Veterinarians
17. Have you taken any initiatives to motivate farmers for production of safe and hygienic milk and meat products following national and international Good Agricultural Practices (GAP) and HACCP? No
18. What is your thinking about constraints to improve milk and meat production?
- Lack of milk collection centre
- Milk price fluctuates
- Lack of slaughter house
- Lack of awareness

19. How those problems could be minimized?
20. How the related stakeholders could be motivated to produce safe and hygienic meat, milk and milk products?

KII-4 (ULO/VS/LEO)

A. Name, designation and contact number

Name: Dr. Amirul Islam, Phone: 01816891353
Designation: ULO
Upazila: Adomdighi **District:** Bogura

B. Information related to livestock

1. What are the services provide in your office? Treatment, AI, Vaccination, De-worming
2. In an average how many clients/farmers get livestock services in a day? About 40-50
3. Which types of animal keeper farmers get more services? Cattle
4. How many farmers keep dairy cow and beef cattle? Dairy 60% and Beef Fattening 40%
5. Which type farming is more profitable? Both dairy and fattening
6. How many farmers keep native and crossbred cattle? Native 45%, Crossbred 55%
7. How many farmers keep goat? 30%
8. Which type of goat is reared by most of the farmers? Native
9. How many farmers keep sheep? 5%
10. Which disease is most prevalent in cattle? LSD
11. Which disease is most prevalent in goat? PPR
12. Which disease is most prevalent in sheep? PPR
13. Do farmers regularly vaccinate their animals? No
14. Do farmers regularly de-worm their animals? No

15. In the following issues what types of problems livestock keeper farmers are facing?
15.1 Dairy production: Scarcity of green grass
15.2 Beef fattening: High price of feed
15.3 Animal health and diseases: No biosecurity is maintained
15.4 Breeding and reproduction: RB
15.5 Feeds and feeding: High price
15.6 Milk marketing: No milk collection centre
15.7 Overall farm management: Despite having training farmers do not follow it properly. Lack of practice
16. To improve and extend in providing livestock services what are lackings in your office? Associate stuffs
17. Have you taken any initiatives to motivate farmers for production of safe and hygienic milk and meat products following national and international Good Agricultural Practices (GAP) and HACCP? Yes
18. What is your thinking about constraints to improve milk and meat production?
- Intention of the farmers to inseminate cows with 100% exotic breeds
- Lack of fodder land
- High cost of feeds
19. How those problems could be minimized?
- Need to use below 75% exotic breed for crossbreeding
20. How the related stakeholders could be motivated to produce safe and hygienic meat, milk and milk products?
- By giving training to the farmers
- By using modern technology

LSP/AISP/Quack/Paravet

KII-1 (LSP)

A. General Information

Name:	Md. Rakib Hossain	Father's Name: Md. Echahaq Ali	
Village: Singbacha	Union: Shoilgachi	Upazilla: Naogaon Sadar	District: Naogaon
Age (Yrs): 31	Education: BA		
Main income source:	LSP (Quack)	Secondary income source	Tution
		Contact Number:	01734531993
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment, Vaccine and Deworming
2. How long are you providing services in your profession? 5 Years

3. Do you have formal education on your profession? No
4. If no, then how have you learnt it? By Training
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course?
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	DLS	DLS	
How long? (d/m/y)	7 d	3 d	
What was the topic?	Primary tretament		

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 100.0
    b) For treatment of Goat/Sheep: BDT. 50.0
    c) For AI of Cattle/Buffalo:
    d) For vaccination of cattle/goat: BDT. 10.0 /animal
    e) For de-worming of cattle/goat: BDT. 30.0 /animal
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 60 number
    b) Treatment of Goat: 40 number
    c) Treatment of Sheep:
    d) Artificial Insemination:
    e) Vaccination: 500 number
    f) De-worming: 500 number
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? Diseased animals do not take feeds.
13. How do you face/overcome those complains? By giving treatment for that problem free of cost.
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why? Breed and feed
    b) Performance of beef cattle: None, why?
    c) Animal health and disease: Bloat, Fever, FMD why?
    d) Breeding and Reproduction: RB, Anestrous, why?
    e) Feeds and Feeding: Low quality, inadequate supply, why?
    f) Milk marketing: ……, why?
    g) Fattening animal marketing……., Why? …….
    h) Marketing of goat and sheep……., Why? ……..
    i) Overall farm management: Low space, lack of manger and waterer, why?
    j) Farm waste management: Cow dung is kept inside the house, why?
    k) Weather, climate and environment: ……., why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No
16. If yes, what are those? …….
17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No
18. What are the constraints for dairy and beef fattening development in your community?
- High price of animal feeds
- Low quality of feeds
- High price of medicine
- Over dominancy of animal trader/broker
- Low milk price

19. What is/are your suggestion(s) to overcome those constraint?
- Need to develop linkage with milk product manufacturing companies
- Need to ensure fair price
- Need to prepare milk products
- Need good communication

20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?
- To build up awareness
- We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? LSP (Quack)
22. What is the average monthly income from your main income source? 5,000/-
23. What is the average monthly income from your secondary income source? 15,000/-

********** End *********

KII-2 (LSP)

A. General Information

Name:	Md. Abrar Shahriar	Father's Name: Mokbul Hossain	
Village: Mokrampur	Union: Shoilgachi	Upazilla: Naogaon Sadar	District: Naogaon
Age (Yrs): 30	Education: Diploma (Agrl)		
Main income source:	LSP (Quack+AISP)	Secondary income source	
		Contact Number:	01736753032
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment, AI, Vaccine and Deworming

2. How long are you providing services in your profession? 4 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? NGO, 2 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	YTC		
How long? (d/m/y)	15 d		
What was the topic?	Livestock Management		

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 200.0
    b) For treatment of Goat/Sheep: BDT. 100.0
    c) For AI of Cattle/Buffalo: BDT. 300.0 to 500.0
    d) For vaccination of cattle/goat: BDT. 30.0 /animal
    e) For de-worming of cattle/goat: BDT. 50.0 /animal
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 250 number
    b) Treatment of Goat: 100-150 number
    c) Treatment of Sheep: 30-40 number
    d) Artificial Insemination:
    e) Vaccination: 100 number
    f) De-worming: 600-700 number
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? RB, Why animal died?
13. How do you face/overcome those complains? By approaching politely, giving advice for regular vaccination and de-worming, refer to registered veterinarian if disease is complex
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why? Lack of green grass and feed
    b) Performance of beef cattle: Poor, why?
    c) Animal health and disease: LSD, FMD, PPR why?
    d) Breeding and Reproduction: RB, Metriris, Prolapse, Anestrous, why?
    e) Feeds and Feeding: High price, low quality, inadequate supply, why?
    f) Milk marketing: Low price, why?
    g) Fattening animal marketing……., Why? …….
    h) Marketing of goat and sheep……., Why? ……..
    i) Overall farm management: Poor, why?

j) Farm waste management: Poor, why?

k) Weather, climate and environment: ……., why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No

16. If yes, what are those? …….

17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? Yes

18. What are the constraints for dairy and beef fattening development in your community?

- Milk marketing
- High price of animal feeds
- Lack of experience on selecting superior breeds

19. What is/are your suggestion(s) to overcome those constraint?

- Need to introduce milk product manufacturing companies
- Need to prepare milk products
- Need to cultivate green grass and fodders
- Need to adopt feeding technologies (silage)

20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?

- To build up awareness among farmers
- We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? LSP (Quack+AI)

22. What is the average monthly income from your main income source? 15,000/-

23. What is the average monthly income from your secondary income source?

********** End *********

KII-3 (LSP)

A. General Information

Name:	Md. Jahangir Alam	Father's Name: Md. A. Rahman	
Village: Tarajone	Union: Dupchachia	Upazilla: Dupchachia	District: Bogura
Age (Yrs): 38	Education: HSC		
Main income source:	LSP (Quack)	Secondary income source	Agriculture
		Contact Number:	01728166423
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment and Vaccine
2. How long are you providing services in your profession? 3 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	YTC	YTC	
How long? (d/m/y)	26 d	10 d	
What was the topic?	Livestock & LSP's activities		

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 200.0 to 300.0
    b) For treatment of Goat/Sheep: BDT. 100.0 to 150.0
    c) For AI of Cattle/Buffalo: BDT. 300.0 to 500.0
    d) For vaccination of cattle/goat: BDT. 50.0 /animal
    e) For de-worming of cattle/goat:
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 45 number
    b) Treatment of Goat: 25 number
    c) Treatment of Sheep: 30-40 number
    d) Artificial Insemination:
    e) Vaccination: 80-90 number
    f) De-worming:
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? Service is not provided in time, High treatment cost?
13. How do you face/overcome those complains? By approaching politely, refer to registered veterinarian if disease is complex
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why? Lack of feed, improper management
    b) Performance of beef cattle: Poor, why? Feed and Breed
    c) Animal health and disease: FMD, Fever why?
    d) Breeding and Reproduction: RB, Metritis, Anestrous why?
    e) Feeds and Feeding: Feeding boiled broken cases poising, why?
    f) Milk marketing: Low price, poor milk carrying can, no testing facility, why?

g) Fattening animal marketing: Lack of good vehicle cause injury, bad communication, low price

h) Marketing of goat and sheep: Same as fattening animal marketing, Why? …

i) Overall farm management: Poor, no biosecurity, unconsciousness, financial insolvency, why?

j) Farm waste management: Poor, why?

k) Weather, climate and environment: Disease prevalence increased, why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No

16. If yes, what are those? …….

17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No

18. What are the constraints for dairy and beef fattening development in your community?

- Inferior breed
- High price of animal feeds
- Market syndicate
- Lack of green grass

19. What is/are your suggestion(s) to overcome those constraint?

- Need to develop quality breed
- Need to advice farmers
- Need to train farmers
- Need to reduce feed cost

20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?

- To build up awareness among farmers
- Adopt technology, Training
- We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession

22. What is the average monthly income from your main income source? 14,000/-

23. What is the average monthly income from your secondary income source? 3,000/-

********** End *********

KII-4 (LSP)

A. General Information

Name:	Md. Sakhawat Hossain	Father's Name: Abdus Salam	
Village: Bazardighi Bazar	Union: Dupchachia	Upazilla: Dupchachia	District: Bogura
Age (Yrs): 38	Education: Hons		

Main income source:	LSP (Quack+AISP)	Secondary income source	
		Contact Number:	01731917555
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment, AI, Vaccination and De-worming
2. How long are you providing services in your profession? 14 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	BRAC		
How long? (d/m/y)	3 M		
What was the topic?	Artificial Insemination		

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 200.0
    b) For treatment of Goat/Sheep: BDT. 100.0
    c) For AI of Cattle/Buffalo: BDT. 400.0
    d) For vaccination of cattle/goat: BDT. 50.0 /animal
    e) For de-worming of cattle/goat: BDT. 200.0 to 250.0
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 120 number
    b) Treatment of Goat: 60 number
    c) Treatment of Sheep: 10 number
    d) Artificial Insemination: 140 cows
    e) Vaccination: 20 number
    f) De-worming: 25 number
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? Frequent heat (7 days after AI), calf is not good?
13. How do you face/overcome those complains? By approaching politely
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why? Lack of feed and quality breed
    b) Performance of beef cattle: why?

c) Animal health and disease: Pneumonia, Diarrhoea why?
d) Breeding and Reproduction: RB why?
e) Feeds and Feeding: why?
f) Milk marketing: Low price, why?
g) Fattening animal marketing:
h) Marketing of goat and sheep: Why? ……
i) Overall farm management: Poor, lack of cleanliness, why?
j) Farm waste management: Poor, why?
k) Weather, climate and environment: why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No
16. If yes, what are those? …….
17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No
18. What are the constraints for dairy and beef fattening development in your community?
    - High price of animal feeds
    - High price of medicine
19. What is/are your suggestion(s) to overcome those constraint?
    - Need to reduce price of feed and medicine
20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?
    - They should be aware of cleanliness, follow regular vaccination and de-worming
    - Farmers need to participate training
    - We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? 15,000/-
23. What is the average monthly income from your secondary income source?

********** End *********

KII-5 (LSP)

A. General Information

Name:	Pankog Kumer Sarker	Father: Dhirendra Nath Sarker	
Village: Halderpara	Union: Kashimpur	Upazilla: Raninagar	District: Naogaon
Age (Yrs): 44	Education: SSC		
Main income source:	LSP (Quack)	Secondary income source	

		Contact Number:	01717289043
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment, Vaccination and De-worming
2. How long are you providing services in your profession? 3.5 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	**2**	**3**
From where?	LDDP	DLS	YTC
How long? (d/m/y)	21d	26 d	10 d
What was the topic?	Livestock management and Embryo Transfer		ToT

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 50.0 to 100.0
    b) For treatment of Goat/Sheep: BDT. 50.0
    c) For AI of Cattle/Buffalo:
    d) For vaccination of cattle/goat: BDT. 10.0 /animal
    e) For de-worming of cattle/goat: BDT. 10.0
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 50-70 number
    b) Treatment of Goat: 90 number
    c) Treatment of Sheep: 30-40 number
    d) Artificial Insemination:
    e) Vaccination: 250 number
    f) De-worming: 250 number
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? Disease is not recovered completely?
13. How do you face/overcome those complains? By referring to the registered veterinarian
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why? Lack of feed and quality breed
    b) Performance of beef cattle: Poor, why? Lack of feed and quality breed
    c) Animal health and disease: LSD, FMD, why?

d) Breeding and Reproduction: RB, Anestrous, why?
e) Feeds and Feeding: Provide boiled broken rice, inadequate supply of feed, why?
f) Milk marketing: Low price, why?
g) Fattening animal marketing:
h) Marketing of goat and sheep: Why? ……
i) Overall farm management: Poor, why? Financial insolvency
j) Farm waste management: Poor, why? Financial insolvency
k) Weather, climate and environment: why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? Yes
16. If yes, what are those? Biogas
17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No
18. What are the constraints for dairy and beef fattening development in your community?
    - Lack of market facility
    - Milkman/goala syndicate
    - Lack of technological knowledge for manufacturing milk products
    - High price of animal feeds
    - Lack of fodder cultivation
19. What is/are your suggestion(s) to overcome those constraint?
    - Need training for the farmers
    - Need financial supports for the farmers
    - Need result oriented demonstration
20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?
    - They should follow regular vaccination, de-worming and withdrawal period of using drugs
    - Farmers need to participate training
    - We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? 12,000/-
23. What is the average monthly income from your secondary income source?

********** End **********

KII-6 (LSP)

A. General Information

Name:	Tofael Hossain	Father: Jahangir Alam	
Village: Ataikula	Union: 8 No. Mirati	Upazilla: Raninagar	District: Naogaon
Age (Yrs): 27	Education: HSC		

Main income source:	LSP (Quack+AISP)	Secondary income source	
		Contact Number:	01773214967
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment and AI
2. How long are you providing services in your profession? 8 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? ACI, 3 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	ACI		
How long? (d/m/y)	3 m		
What was the topic?	Livestock management, treatment and AI		

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 200.0
    b) For treatment of Goat/Sheep: BDT. 100.0
    c) For AI of Cattle/Buffalo: BDT. 500.0
    d) For vaccination of cattle/goat:
    e) For de-worming of cattle/goat:
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 60 number
    b) Treatment of Goat: 30 number
    c) Treatment of Sheep:
    d) Artificial Insemination: 50 to 60
    e) Vaccination:
    f) De-worming:
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those? Animal is not getting conception, not fattening
13. How do you face/overcome those complains? By giving advice to provide adequate feed
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Low fat, why?
    b) Performance of beef cattle: why?

c) Animal health and disease: LSD, FMD, BQ, why?

d) Breeding and Reproduction: RB, Anestrous, Dystocia, why?

e) Feeds and Feeding: Low quality feed, no balanced diet, inadequate supply of grass

f) Milk marketing: Less demand, low price, why? Due to financial insolvency peoples are not consuming milk

g) Fattening animal marketing:

h) Marketing of goat and sheep: Why? ……

i) Overall farm management: Poor housing, low space, why? Unconsciousness, financial insolvency

j) Farm waste management: Poor, why? Financial insolvency

k) Weather, climate and environment: why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No

16. If yes, what are those?

17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No

18. What are the constraints for dairy and beef fattening development in your community?

- Lack of quality breed
- Lack of green grass
- Low milk price
- High price of animal feeds
- Bad communication

19. What is/are your suggestion(s) to overcome those constraint?

- Need to allot land for fodder cultivation
- Need to develop milk market
- Need to reduce price of feeds

20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?

- Farmers should be trained up
- They should follow regular vaccination, de-worming and animal qurantine
- We can advice farmers

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession

22. What is the average monthly income from your main income source? 8,000/-

23. What is the average monthly income from your secondary income source?

********** End *********

KII-7 (LSP)

A. General Information

Name: Md. Helal Uddin Mondal		Father: Late Kader Box Mondal	
Village: Dhonessar	Union: Kalikapur	Upazilla: Atrai	District: Naogaon
Age (Yrs): 48	Education: HSC		
Main income source:	LSP (Quack)	Secondary income source	
		Contact Number:	01732760093
Relation with Dabi: Participant			

B. Professional Information

1. What types of services do you provide in livestock? Treatment and vaccination
2. How long are you providing services in your profession? 23 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? Yes
7. If you have formal training then provide the following information:

	1	2	3
From where?	DLS		
How long? (d/m/y)	21 d	21 d	3+5 d
What was the topic?	Goat		Vaccine

8. How much effective the training was? Roughly effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 100.0
    b) For treatment of Goat/Sheep: BDT. 30.0
    c) For AI of Cattle/Buffalo:
    d) For vaccination of cattle/goat: BDT. 5.0
    e) For de-worming of cattle/goat: BDT. 5.0
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 50 number
    b) Treatment of Goat: 50 number
    c) Treatment of Sheep: 30 number
    d) Artificial Insemination:
    e) Vaccination: 200
    f) De-worming: 20
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those?
    - Animals are not becoming cure
    - High cost of medicine
    - Animals are coming in to heat

13. How do you face/overcome those complains?

- By giving advice to provide balance feed and cleanliness

14. What are the problems faced by the domestic animal keepers in your community with the following issues?

a) Performance of dairy cattle: Could not identify, why?
b) Performance of beef cattle: Could not identify why?
c) Animal health and disease: Could not identify, why?
d) Breeding and Reproduction: Could not identify, why?
e) Feeds and Feeding: Could not identify
f) Milk marketing: Could not identify
g) Fattening animal marketing: Could not identify
h) Marketing of goat and sheep: Could not identify, Why? ……
i) Overall farm management: Could not identify
j) Farm waste management: Could not identify, why?
k) Weather, climate and environment: Could not identify why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No

16. If yes, what are those?

17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No

18. What are the constraints for dairy and beef fattening development in your community?

- Low milk price
- No local market
- Lack of green grass
- Low milk and meat production

19. What is/are your suggestion(s) to overcome those constraint?

- To build up public awareness by GOs and NGOs

20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?

Could not answer properly

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession

22. What is the average monthly income from your main income source? 12,000/-

23. What is the average monthly income from your secondary income source?

********** End **********

KII-8 (LSP)

A. General Information

Name: Md. Robiul Islam		Father: Md. Fazlur Rahman	
Village: Jinuyeer	Union: Adomdighi	Upazilla: Adomdighi	District: Bogura

Age (Yrs): 38	Education: SSC		
Main income source:	LSP (Quack+AISP)	Secondary income source	Vet Pharmacy
Relation with Dabi	Participant	Contact Number:	01718701643

B. Professional Information

1. What types of services do you provide in livestock? Treatment, AI, vaccination and de-worming
2. How long are you providing services in your profession? 15 Years
3. Do you have formal education on your profession? Yes
4. If no, then how have you learnt it?
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? No
7. If you have formal training then provide the following information:

	1	2	3
From where?			
How long? (d/m/y)			
What was the topic?			

8. How much effective the training was?
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 50.0
    b) For treatment of Goat/Sheep: BDT. 20.0
    c) For AI of Cattle/Buffalo: BDT. 300 to 400
    d) For vaccination of cattle/goat: BDT. 10.0
    e) For de-worming of cattle/goat: BDT. 10.0
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 30 number
    b) Treatment of Goat: 30 number
    c) Treatment of Sheep: 20 number
    d) Artificial Insemination: 20 cows
    e) Vaccination: 200-250
    f) De-worming: 200-250
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those?
    - Vaccines are not effective
    - High medicine cost
13. How do you face/overcome those complains?
    - By giving advice to give vaccine followed by administering multivitamins

14. What are the problems faced by the domestic animal keepers in your community with the following issues?

a) Performance of dairy cattle: Poor, why? Scarcity of green grass
b) Performance of beef cattle: Poor, why? High price of feed
c) Animal health and disease: High prevalence, why? Poor management
d) Breeding and Reproduction: Delayed heat, why?
e) Feeds and Feeding: Could not identify
f) Milk marketing: Low milk price
g) Fattening animal marketing: Low price
h) Marketing of goat and sheep: Low price, Why? ……
i) Overall farm management: Poor
j) Farm waste management: Poor, why?
k) Weather, climate and environment: Could not identify why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No
16. If yes, what are those?
17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No
18. What are the constraints for dairy and beef fattening development in your community?
- High price of feed and medicine
19. What is/are your suggestion(s) to overcome those constraint?
20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?
- Could not answer properly

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? 10,000/-
23. What is the average monthly income from your secondary income source? 10,000/-

********** End *********

KII-9 (LSP)

A. General Information

Name: Md. Ruhul Amin		Father: Md. Azimuddin	
Village: East Dalomba	Union: Nasratpur	Upazilla: Adomdighi	District: Bogura
Age (Yrs): 38	Education: SSC		
Main income source:	LSP (Quack+AISP)	Secondary income source	Vet Pharmacy
Relation with Dabi:	Participant	Contact Number:	01722688897

B. Professional Information

1. What types of services do you provide in livestock? Treatment, AI, vaccination and de-worming
2. How long are you providing services in your profession? 4 Years
3. Do you have formal education on your profession? No
4. If no, then how have you learnt it? By Training
5. If you have formal education related to your profession, then from where? What is the name of the course? What was the duration of the course? YTC, 3 months
6. Have you got any training related to your profession? No
7. If you have formal training then provide the following information:

	1	**2**	**3**
From where?	YTC		PSTU
How long? (d/m/y)	3 m		2m
What was the topic?	Livestock rearing and treatment		AI

8. How much effective the training was? Very effective
9. What is your service charge?
    a) For treatment of Cattle/Buffalo: BDT. 100.0
    b) For treatment of Goat/Sheep: BDT. 50.0
    c) For AI of Cattle/Buffalo: BDT. 300 to 400
    d) For vaccination of cattle/goat: BDT. 10.0
    e) For de-worming of cattle/goat: BDT. 10.0
10. How many clients to whom do you give services per month?
    a) Treatment of Cattle: 30 number
    b) Treatment of Goat: 10 number
    c) Treatment of Sheep: 2 number
    d) Artificial Insemination: 30 cows
    e) Vaccination: 200
    f) De-worming: 300
11. Do you get any complain from your client related to your services? Sometimes
12. If you get complains, what are those?
    - Medicine is less effective
    - High medicine cost
13. How do you face/overcome those complains?
    - By giving advice to seek treatment timely
    - By giving advice to take care animals properly
14. What are the problems faced by the domestic animal keepers in your community with the following issues?
    a) Performance of dairy cattle: Poor, why?
    b) Performance of beef cattle: Poor, why? High price of feed
    c) Animal health and disease: High prevalence, why? Poor management

d) Breeding and Reproduction: Inferior quality of bull semen, why?
e) Feeds and Feeding: Quality of feed is not good
f) Milk marketing: Low milk price
g) Fattening animal marketing: Low price
h) Marketing of goat and sheep: Low price
i) Overall farm management: Poor
j) Farm waste management: why?
k) Weather, climate and environment: why? ……..

15. Did farmers get new technologies for production of safe and hygienic milk and meat products in your community? No
16. If yes, what are those?
17. Do you have any idea or have training on national and international GAP and HACCP for safe milk and meat production? No
18. What are the constraints for dairy and beef fattening development in your community?
    - Lack of market for selling of milk and animals
    - Lack of experience of the farmers
19. What is/are your suggestion(s) to overcome those constraint? Could not answer properly
20. To produce safe and hygienic milk, meat and milk products, what can be done by the farmers and what roles could be played by you?
    - Farmers need to have learn on farm management

C. Income

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? 12,000/-
23. What is the average monthly income from your secondary income source? 5,000/-

********** End *********

Feed Seller

KII-1 (Feed Seller)

A. General Information

Name: Md. Akter Uzzaman		Father: Alhaj Somiruddin Mondal	
Village: Zianagar Bazar		Union: Zianagar	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 30	Education: HSC		
Main income source: Farming		Secondary income source: Feed Sell & Pharmacy	
Name of Trading: Mondal Traders		Address: Zianagar Bazar	
Relation with DABI: Participant		Contact Number:	01912727174

B. Business Information

1. From how long have you been in this business? 12 yrs
2. How much is your invest in this business? 40 lacs Tk
3. Source of investment? Both self and loan
4. If loan is taken, from where? Bank
5. What types of animal feeds do you sell? Poultry, Fish
6. What form of animal feeds do you sell? Ready feed
7. From where do you collect loose feed items? N/A
8. Do you inspect quality of ready and raw feed materials during collect? Yes
9. If yes, who inspect quality? Own self
10. If you inspect quality by yourself, then how you have learnt it? Self experience
11. Please give the following information regarding feed selling

Type of feed	Quantity sold in a day		Purchase price (BDT)		Retail price (BDT/)	
	Bag	Kg	Bag	Kg	Bag	Kg
Ready cattle feed						
Ready poultry feed	6 (50/bag)		2950.0		3050.0	
Ready fish feed	1 (25/bag)		1700.0		1800.0	
Wheat bran						
Rice polish						
Maize						
Soybean meal						
Oil cake						
Pulse bran						
DCP						
Vitamin Premix						
Others ……						

12. How do you keep feeds? On the wooden frame in concrete floor
13. Do you know HACCP for keeping feed safely? No
14. If yes, do you follow it?
15. How do you control pest and rodents? No need
16. What do you do when your feed expired date or damaged? Not happened
17. Do you ever get any complaint from your customer? Sometimes
18. If yes, what types of complain? FCR not good
19. What changes has been noticed regarding the sell volume of feed as compared to previous year? Decreased
20. What are the problems you are facing for marketing animal feeds?
    - Low FCR
    - High price of feeds

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Farming
22. What is the average monthly income from your main income source? 20,000/-

23. What is the average monthly income from your secondary income source? 10,000/-

********** End **********

KII-2 (Feed Seller)

A. General Information

Name: Md. Ashraful Islam		Father: Md. Mofazzal Hossain	
Village: Kujail Bazar		Union: Kashimpur	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 31	Education: B.Sc. Engr		
Main income source: Feed Selling		Secondary income source: Grocery	
Name of Trading: Sagor Traders		Address: Kujail Bazar	
Relation with DABI: Participant		Contact Number:	01740564483

B. Business Information

1. From how long have you been in this business? 10 months
2. How much is your invest in this business? BDT 3.0 Lacs
3. Source of investment? Own-self
4. If loan is taken, from where?
5. What types of animal feeds do you sell? Animal, Fish
6. What form of animal feeds do you sell? Ready feed and feed ingredients
7. From where do you collect loose feed items? Wholeseller
8. Do you inspect quality of ready and raw feed materials during collect? Yes
9. If yes, who inspect quality? Own self
10. If you inspect quality by yourself, then how you have learnt it? Through online
11. Please give the following information regarding feed selling

Type of feed	Quantity sold in a day		Purchase price (BDT)		Retail price (BDT/)	
	Bag	Kg	Bag	Kg	Bag	Kg
Ready cattle feed		4		43.0		48.0
Ready poultry feed						
Ready fish feed	5 (20kg/bag)		1200.0		1250.0	
Wheat bran	0.5 (37kg/bag)		2000.0		2020.0	
Rice polish						
Maize						
Soybean meal						
Oil cake	0.5 (37kg/bag)		1700.0		1750.0	
Pulse bran						
DCP						
Vitamin Premix						
Common salt		10		22.0		23.0
Others: Broken rice		2		29.0		30.0

12. How do you keep feeds? On the wooden frame in concrete floor
13. Do you know HACCP for keeping feed safely? No
14. If yes, do you follow it?
15. How do you control pest and rodents? Spraying insecticide
16. What do you do when your feed expired date or damaged? Use as fish feed
17. Do you ever get any complaint from your customer? Never
18. If yes, what types of complain?
19. What changes has been noticed regarding the sell volume of feed as compared to previous year? Increased
20. What are the problems you are facing for marketing animal feeds?
    - Not getting feed dealership

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Feed Selling
22. What is the average monthly income from your main income source? 8,000/-
23. What is the average monthly income from your secondary income source? 7,000/-

KII-3 (Feed Seller)

A. General Information

Name: Md. Shamsul Haque		Father: Md. Mojibur Rahman	
Village: Dohorpur		Union: Adomdighi	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 34	Education: HSC		
Main income source: Feed Selling		Secondary income source: Business and Farming	
Name of Trading: M/S Shamsul Traders		Address: Adomdighi	
Relation with DABI: Non-Participant		Contact Number:	01718407236

B. Business Information

1. From how long have you been in this business? 2 yrs
2. How much is your invest in this business? BDT 12.0 Lacs
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of animal feeds do you sell? Cattle and Poultry
6. What form of animal feeds do you sell? Ready feed and feed ingredients
7. From where do you collect loose feed items? Wholeseller
8. Do you inspect quality of ready and raw feed materials during collect? Yes
9. If yes, who inspect quality? Own self
10. If you inspect quality by yourself, then how you have learnt it? Self experience
11. Please give the following information regarding feed selling

Type of feed	Quantity sold in a day		Purchase price (BDT)		Retail price (BDT/)	
	Bag	Kg	Bag	Kg	Bag	Kg

Ready cattle feed	15 kg	1000.0	40.0	1100.0	44.0
Ready poultry feed	8 (50kg/bag)	3000.0	60.0	3100.0	62.0
Ready fish feed					
Wheat bran	5 (35kg/bag)	1750.0	50.0	1800.0	52.0
Rice polish	2 (50kg/bag)	800.0	16.0	900.0	18.0
Maize					
Soybean meal					
Oil cake	1 (50kg/bag)	2000.0	40.0	2100.0	42.0
Pulse bran					
DCP					
Vitamin Premix					
Common salt	1 (50kg/bag)	1100.0	22.0	1200.0	24.0
Others: Broken rice					

12. How do you keep feeds? On the wooden frame
13. Do you know HACCP for keeping feed safely? No
14. If yes, do you follow it?
15. How do you control pest and rodents? Trapping
16. What do you do when your feed expired date or damaged? Return
17. Do you ever get any complaint from your customer? Sometimes
18. If yes, what types of complain? Quality and price
19. What changes has been noticed regarding the sell volume of feed as compared to previous year? Decreased
20. What are the problems you are facing for marketing animal feeds? - High price

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Feed Selling
22. What is the average monthly income from your main income source? 10,000/-
23. What is the average monthly income from your secondary income source? 50,000/-

********** End **********

KII-4 (Feed Seller)

A. General Information

Name: S.M. Mehedi Mahboob		Father: Sheikh Abdul Majed	
Village: Bandaikhana		Union: Hatkalopar	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 28	Education: HSC		
Main income source: Feed Selling		Secondary income source:	
Name of Trading: Roushan Agro Farm		Address: Bandaikhara Bazar	
Relation with DABI: Non-Participant		Contact Number:	01756912620

B. Business Information

1. From how long have you been in this business? 1 yr
2. How much is your invest in this business? BDT 50.0 Lacs
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of animal feeds do you sell? Cattle, Poultry & Fish Feed
6. What form of animal feeds do you sell? Ready feed and feed ingredients
7. From where do you collect loose feed items? Wholeseller
8. Do you inspect quality of ready and raw feed materials during collect? Yes
9. If yes, who inspect quality? Own self
10. If you inspect quality by yourself, then how you have learnt it? Self experience
11. Please give the following information regarding feed selling

Type of feed	Quantity sold in a day		Purchase price (BDT)		Retail price (BDT/)	
	Bag	Kg	Bag	Kg	Bag	Kg
Ready cattle feed		10.0	1400.0	56.0	1450.0	58.0
Ready poultry feed		30	3000.0	60.0	3200.0	64.0
Ready fish feed	3 (25kg/bag)		1200.0	48.0	1300.0	50.0
Wheat bran	2 (35kg/bag)		1700.0	48.5	1800.0	50.0
Rice polish						
Maize	1 (50kg/bag)		1800.0	36.0	1900.0	38.0
Soybean meal						
Oil cake						
Pulse bran						
DCP						
Vitamin Premix						
Common salt						
Others: Broken rice						

12. How do you keep feeds? On the concrete floor
13. Do you know HACCP for keeping feed safely? No
14. If yes, do you follow it?
15. How do you control pest and rodents? Trapping
16. What do you do when your feed expired date or damaged? Return
17. Do you ever get any complaint from your customer? Sometimes
18. If yes, what types of complain? Quality and price
19. What changes has been noticed regarding the sell volume of feed as compared to previous year? Increased
20. What are the problems you are facing for marketing animal feeds? Could not identify

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Feed Selling
22. What is the average monthly income from your main income source? BDT. 18000/-
23. What is the average monthly income from your secondary income source?

********** **End** **********

KII-5 (Feed Seller)

A. General Information

Name: Md. Mahbubur Rashid Ariful		Father: Md. Moslem Uddin	
Village: Shoilgachi		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 38	Education: HSC		
Main income source: Feed Selling		Secondary income source: Agriculture	
Name of Trading: Talha Feed Vandar		Address: Shoilgachi Bazar	
Relation with DABI: Participant		Contact Number:	01317503053

B. Business Information

1. From how long have you been in this business? 2 yr
2. How much is your invest in this business? BDT 2.0 Lacs
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of animal feeds do you sell? Cattle & Poultry Feed
6. What form of animal feeds do you sell? Ready feed and feed ingredients
7. From where do you collect loose feed items? Wholeseller
8. Do you inspect quality of ready and raw feed materials during collect? Yes
9. If yes, who inspect quality? Own self
10. If you inspect quality by yourself, then how you have learnt it? Self experience
11. Please give the following information regarding feed selling

Type of feed	Quantity sold in a day		Purchase price (BDT)		Retail price (BDT/)	
	Bag	Kg	Bag	Kg	Bag	Kg
Ready cattle feed		10	1300.0	52.0	1400.0	54.0
Ready poultry feed	2 (50kg/bag)		3000.0	60.0	3200.0	64.0
Ready fish feed						
Wheat bran	2 (25kg/bag)		1040.0	41.6	1200.0	48.0
Rice polish						
Maize						
Soybean meal						
Oil cake						
Pulse bran						
DCP		5		200.0		
Vitamin Premix		3				
Common salt		30				
Others: Broken rice						

12. How do you keep feeds? On the wooden frame
13. Do you know HACCP for keeping feed safely? No
14. If yes, do you follow it?
15. How do you control pest and rodents? Trapping & Poison

16. What do you do when your feed expired date or damaged? Disposed
17. Do you ever get any complaint from your customer? Sometimes
18. If yes, what types of complain? Quality and price
19. What changes has been noticed regarding the sell volume of feed as compared to previous year? Decreased
20. What are the problems you are facing for marketing animal feeds? Could not identify

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Feed Selling
22. What is the average monthly income from your main income source? BDT. 10,000/-
23. What is the average monthly income from your secondary income source? BDT. 5,000/-

********** End **********

Medicine Seller

KII-1 (Medicine Seller)

A. General Information

Name: Md. Aslam Hossain		Father: Late Akkas Ali	
Village: Chawk Sokangari		Union: 4 No. Word Pourasava	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 29	Education:HSC		
Main income source: Pharmacy		Secondary income source: LSP	
Name of Trading: Ma-Baba Pharmacy		Address: Mail Bus Stand	
Relation with DABI: Participant		Contact Number:	01773745220

A. Business Information

1. How long have you been in this business? 11 yrs
2. How much is yours invest in this business? 3.5 lacs Tk
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of medicine do you sell? Cattle and Poultry
6. From where do you collect medicine? Pharmacutical Company
7. Do you inspect medicine manufactured by reputed pharmaceutical and date of expired during purchase? Yes
8. Who inspect it? Ownself
9. Medicine for which problems/diseases of cattle, goat and sheep is selling more? Milk Fever, Mastitis, Fever, Respiratory, Diarrhoea
10. Which types of antibiotics are most commonly used for treatment of cattle, goat and sheep? N/A
11. Which medicine is used for increasing milk production? Ca, Multivitamin, Mineral Premix, Amino acids

12. Which medicine is used for fattening cattle? Vigro, Bergafat, Premafat, Cataphos
13. What do you do when medicine expired date or damaged? Dispose or return
14. How do you keep medicine in your shop? Open rack in Non-AC room
15. Do you know HACCP protocol to keep medicine safely? No
16. Do you ever get any complaint from your customer? Never
17. If yes, what are those?
18. What changes has been noticed regarding the sell volume of medicine as compared to previous year? Decreased
19. What problems are you facing in veterinary medicine marketing?
    - Credit sell (credit is not recovered)
    - Medicine is not supplied by the pharmaceutical companies in time
    - Insufficient supply of emergency medicines and are not supplied by the pharmaceutical companies in time

C. **Family income of the respondent**

20. What is the main source of income to maintain your family expenditure? LSP
21. What is the average monthly income from your main income source? 15000.0
22. What is the average monthly income from your secondary income source? 7000.0

KII-2 (Medicine Seller)

A. General Information

Name: Rezaul Mostafa		Father: Alhaj Akkel Ali	
Village: Durgapur		Union: Gona	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 48	Education: SSC		
Main income source: Pharmacy		Secondary income source:	
Name of Trading: Rafi Traders		Address: Kujail Bazar	
Relation with DABI: Participant		Contact Number:	01713826575

A. Business Information

1. How long have you been in this business? 14 yrs
2. How much is yours invest in this business? 10-12 lacs Tk
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of medicine do you sell? Cattle and Poultry
6. From where do you collect medicine? Pharmacutical Company
7. Do you inspect medicine manufactured by reputed pharmaceutical and date of expired during purchase? Yes
8. Who inspect it? Ownself
9. Medicine for which problems/diseases of cattle, goat and sheep is selling more? Anthrax, FMD, LSD
10. Which types of antibiotics are most commonly used for treatment of cattle, goat and sheep? N/A

11. Which medicine is used for increasing milk production? Ca, DB-vitamin, Vit-Min Premix, Multivitamin liquid
12. Which medicine is used for fattening cattle? Cataphos, Aminovet
13. What do you do when medicine expired date or damaged? Dispose or return
14. How do you keep medicine in your shop? Open rack in Non-AC room
15. Do you know HACCP protocol to keep medicine safely? No
16. Do you ever get any complaint from your customer? Sometimes
17. If yes, what are those?
18. What changes has been noticed regarding the sell volume of medicine as compared to previous year? Increased
19. What problems are you facing in veterinary medicine marketing?
    - Credit sell (credit is not recovered)
    - High medicine price and low quality
    - High competition

C. **Family income of the respondent**

20. What is the main source of income to maintain your family expenditure? Current profession
21. What is the average monthly income from your main income source? 9000.0
22. What is the average monthly income from your secondary income source? None

KII-3 (Medicine Seller)

A. General Information

Name: Md. Rezaul		Father: Md. Moslem	
Village: Shoilgachi		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 35	Education: HSC		
Main income source: Pharmacy		Secondary income source:	
Name of Trading: Talha Pharmacy		Address: Shoilgachi Bazar	
Relation with DABI: Participant		Contact Number:	01757961216

A. Business Information

1. How long have you been in this business? 5 yrs
2. How much is yours invest in this business? 4.0 lacs Tk
3. Source of investment? Own
4. If loan is taken, from where?
5. What types of medicine do you sell? Cattle and Poultry
6. From where do you collect medicine? Pharmacutical Company
7. Do you inspect medicine manufactured by reputed pharmaceutical and date of expired during purchase? Yes
8. Who inspect it? Ownself
9. Medicine for which problems/diseases of cattle, goat and sheep is selling more? LSD

10. Which types of antibiotics are most commonly used for treatment of cattle, goat and sheep? Penicillin
11. Which medicine is used for increasing milk production? Ca, DB-vitamin, Vit-Min Premix, Multivitamin liquid
12. Which medicine is used for fattening cattle? Fatenin
13. What do you do when medicine expired date or damaged? Return to the company
14. How do you keep medicine in your shop? Glass door rack in Non-AC room
15. Do you know HACCP protocol to keep medicine safely? No
16. Do you ever get any complaint from your customer? Sometimes
17. If yes, what are those? Quality, Medicine manufactured by bad company, high price
18. What changes has been noticed regarding the sell volume of medicine as compared to previous year? Decreased
19. What problems are you facing in veterinary medicine marketing? Could not identify problems

C. **Family income of the respondent**

20. What is the main source of income to maintain your family expenditure? Current profession
21. What is the average monthly income from your main income source? BDT. 7000.0
22. What is the average monthly income from your secondary income source?

KII-4 (Medicine Seller)

A. General Information

Name: Md. Touhidul Islam		Father: Late Mojahar Hossain	
Village: Dalomba		Union: Adomdighi	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 31	Education: M.Sc.		
Main income source: Pharmacy		Secondary income source: Teacher	
Name of Trading: Mina Medical Hall		Address: Adomdighi	
Relation with DABI: Non-Participant		Contact Number:	01710790955

A. Business Information

1. How long have you been in this business? 2 yrs
2. How much is yours invest in this business? 1.0 lacs Tk
3. Source of investment? Both own and loan
4. If loan is taken, from where? Bank
5. What types of medicine do you sell? Cattle and Poultry
6. From where do you collect medicine? Pharmacutical Company
7. Do you inspect medicine manufactured by reputed pharmaceutical and date of expired during purchase? Yes
8. Who inspect it? Ownself

9. Medicine for which problems/diseases of cattle, goat and sheep is selling more? Nutrient defficiency
10. Which types of antibiotics are most commonly used for treatment of cattle, goat and sheep? Ceptiexin
11. Which medicine is used for increasing milk production? Vitamin
12. Which medicine is used for fattening cattle? Cataphos
13. What do you do when medicine expired date or damaged? Return to the company
14. How do you keep medicine in your shop? Open rack in Non-AC room
15. Do you know HACCP protocol to keep medicine safely? No
16. Do you ever get any complaint from your customer? Sometimes
17. If yes, what are those? Quality, high price
18. What changes has been noticed regarding the sell volume of medicine as compared to previous year? Increased
19. What problems are you facing in veterinary medicine marketing?
    - High price
    - Low quality
    - Need to purchase in cash money

C. **Family income of the respondent**

20. What is the main source of income to maintain your family expenditure? Current profession
21. What is the average monthly income from your main income source? BDT. 7250.0
22. What is the average monthly income from your secondary income ? BDT. 10000.0

KII-5 (Medicine Seller)

A. General Information

Name: Md. Nazrul Islam		Father: Late Badar Uddin	
Village: Dwipchandpur		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs):	Education:		
Main income source: Pharmacy		Secondary income source: Teacher	
Name of Trading: Sumaya Pharmacy		Address: Bandaikhara Bazar	
Relation with DABI: Non-Participant		Contact Number:	01713779209

A. Business Information

1. How long have you been in this business? 12 yrs
2. How much is yours invest in this business? 4.0 lacs Tk
3. Source of investment? Own
4. If loan is taken, from where? Bank
5. What types of medicine do you sell? Cattle and Poultry
6. From where do you collect medicine? Pharmacutical Company

7. Do you inspect medicine manufactured by reputed pharmaceutical and date of expired during purchase? Yes
8. Who inspect it? Ownself
9. Medicine for which problems/diseases of cattle, goat and sheep is selling more? Nutrient defficiency
10. Which types of antibiotics are most commonly used for treatment of cattle, goat and sheep? Penicillin
11. Which medicine is used for increasing milk production? Calcium supplement
12. Which medicine is used for fattening cattle? Aminovet
13. What do you do when medicine expired date or damaged? Return to the company
14. How do you keep medicine in your shop? Open rack in Non-AC room
15. Do you know HACCP protocol to keep medicine safely? No
16. Do you ever get any complaint from your customer? Never
17. If yes, what are those?
18. What changes has been noticed regarding the sell volume of medicine as compared to previous year? Decreased
19. What problems are you facing in veterinary medicine marketing? No problem

C. **Family income of the respondent**

20. What is the main source of income to maintain your family expenditure? Current profession
21. What is the average monthly income from your main income source? BDT. 7500.0
22. What is the average monthly income from your secondary income? BDT. 10000.0

Meat Processor

KII-1 (Meat Processor)

A. General Information

Name: Shawn Pramanik		Father: Golam Kuddus Swapon	
Village: Vobanipur Kazipara		Union: Gona	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 28	Education: JSC		
Main income source: Butcher (Cattle)		Secondary income source: None	
Relation with DABI: Participant		Contact Number:	01753390195

B. Business Information

1. How long have you been in your profession? 10 yrs
2. Which animal meat do you sell? Cattle
3. How many cattle are slaughtered per week? 2 Nos
4. How many buffalo are slaughtered per month? Nil
5. How many goats are slaughtered per week? …… Nos
6. How many sheep are slaughtered per month? ……Nos
7. Sources how animals are collected for slaughter;

Directly from producer: 30%, from market: 70%, from trader: 0%

8. Time elapsed between animal collection and slaughter; 18 hours
9. Whether slaughtered animals are inspected for health status: No
10. If it is yes, then who perform it?
11. Do you take meat certification for selling meat? No
12. If you take it, then from which authority?
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? 3-4 hours
17. What do you do when meat is not completely sold? Freezing
18. Is there any separate place for slaughtering animals? No
19. How slaughterhouse wastes are disposed after slaughtering animals? Go through in to the river
20. How do you clean your butcher shop? Water with detergent and disinfectants
21. Frequency of cleaning in a day: 2-3 times
22. Do you ever get any complaint from your customers? Sometimes
23. If yes, what are those? More fats
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Decreased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current profession
24. What is the average monthly income from your main income source? BDT. 15,000/-
25. What is the average monthly income from your secondary income source?

KII-2 (Meat Processor)

A. General Information

Name: Md. Abdul Hamid Fakir		Father: Md. Sukur Ali Fakir	
Village: Dim-Sahar Fakirpara		Union: Pourasava	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 55	Education: Can sign		
Main income source: Butcher (Cattle)		Secondary income source: Agriculture	
Relation with DABI: Participant		Contact Number:	01731109117

B. Business Information

1. How long have you been in your profession? 40 yrs
2. Which animal meat do you sell? Cattle
3. How many cattle are slaughtered per week? 11 Nos
4. How many buffalo are slaughtered per month? Nil
5. How many goats are slaughtered per week? ……. Nos
6. How many sheep are slaughtered per month? ……Nos
7. Sources how animals are collected for slaughter;

Directly from producer: %, from market: 100%, from trader: 0%

8. Time elapsed between animal collection and slaughter; 8-10 hours
9. Whether slaughtered animals are inspected for health status: No
10. If it is yes, then who perform it?
11. Do you take meat certification for selling meat? No
12. If you take it, then from which authority?
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? Max. 8 hours
17. What do you do when meat is not completely sold? Freezing
18. Is there any separate place for slaughtering animals? Yes, but very poor
19. How slaughterhouse wastes are disposed after slaughtering animals? Go through in to the water resoirver
20. How do you clean your butcher shop? Water with detergent and finally disinfectants
21. Frequency of cleaning in a day: Once
22. Do you ever get any complaint from your customers? Sometimes
23. If yes, what are those? Tough meat with more tendons
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Decreased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current occupasion
24. What is the average monthly income from your main income source? BDT. 20,000/-
25. What is the average monthly income from your secondary income source? None

KII-3 (Meat Processor)

A. General Information

Name: Md. Belal Hossain		Father: Late Alhaj Ibrahim Sarder	
Village: Dumri gram		Union: Narsatpur	
Upazilla: Adamdighi		District: Bogura	
Age (Yrs): 52	Education: 8th		
Main income source: Butcher (Cattle)		Secondary income source: Fisheries	
Relation with DABI: Non-Participant		Contact Number:	01718213234

B. Business Information

1. How long have you been in your profession? 40 yrs
2. Which animal meat do you sell? Cattle & Buffalo
3. How many cattle are slaughtered per week? 5 Nos
4. How many buffalo are slaughtered per month? 15

5. How many goats are slaughtered per week? ……Nos
6. How many sheep are slaughtered per month? ……Nos
7. Sources how animals are collected for slaughter;
Directly from producer: %, from market: 100%, from trader: 0%
8. Time elapsed between animal collection and slaughter; 24 hours
9. Whether slaughtered animals are inspected for health status: Yes
10. If it is yes, then who perform it? Veterinarian
11. Do you take meat certification for selling meat? Yes
12. If you take it, then from which authority? Union Parishad
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? 5-6 hours
17. What do you do when meat is not completely sold? Sell to the hotel
18. Is there any separate place for slaughtering animals? Yes
19. How slaughterhouse wastes are disposed after slaughtering animals? Go through in to the water resoirver
20. How do you clean your butcher shop? Only with water
21. Frequency of cleaning in a day: Once
22. Do you ever get any complaint from your customers? Never
23. If yes, what are those? Tough meat with more tendons
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Increased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current occupasion
24. What is the average monthly income from your main income source? BDT. 15,000/-
25. What is the average monthly income from your secondary income? BDT. 9,000/-

KII-4 (Meat Processor)

A. General Information

Name: Ahsan Ali Sarder		Father: Ahad Ali Sarder	
Village: Bandaikhara		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 40	Education: 8th		
Main income source: Butcher (Cattle)		Secondary income source:	
Relation with DABI: Participant		Contact Number:	01750366900

B. Business Information

1. How long have you been in your profession? 12 yrs

2. Which animal meat do you sell? Cattle & Buffalo
3. How many cattle are slaughtered per week? 3-4 Nos
4. How many buffalo are slaughtered per month? 3
5. How many goats are slaughtered per week? ……Nos
6. How many sheep are slaughtered per month? ……. Nos
7. Sources how animals are collected for slaughter; From the market: 100%
8. Time elapsed between animal collection and slaughter; 24 hours
9. Whether slaughtered animals are inspected for health status: Yes
10. If it is yes, then who perform it? Veterinarian
11. Do you take meat certification for selling meat? Yes
12. If you take it, then from which authority? Union Parishad
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? 4 hours
17. What do you do when meat is not completely sold? No unsold
18. Is there any separate place for slaughtering animals? Yes
19. How slaughterhouse wastes are disposed after slaughtering animals? Go through in to the water resoirver
20. How do you clean your butcher shop? Water, detergent and disinfectants
21. Frequency of cleaning in a day: Once
22. Do you ever get any complaint from your customers? Never
23. If yes, what are those? Tough meat with more tendons
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Increased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current occupasion
24. What is the average monthly income from your main income source? BDT. 8,000/-

25. What is the average monthly income from your secondary income source?

KII-5 (Meat Processor)

A. General Information

Name: Md. Abdul Majid		Father: Md. Afzal Hossain	
Village: Sahapukur		Union: Boalia	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 44	Education: 8^{th}		
Main income source: Butcher (Cattle)		Secondary income source: Fisheries	
Relation with DABI: Participant		Contact Number:	01719248873

B. Business Information

1. How long have you been in your profession? 10 yrs
2. Which animal meat do you sell? Cattle
3. How many cattle are slaughtered per week? 7 Nos
4. How many buffalo are slaughtered per month? 3
5. How many goats are slaughtered per week? …… Nos
6. How many sheep are slaughtered per month? …… Nos
7. Sources how animals are collected for slaughter; From the market: 100%
8. Time elapsed between animal collection and slaughter; 48 hours
9. Whether slaughtered animals are inspected for health status: Yes
10. If it is yes, then who perform it? Self
11. Do you take meat certification for selling meat? Yes
12. If you take it, then from which authority? Union Parishad
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? 7 hours
17. What do you do when meat is not completely sold? Freezing
18. Is there any separate place for slaughtering animals? Yes
19. How slaughterhouse wastes are disposed after slaughtering animals? Kept in the dust bin
20. How do you clean your butcher shop? Water, detergent and disinfectants
21. Frequency of cleaning in a day: Twice
22. Do you ever get any complaint from your customers? Never
23. If yes, what are those? Tough meat with more tendons
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Decreased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current occupasion
24. What is the average monthly income from your main income source? BDT. 14,000/-
25. What is the average monthly income from your secondary income? BDT. 5,000/-

KII-6 (Meat Processor)

A. General Information

Name: Md. Tufan Ali		Father: Late Mokshed
Village: Shoilgachi		Union: Shoilgachi
Upazilla: Naogaon Sadar		District: Naogaon
Age (Yrs): 35	Education: 5th	
Main income source: Butcher (Goat)		Secondary income source: Agriculture

Relation with DABI: Non-Participant	Contact Number:	01777321703

B. Business Information

1. How long have you been in your profession? 22 yrs
2. Which animal meat do you sell? Goat
3. How many cattle are slaughtered per week?
4. How many buffalo are slaughtered per month?
5. How many goats are slaughtered per week? 5 Nos
6. How many sheep are slaughtered per month? …… Nos
7. Sources how animals are collected for slaughter; From the market: 100%
8. Time elapsed between animal collection and slaughter; 24 hours
9. Whether slaughtered animals are inspected for health status: Yes
10. If it is yes, then who perform it? Self
11. Do you take meat certification for selling meat? Yes
12. If you take it, then from which authority? Union Parishad
13. Do you have any idea or have any training on HACCP for quality and safe meat processing? No
14. If yes, do you follow it?
15. Is your butcher shop approved by any legal authority? Yes
16. How long meat is retained in the shop up to end of selling? 4 hours
17. What do you do when meat is not completely sold? Freezing
18. Is there any separate place for slaughtering animals? Yes
19. How slaughterhouse wastes are disposed after slaughtering animals? Go through into the water bodies
20. How do you clean your butcher shop? Water, detergent and disinfectants
21. Frequency of cleaning in a day: Twice
22. Do you ever get any complaint from your customers? Very few
23. If yes, what are those? More bone and fat
24. What changes has been noticed regarding the sell volume of meat as compared to previous year? Decreased

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current occupasion
24. What is the average monthly income from your main income source? BDT. 15,000/-
25. What is the average monthly income from your secondary income? BDT. 2,000/-

Milk Processor

KII-1 (Milk Processor)

A. General Information

Name: Md. Aminul Islam	Father: Md. Wadud Khandoker

Village: Dangapara		Union: Kashimpur	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 30	Education: HSC		
Main income source: Sweetmeat shop		Secondary income source:	
Trade name: Sony-Sana Misthanno		Address: Kujail Bazar	
Relation with DABI: Participant		Contact Number:	01305841872

B. Business Information

1. How long have you been in your profession? 30 yrs
2. How many wage based workers are there in your business? 3 nos
3. How much is yours invest in this business? 2.5 lacs TK.
4. What is the source of investment? Own
5. What types of milk products do you manufacture? Sweet
6. Who manufacture these products? Recruited employee
7. If you manufacture yourself, then how you have learnt it?
8. From where do you collect channa? Channa maker
9. How much channa do you collect everyday? 8 kg
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? Yes
11. At this moment, how much do you pay for purchasing each kilogram of channa? 260.0 Tk.
12. During purchasing channa, do you judge its quality? Yes
13. How do you judge? Physical appearance
14. If you judge it on the basis of physical appearance, then what characters do you consider? Color
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats	15.0 kg	15.0 kg	200-250	4500.0
Dahi/Yogurt				
Ghee				
Channa				

16. To whom do you sell your milk products? Directly to the consumer
17. Do you ever get any complaint from your customer on selling your products? Sometimes
18. If you get, what are those? Hardy inside the sweet
19. What measures do you take for maintaining quality of milk products?
    -Try to purchase good quality channa and sugar
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of milk products as compared to previous year? Decreased
22. Is there any competition with others in this business? Yes
23. If yes, on for what? Sell volume

24. What challenges are there to keep up reputation of this business? Unknown

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? Tk. 15,000.0
26. What is the average monthly income from your secondary income source?

KII-2 (Milk Processor)

A. General Information

Name: Md. Obaidullah		Father: Chan Mohammad	
Village: Matihas		Union: Dupchachia	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 26	Education: HSC		
Main income source: Sweetmeat shop		Secondary income source:	
Trade name: Bismillah Doi-Misti Ghor		Address: Dupchachia Bazar	
Relation with DABI: Participant		Contact Number:	01303532382

B. Business Information

1. How long have you been in your profession? 3 months
2. How many wage based workers are there in your business? 3 nos
3. How much is yours invest in this business? 1.5 lacs TK.
4. What is the source of investment? Own
5. What types of milk products do you manufacture? Sweet & Yogurt (Dahi)
6. Who manufacture these products? Recruited employee
7. If you manufacture yourself, then how you have learnt it?
8. From where do you collect milk and channa? Milk from market and channa from channa maker
9. How much milk and channa do you collect everyday? Milk 40.0 kg and channa 8.0 kg
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? Yes
11. At this moment, how much do you pay for purchasing each kilogram of milk and channa? Milk 50-60 Tk. and channa 240.0 Tk.
12. During purchasing milk, do you judge its quality? Yes
13. How do you judge? Physical appearance
14. If you judge it on the basis of physical appearance, then what characters do you consider? Milk fat, color, flavor, smell, water
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats	20.0 kg	15-20.0 kg	160.0	3200.0
Dahi/Yogurt	30 kg	25 kg	220.0	5500.0

Ghee
Channa

16. To whom do you sell your milk products? Directly to the consumer
17. Do you ever get any complaint from your customer on selling your products? Never
18. If you get, what are those?
19. What measures do you take for maintaining quality of milk products? Cleanliness
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of milk products as compared to previous year? Decreased
22. Is there any competition with others in this business? No
23. If yes, on for what?
24. What challenges are there to keep up reputation of this business?
    - Manufacturing quality products
    - Good behaviour

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? Tk. 20,000.0
26. What is the average monthly income from your secondary income source?

KII-3 (Milk Processor)

A. General Information

Name: Jim Babu		Father: Efajul Pramanik	
Village: Alohali (west)		Union: Dupchachia	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 18	Education: 5th		
Main income source: Channa maker (Home)		Secondary income source: None	
Relation with DABI: Participant		Contact Number:	01753592467

B. Business Information

1. How long have you been in your profession? 6 yrs
2. How many wage based workers are there in your business? 3 nos
3. How much is yours invest in this business? TK. 10,000/-
4. What is the source of investment? Own
5. What types of milk products do you manufacture? Channa
6. Who manufacture these products? Self
7. If you manufacture yourself, then how you have learnt it? Others
8. From where do you collect milk? Market
9. How much milk do you collect everyday? 70-80 kg
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? No

11. At this moment, how much do you pay for purchasing each kilogram of milk? 65.0 Tk.
12. During purchasing milk, do you judge its quality? Yes
13. How do you judge? Physical appearance (by pouring in to the glass)
14. If you judge it on the basis of physical appearance, then what characters do you consider? Milk fat
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats				
Dahi/Yogurt				
Ghee				
Channa	15.0 kg	15.0 kg	240.0	6000.0

16. To whom do you sell your milk products? Sweetmeat shop
17. Do you ever get any complaint from your customer on selling your product?
18. If you get, what are those?
19. What measures do you take for maintaining quality of milk products?
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of channa as compared to previous year? Increased
22. Is there any competition with others in this business?
23. If yes, on for what?
24. What challenges are there to keep up reputation of this business?

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? Tk. 10,000.0
26. What is the average monthly income from your secondary income source?

KII-4 (Milk Processor)

A. General Information

Name: Md. Zahidul Islam		Father: Efajul Pramanik	
Village: Dohorpur		Union: Adomdighi	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 28	Education: 8th		
Main income source: Bhai-Bon Hotel		Secondary income source: Rice Processing	
Relation with DABI: Non-Participant		Contact Number:	01714622635

B. Business Information

1. How long have you been in your profession? 18 yrs
2. How many wage based workers are there in your business? 12 nos
3. How much is yours invest in this business? TK. 50,000/-

4. What is the source of investment? Own
5. What types of milk products do you manufacture? Sweet, Yogurt, Ghee
6. Who manufacture these products? Recruited employees
7. If you manufacture yourself, then how you have learnt it? Others
8. From where do you collect milk? Contractual milkman/goala
9. How much milk do you collect everyday? 10 kg (Channa)
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? Yes
11. At this moment, how much do you pay for purchasing each kilogram of milk? 45.0 Tk.
12. During purchasing milk, do you judge its quality? Yes
13. How do you judge? Physical appearance
14. If you judge it on the basis of physical appearance, then what characters do you consider? Milk fat, color, water%
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats	25 kg	20-25 kg	180-300	4000/-
Dahi/Yogurt		10 kg	150/-	1500/-
Ghee		1.0 kg	1000/-	1000/-
Channa				

16. To whom do you sell your milk products? Directly to the consumers
17. Do you ever get any complaint from your customer on selling your product? Sometimes
18. If you get, what are those? Quality should be increased
19. What measures do you take for maintaining quality of milk products? Try to recruit expert manufacturer
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of channa as compared to previous year? Increased
22. Is there any competition with others in this business? Yes
23. If yes, on for what? Sell volume
24. What challenges are there to keep up reputation of this business? Could not identified

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? BDT. 20,000.0
26. What is the average monthly income from your secondary income? BDT. 10,000.0

KII-5 (Milk Processor)

A. General Information

Name: Prokash Kumer	Father: Late Narayan Chandra

Village: Bandaikhara		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 52	Education: 8th		
Main income source: Sweetmeat shop		Secondary income source: Hotel	
Name of Trade: Oditi Mistanno Vandar		Address: Bandaikhara	
Relation with DABI: Non-Participant		Contact Number:	0174355920

B. Business Information

1. How long have you been in your profession? 22 yrs
2. How many wage based workers are there in your business? One
3. How much is yours invest in this business? TK. 100,000/-
4. What is the source of investment? Own
5. What types of milk products do you manufacture? Sweet
6. Who manufacture these products? Self
7. If you manufacture yourself, then how you have learnt it? Inherent
8. From where do you collect channa? Channa manufacturer
9. How much channa do you collect everyday? 6 kg
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? Yes
11. At this moment, how much do you pay for purchasing each kilo of channa? BDT. 250.0
12. During purchasing channa, do you judge its quality? Yes
13. How do you judge? Physical appearance
14. If you judge it on the basis of physical appearance, then what characters do you consider? Color
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats	8 kg	8 kg	200	1600/-
Dahi/Yogurt				
Ghee				
Channa				

16. To whom do you sell your milk products? Directly to the consumers
17. Do you ever get any complaint from your customer on selling your product? Never
18. If you get, what are those? Quality should be increased
19. What measures do you take for maintaining quality of milk products? Could not answer
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of channa as compared to previous year? Same as before
22. Is there any competition with others in this business? Yes
23. If yes, on for what? Sell volume

24. What challenges are there to keep up reputation of this business? Investment, competitors

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? BDT. 8,000.0
26. What is the average monthly income from your secondary income? BDT. 5,000.0

KII-6 (Milk Processor)

A. General Information

Name: Md. Saiful Islam		Father: Late Badesh Mondal	
Village: Shoilgachi		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 55	Education: 8th		
Main income source: Sweetmeat shop		Secondary income source: Agriculture	
Name of Trade: Asha Foods and Mistanno		Address: Shoilgachi Bazar	
Relation with DABI: Non-Participant		Contact Number:	

B. Business Information

1. How long have you been in your profession? 12 yrs
2. How many wage based workers are there in your business? One
3. How much is yours invest in this business? TK. 300,000/-
4. What is the source of investment? Own
5. What types of milk products do you manufacture? Sweet, Dahi (Yogurt)
6. Who manufacture these products? Self and recruited employee
7. If you manufacture yourself, then how you have learnt it? By learning from other shop, while working there
8. From where do you collect channa? Market and channa manufacturer
9. How much channa do you collect everyday? 10 kg
10. Is this amout sufficient to meet up your everyday demand for manufacturing products? Yes
11. At this moment, how much do you pay for purchasing each kilo of channa? BDT. 250.0
12. During purchasing channa, do you judge its quality? Yes
13. How do you judge? Physical appearance
14. If you judge it on the basis of physical appearance, then what characters do you consider? Color, fat, flavor, smell
15. Please give the following information related to product manufacturing and selling:

Name of products	Amount prepared in a day	Amount sold in a day	Sold price (BDT/kg)	Total selling Price (BDT)
All kinds of sweetmeats	20 kg	15 kg	220	3300/-

Dahi/Yogurt	60 cups	40 cups	25	1000/-
Ghee				
Channa				

16. To whom do you sell your milk products? Directly to the consumers
17. Do you ever get any complaint from your customer on selling your product? Sometimes
18. If you get, what are those? Quality, price, size, color
19. What measures do you take for maintaining quality of milk products? Seeking expert manufacturer
20. Do you know HACCP protocol for manufacturing safe and healthy milk products? No
21. What changes have you observed regarding the sell volume of channa as compared to previous year? Decreased
22. Is there any competition with others in this business? Yes
23. If yes, on for what? Price, quality and sell volume
24. What challenges are there to keep up reputation of this business? Could not identify

C. **Family income of the respondent**

25. What is the main source of income to maintain your family expenditure? Current business
26. What is the average monthly income from your main income source? BDT. 18,000.0
26. What is the average monthly income from your secondary income? BDT. 2,000.0

Milk Trader/Goala

KII-1 (Milk Trader/Goala)

A. General Information

Name: Chandan Ghosh		Father: Late Jotimbar Ghosh	
Village: Shoilgachi		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 62	Education: 8th		
Main income source: Milkman/goala		Secondary income source: Agriculture	
Relation with DABI: Participant		Contact Number:	01704008864

B. Business Information

1. How long have you been in your profession? 45 yrs
2. From where do you collect milk? Commercial farms and farmers
3. Oher than market, do you have any contract with them to collect milk regularly? Yes
4. How much milk do you collect everyday from those sources? 25 liters
5. What price do you pay per unit of milk? BDT. 45.0 per liters
6. To whom do you sell your collected milk? Sweetmeat shop
7. Can you sell whole amount of milk colleceted in a day? Yes
8. If you cannot, how much milk is retained in a day? None
9. What do you do if milk is retained unsold? N/A

10. What price do you sell milk per unit of milk? BDT. 60.00 per liters
11. Can you collect milk as per your requirement? No
12. What is the time interval between milk collection and end of milk selling? 6 hrs
13. Do you inspect quality of milk during collection? Yes
14. If you do it, then how? By entering hand in the milk as to check fat content
15. Based on your experience, what change do you feel on quality of milk? Decreased
16. What changes do you observe regarding demand of milk? Increased
17. During purchasing milk, who fix milk price? Both parties mutually fix
18. During selling milk who fix milk price? Both parties mutually fix
19. Whether price of milk is flexible or not; frequently fluctuates
20. If fluctuate, what is the reason? Depending on milk supply

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? Tk. 5,000/-
23. What is the average monthly income from your secondary income? Tk. 4,000/-

KII-2 (Milk Trader/Goala)

A. General Information

Name: Niren Ghosh		Father: Late Surendra Nath	
Village: Bandaikhara		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 54	Education: 8th		
Main income source: Milkman/goala		Secondary income source:	
Relation with DABI: Non-Participant		Contact Number:	01727363698

B. Business Information

1. How long have you been in your profession? 28 yrs
2. From where do you collect milk? Directly from the farmers
3. Oher than market, do you have any contract with them to collect milk regularly? Yes
4. How much milk do you collect everyday from those sources? 40 liters
5. What price do you pay per unit of milk? BDT. 50.0 per liters
6. To whom do you sell your collected milk? Sweetmeat shop
7. Can you sell whole amount of milk colleceted in a day? Yes
8. If you cannot, how much milk is retained in a day? None
9. What do you do if milk is retained unsold? N/A
10. What price do you sell milk per unit of milk? BDT. 60.00 per liters
11. Can you collect milk as per your requirement? No
12. What is the time interval between milk collection and end of milk selling? 8 hrs
13. Do you inspect quality of milk during collection? No
14. If you do it, then how?

15. Based on your experience, what change do you feel on quality of milk? Increased
16. What changes do you observe regarding demand of milk? Increased
17. During purchasing milk, who fix milk price? Both parties mutually fix
18. During selling milk who fix milk price? Both parties mutually fix
19. Whether price of milk is flexible or not; frequently fluctuates
20. If fluctuate, what is the reason? Could not answer

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? BDT. 6,000/-
23. What is the average monthly income from your secondary income source?

KII-3 (Milk Trader/Goala)

A. General Information

Name: Sri Anand Ghosh		Father: Sri Govinda	
Village: Kusum Bibi		Union: Adomdighi	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 32	Education: 6th		
Main income source: Milkman/goala		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01745556557

B. Business Information

1. How long have you been in your profession? 25 yrs
2. From where do you collect milk? Directly from the farmers
3. Oher than market, do you have any contract with them to collect milk regularly? No
4. How much milk do you collect everyday from those sources? 100 liters
5. What price do you pay per unit of milk? BDT. 45.0 per liters
6. To whom do you sell your collected milk? Sweetmeat shop
7. Can you sell whole amount of milk colleceted in a day? Yes
8. If you cannot, how much milk is retained in a day? None
9. What do you do if milk is retained unsold? N/A
10. What price do you sell milk per unit of milk? BDT. 50.00 per liters
11. Can you collect milk as per your requirement? Yes
12. What is the time interval between milk collection and end of milk selling? 12 hrs
13. Do you inspect quality of milk during collection? Yes
14. If you do it, then how? By entering hand into the milk as to check milk fat content
15. Based on your experience, what change do you feel on quality of milk? Unchanged
16. What changes do you observe regarding demand of milk? Increased
17. During purchasing milk, who fix milk price? Both parties mutually fix
18. During selling milk who fix milk price? Myself
19. Whether price of milk is flexible or not; frequently fluctuates

20. If fluctuate, what is the reason? Depending on milk supply

C. **Family income of the respondent**

21. What is the main source of income to maintain your family expenditure? Current profession
22. What is the average monthly income from your main income source? BDT. 10,000/-
23. What is the average monthly income from your secondary income? BDT. 12,000/-

Fodder Trader

KII-1 (Fodder Trader)

A. General Information

Name: Bilal		Father: Late Khoair Ali Pramanik	
Village: Masinda		Union: Dupchachia	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 60	Education: Can sign		
Main income source: Nursery		Secondary income source: Fodder cultivation	
Relation with DABI: Participant		Contact Number:	01746171588

B. Business Information

1. How long have you been in your profession? 1 yr
2. From where do you collect fodder? Other fodder producer
3. What types of fodder do you sell? Napier, Pakchong
4. What measurement unit do you use for purchasing and selling fodder?
   Purchase: Land size (Per Bigha basis)
   Sell: Bundle
5. If it is bunch, then what is the weight for single bunch? Approx. 5-10 kg
6. If you purchase on the basis of land size and sell by bundle, then how much bundle do you get for single harvest? 800 bundle (10.0 kg per bundle) per bigha land (33 decimal)
7. What is the price per unit?
   For purchase: Napier-Tk. 10,000.0 per bigha (33 decimal)
   For sell: Napier- Tk. 20.0-25.0 per bundle (each of 5.0 kg)
8. How much amount of different types fodder do you sell in a day?
   Napier & Pakchong 100 bundle (each of 5-7 kg)
9. Which type of fodder has more demand? Napier
10. In which season(s) the demand of fodder becomes high? Rainy
11. Why the demand becomes high in that/those season? Scarcity of rice straw and water logging
12. What changes have you observed in selling fodder as compared to previous year? Increased
13. If increase, then why?
    - Increasing publicity of cultivated grass

- More farmers are feeding grass to animals

14. If decrease, then why?
15. What types of problems are you facing for marketing fodder? Lack of getting land for fodder cultivation

C. **Family income of the respondent**

16. What expenses do you pay in a month, except price of fodder purchasing? Tk. 40,000/-
17. How much money do you earn per month for marketing fodder? Tk. 60,000/-
18. What is your net income per month in this profession? Tk. 20,000/-

KII-2 (Fodder Trader)

A. General Information

Name: Md. Abdur Rashid Sarder		Father: Rahim Box	
Village: Bandaikhara		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 40	Education: 5th		
Main income source: Agriculture		Secondary income source: Fodder Trading	
Relation with DABI: Participant		Contact Number:	01782124993

B. Business Information

1. How long have you been in your profession? 1 yr
2. From where do you collect fodder? Fodder producer
3. What types of fodder do you sell? Napier
4. What measurement unit do you use for purchasing and selling fodder?
   Purchase: Bundle
   Sell: Bundle
5. If it is bunch, then what is the weight for single bunch? Approx. 6 kg
6. If you purchase on the basis of land size and sell by bundle, then how much bundle do you get for single harvest?
7. What is the price per unit?
   For purchase: Tk. 25 per bundle
   For sell: Tk. 30 per bundle
8. How much amount of different types fodder do you sell in a day? 100 bundle
9. Which type of fodder has more demand? Napier
10. In which season(s) the demand of fodder becomes high? Rainy
11. Why the demand becomes high in that/those season? Water logging
12. What changes have you observed in selling fodder as compared to previous year? Increased
13. If increase, then why?
    - Growing awareness of the farmers
14. If decrease, then why?
15. What types of problems are you facing for marketing fodder? No problem

C. **Family income of the respondent**

16. What expenses do you pay in a month, except price of fodder purchasing? Tk. 10,800/-
17. How much money do you earn per month for marketing fodder? Tk. 12,960/-
18. What is your net income per month in this profession? Tk. 2160/-

KII-3 (Fodder Trader)

A. General Information

Name: Md. Alamin		Father: Md. Liton Mondal	
Village: Arginaogaon		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 29	Education: HSC		
Main income source: Fodder Trading		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01784801899

B. Business Information

1. How long have you been in your profession? 2 yrs
2. From where do you collect fodder? Fodder producer
3. What types of fodder do you sell? Napier, Pakchong
4. What measurement unit do you use for purchasing and selling fodder?
   Purchase: Bundle
   Sell: Bundle
5. If it is bunch, then what is the weight for single bunch? Approx. 5 kg
6. If you purchase on the basis of land size and sell by bundle, then how much bundle do you get for single harvest?
7. What is the price per unit?
   For purchase: Tk. 24 per bundle
   For sell: Tk. 30 per bundle
8. How much amount of different types fodder do you sell in a day?
   Napier & Pakchong 150 bundle
9. Which type of fodder has more demand? Napier
10. In which season(s) the demand of fodder becomes high? Winter
11. Why the demand becomes high in that/those season? Scarcity of green grasses in the field
12. What changes have you observed in selling fodder as compared to previous year? Increased
13. If increase, then why?
    - Scarcity of grass
    - Everybody is rearing cattle
14. If decrease, then why?
15. What types of problems are you facing for marketing fodder?
    - Mature grass

- High price
- Less quantity
- Not available in time

C. **Family income of the respondent**

16. What expenses do you pay in a month, except price of fodder purchasing? Tk. 14,000/-
17. How much money do you earn per month for marketing fodder? Tk. 17,500/-
18. What is your net income per month in this profession? Tk. 3,500/-

Fodder Producer

KII-1 (Fodder Producer)

A. General Information

Name: Md. Moazzem Hossain		Father: Late Omar Ali Pramanik	
Village: Chawk Kujail		Union: Kashimpur	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 58	Education: HSC		
Main income source: Rice Mill		Secondary income source: Beef & Dairy	
Relation with DABI: Participant		Contact Number:	01713742073

B. Business Information

1. How long have you been in producing fodder? 5 yrs
2. What types of fodder do you produce? Napier & Pakchong
3. From where had you collected fodder cutting/seed? Another fodder producer
4. How much land do you use in cultivating fodder? 1 Bigha (33 decimal)
5. On what purpose do you cultivate fodder? Self-consumption (dairy and fattening)
6. To whom do you sell your cultivated fodder? Not sold
7. Which type of fodder has more demand?
8. What measurement unit do you use for selling fodder?
9. If the measurement unit is on the basis of land size, then what unit is used for selling fodder?
10. What is the selling price of fodder per unit?
11. If fodder is sold on the basis of bunch, then what is selling price per bunch?
12. How much bundles of grasses are produced per decimal/katha/bigha of land for single cut?
13. What is the frequency of fodder harvest per year? 8 harvests
14. What types of fertilizer are applied in your fodder land? Cow dung, Urea, DAP
15. How many times do you apply fertilizer before each harvest?
16. How many times do you apply fertilizer round the year? Cow dung & urea 2-3 times, DAP once
17. Do you irrigate your fodder land? Yes
18. If you do, in what season? Both winter and dry summer

19. Do you weeding your fodder land? Yes
20. Is there any disease outbreak in fodder? Yes
21. If yes, then what types? Insect in the leaf, drying upper part of plant
22. Is fodder cultivation is more profitable than other cash crop? Yes

C. **Family income of the respondent**

23. What expenses do you pay in a year for fodder cultivation in your own land? Tk. 2,000/-
24. How much money do you earn per month for selling fodder? Not sold
25. What is your net annual income from fodder cultivation? N/A

KII-2 (Fodder Producer)

A. General Information

Name: Md. Sajukul Islam		Father: Md. Mokbul Hossain	
Village: Suddin		Union: Adomdighi	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 26	Education: SSC		
Main income source: Fodder cultivation		Secondary income source: Agriculture	
Relation with DABI: Participant		Contact Number:	01785290112

B. Business Information

1. How long have you been in producing fodder? 1 yr
2. What types of fodder do you produce? Pakchong & German
3. From where had you collected fodder cutting/seed? Another fodder producer
4. How much land do you use in cultivating fodder? 15 decimal
5. On what purpose do you cultivate fodder? Only for selling
6. To whom do you sell your cultivated fodder? Livestock keeper farmers
7. Which type of fodder has more demand? Pakchong
8. What measurement unit do you use for selling fodder? Bundle
9. If the measurement unit is on the basis of land size, then what unit is used for selling fodder?
10. What is the selling price of fodder per unit?
11. If fodder is sold on the basis of bunch, then what is selling price per bunch? BDT. 30.0 (6-7 kg/bundle)
12. How much bundles of grasses are produced per decimal/katha/bigha of land for single cut? 100 bundle/decimal
13. What is the frequency of fodder harvest per year? 6 harvests
14. What types of fertilizer are applied in your fodder land? Cow dung, Urea, Zinc
15. How many times do you apply fertilizer before each harvest? Once
16. How many times do you apply fertilizer round the year? 6 times
17. Do you irrigate your fodder land? Yes
18. If you do, in what season? Dry summer

19. Do you weeding your fodder land? Yes
20. Is there any disease outbreak in fodder? Yes
21. If yes, then what types? Rot, yellow leaf, drying leaf
22. Is fodder cultivation is more profitable than other cash crop? Yes

C. **Family income of the respondent**

23. What expenses do you pay in a year for fodder cultivation in your own land? Tk. 150,000/-
24. How much money do you earn per month for selling fodder? Tk. 45,000/-
25. What is your net annual income from fodder cultivation? Tk. 120,000/-

KII-3 (Fodder Producer)

A. General Information

Name: Md. Al-Amin		Father: Md. Zaher Ali	
Village: Azinagar Uttarpara		Union: Pourashava	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 61	Education: 9th		
Main income source: Fodder cultivation		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01763696312

B. Business Information

1. How long have you been in producing fodder? 30 yrs
2. What types of fodder do you produce? Napir, Pakchong & Maize
3. From where had you collected fodder cutting/seed? Another fodder producer
4. How much land do you use in cultivating fodder? 7 Bigha
5. On what purpose do you cultivate fodder? Both self consumption and selling
6. To whom do you sell your cultivated fodder? Livestock keeper farmers
7. Which type of fodder has more demand? Napier
8. What measurement unit do you use for selling fodder? Bundle
9. If the measurement unit is on the basis of land size, then what unit is used for selling fodder?
10. What is the selling price of fodder per unit?
11. If fodder is sold on the basis of bunch, then what is selling price per bunch? BDT. 25.0 (5 kg/bundle)
12. How much bundles of grasses are produced per decimal/katha/bigha of land for single cut? 100 bundle/decimal
13. What is the frequency of fodder harvest per year? 4 harvests
14. What types of fertilizer are applied in your fodder land? Cow dung, Urea, Potash, Phosphate
15. How many times do you apply fertilizer before each harvest? Twice
16. How many times do you apply fertilizer round the year? 8 times
17. Do you irrigate your fodder land? Yes

18. If you do, in what season? Winter
19. Do you weeding your fodder land? Yes
20. Is there any disease outbreak in fodder? Yes
21. If yes, then what types? Yellow leaf, rot
22. Is fodder cultivation is more profitable than other cash crop? Yes

C. **Family income of the respondent**

23. What expenses do you pay in a year for fodder cultivation in your own land? Tk. 1,78,000/-
24. How much money do you earn per year for selling fodder? Tk. 5,60,000/-
25. What is your net annual income from fodder cultivation? Tk. 382,000/-

Animal Trader

KII-1 (Animal Trader)

A. General Information

Name: Md. Sohel Rana		Father: Md. Mojibur Rahman	
Village: Dangapara		Union: Kashimpur	
Upazilla: Raninagar		District: Naogaon	
Age (Yrs): 35	Education: SSC		
Main income source: Animal Trader (Broker)		Secondary income source: Agriculture	
Relation with DABI: Participant		Contact Number:	01753390958

B. Business Information

1. How long have you been in your profession? 5 yrs
2. What species of animal do you trade? Cattle
3. From where do you collect animals? Farmers (more) and market (Hat-bazar)
4. What types of cattle do you trade? All types (dairy, fattening and calves)
5. How much cattle do you trade in each week? Purchase- 10 animals, sell- 10 animals
6. What is the cost of purchasing animals?
   Large animals- 1.2 lacs to 1.5 lacs
   Small animals- 0.7 lac to 1.1 lacs
7. During selling animals, how much money is added with purchase price for each animal?
   Large animals- 3 to 5 Thousands
   Small animals- 3 to 5 Thousands
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing animals?
   Large animals-
   Small animals-
10. During selling animals, what is the additional selling price per animal than purchase price?
   Large animals-

Small animals-

11. How much goat do you trade in each week? None
12. What is the cost of purchasing animals?

Castrated goat- Does-

13. During selling animals, what is the additional selling price per animal than purchase price?

Castrated goat- Does-

14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? Yes
17. Where do you sell your animals? In the market (more) and to the butchers (less)
18. Can you sell all of your collected animals? Yes
19. If not, then what do you do? Keep it in my house for selling next time
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? Swelling leg, Pain, Fever, Sneezing
22. What do you do if disease outbreaks? Sell it after it is recovered from disease
23. Whether animals die after purchase? Yes (slaughtered)
24. In last one year, how many animals were died after purchase? 3 nos
25. During purchase, what phenotypic characters of animals do you observe? Good appearance, Dentition, color, health, fitness of different body parts
26. How do you transport your animals? By traditional vehicle (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Remain same
30. What problems are you facing during marketing animals?
    - Very high market toll
    - Insufficient space in the market
    - Lack of facilities
    - No veterianarian in the market
    - Need higher amount of invest
    - Bad communication

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 50,000/-
23. What is the average monthly income from your secondary income source? Tk. 10,000/-

KII-2 (Animal Trader)

A. General Information

Name: Md. Belal Hossain		Father: Late Samed Ali	
Village: West Alohali		Union: Dupchachia	
Upazilla: Dupchachia		District: Bogura	
Age (Yrs): 50	Education: 7th		
Main income source: Animal Trader (Broker)		Secondary income source: Agriculture	
Relation with DABI: Participant		Contact Number:	01715917625

B. Business Information

1. How long have you been in your profession? 14 yrs
2. What species of animal do you trade? Cattle
3. From where do you collect animals? Market (Hat-bazar)
4. What types of cattle do you trade? Dairy cow
5. How much cattle do you trade? Purchase- 4 animals/month, sell- 4 animals/month
6. What is the cost of purchasing animals? 1.1 to 1.2 lacs
7. During selling animals, how much money is added with purchase price for each animal? 5 to 10 Thousands
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing animals?
   Large animals-
   Small animals-
10. During selling animals, what is the additional selling price per animal than purchase price?
   Large animals-
   Small animals-
11. How much goat do you trade in each week? None
12. What is the cost of purchasing animals?
   Castrated goat- Does-
13. During selling animals, what is the additional selling price per animal than purchase price?
   Castrated goat- Does-
14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? Yes
17. Where do you sell your animals? In the market
18. Can you sell all of your collected animals? Yes
19. If not, then what do you do? Keep it in my house for selling next time
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? Abortion
22. What do you do if disease outbreaks? Sell it with lower price
23. Whether animals die after purchase? No
24. In last one year, how many animals were died after purchase?

25. During purchase, what phenotypic characters of animals do you observe? Stature, udder, health status, fitness of different body parts
26. How do you transport your animals? By traditional vehicle (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Remain same
30. What problems are you facing during marketing animals?
    - Low investment
    - Insufficient space in the market
    - Lack of transport facility
    - High rate of market toll

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 10-15,000/-
23. What is the average monthly income from your secondary income source? Tk. 3,000/-

KII-3 (Animal Trader)

A. General Information

Name: Md. Bablu Poramanik		Father: Chand Poramanik	
Village: Bandaikhara Mudrapara		Union: Hatkalopara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 46	Education: 8th		
Main income source: Animal Trader (Cattle)		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01794580170

B. Business Information

1. How long have you been in your profession? 25 yrs
2. What species of animal do you trade? Cattle
3. From where do you collect animals? Directly from the farmers and market (Hat-bazar)
4. What types of cattle do you trade? All categories
5. How much cattle do you trade per week? Purchase- 4 animals, sell- 3 animals
6. What is the cost of purchasing animals?
   Large animals: 1.2 to 1.5 lacs, Small animals: 0.4 to 0.7 lacs
7. During selling animals, how much money is added with purchase price for each animal?
   Large animals: 3 to 4 Thousands, Small animals: 2 to 2.5 Thousands
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?
10. During selling buffalo, what is the additional selling price per animal than purchase price?

11. How much goat do you trade in each week? None
12. What is the cost of purchasing goat?
13. During selling goats, what is the additional selling price per animal than purchase price?
14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? Yes
17. Where do you sell your animals? In the market
18. Can you sell all of your collected animals? No
19. If not, then what do you do? Take back in my house for selling later
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? FMD, Fever, Diarrhoea
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Never happened
24. In last one year, how many animals were died after purchase?
25. During purchase, what phenotypic characters of animals do you observe? Health soundness
26. How do you transport your animals? By traditional vehicle (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Decreased
30. What problems are you facing during marketing animals?
    - Market (Hat-bazar) is far away
    - High transport cost
    - Trading is not well as before
    - Few buyers, more sellers
    - Require prolong duration to sell animals

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 18,000/-
23. What is the average monthly income from your secondary income source?

KII-4 (Animal Trader)

A. General Information

Name: Md. Mostakim	Father: Alhaz Mofazzol
Village: Sitlai	Union: Nasratpur
Upazilla: Adomdighi	District: Bogura

Age (Yrs): 34	Education: 8th		
Main income source: Animal Trader (Cattle)		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01786445969

B. Business Information

1. How long have you been in your profession? 10 yrs
2. What species of animal do you trade? Cattle
3. From where do you collect animals? Directly from the farmers and market (Hat-bazar)
4. What types of cattle do you trade? All categories cattle
5. How much cattle do you trade per week? Purchase- 4 animals, sell- 3 animals
6. What is the cost of purchasing animals?
   Large animals: 1.5 to 2.2 lacs, Small animals: 0.5 to 0.8 lacs
7. During selling animals, how much money is added with purchase price for each animal?
   Large animals: 4 to 5 Thousands, Small animals: 2 to 3 Thousands
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?
10. During selling buffalo, what is the additional selling price per animal than purchase price?
11. How much goat do you trade in each week? None
12. What is the cost of purchasing goat?
13. During selling goats, what is the additional selling price per animal than purchase price?
14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? No
17. Where do you sell your animals? In the market
18. Can you sell all of your collected animals? No
19. If not, then what do you do? Take back in my house for selling later
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? LSD, Bloat, Diarrhoea
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Yes
24. In last one year, how many animals were died after purchase? 2 nos
25. During purchase, what phenotypic characters of animals do you observe? Udder, teat, fatten, color, horn, age
26. How do you transport your animals? By traditional vehicle (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Increased
30. What problems are you facing during marketing animals?

- Higher market price
- Transport problems
- Taking diseased animals in the market

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 18,000/-
23. What is the average monthly income from your secondary income source? Tk. 6,000/-

KII-5 (Animal Trader)

A. General Information

Name: Md. Robiul Islam		Father: Md. Anisur Sana	
Village: Ramraypur Awliyapara		Union: Shoilgachi	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 33	Education: 8th		
Main income source: Animal Trader (Cattle)		Secondary income source: Agriculture	
Relation with DABI: Non-Participant		Contact Number:	01754676333

B. Business Information

1. How long have you been in your profession? 4 yrs
2. What species of animal do you trade? Cattle
3. From where do you collect animals? Market (Hat-bazar)
4. What types of cattle do you trade? All categories cattle
5. How much cattle do you trade per week? Purchase- 5 animals, sell- 4 animals
6. What is the cost of purchasing animals?
   Large animals: 0.8 to 0.9 lacs, Small animals: 0.5 to 0.6 lacs
7. During selling animals, how much money is added with purchase price for each animal?
   Large animals: 3 to 4 Thousands, Small animals: 2 to 3 Thousands
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?
10. During selling buffalo, what is the additional selling price per animal than purchase price?
11. How much goat do you trade in each week? None
12. What is the cost of purchasing goat?
13. During selling goats, what is the additional selling price per animal than purchase price?
14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? No
17. Where do you sell your animals? In the market and to the butchers

18. Can you sell all of your collected animals? No
19. If not, then what do you do? Take back in my house for selling later
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? Fever, Cold
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Never happened
24. In last one year, how many animals were died after purchase?
25. During purchase, what phenotypic characters of animals do you observe? Color, quantity of meat, soundness of health
26. How do you transport your animals? By Pick-up Van and traditional vehicle (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Increased
30. What problems are you facing during marketing animals? No problem

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 18,000/-
23. What is the average monthly income from your secondary income source? Tk. 10,000/-

KII-6 (Animal Trader)

A. General Information

Name: Md. Robiul Islam		Father: Md. Abdur Razzak	
Village: Dupaipur		Union: Sorsail	
Upazilla: Naogaon Sadar		District: Naogaon	
Age (Yrs): 32	Education: HSC		
Main income source: Animal Trader (Goat)		Secondary income source: Fisheries	
Relation with DABI: Participant		Contact Number:	01753428167

B. Business Information

1. How long have you been in your profession? 7 yrs
2. What species of animal do you trade? Goat
3. From where do you collect animals? Directly from the farmers and market (Hat-bazar)
4. What types of cattle do you trade? None
5. How much cattle do you trade per week?
6. What is the cost of purchasing animals?
7. During selling animals, how much money is added with purchase price for each animal?
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?

10. During selling buffalo, what is the additional selling price per animal than purchase price?
11. How much goat do you trade in each week?
    Purchase: Castrated male goat = 30 nos and female goat = 10 nos
    Sell: All
12. What is the cost of purchasing goat?
    Castrated male goat: 7 to 8 Thousands and female goat: 4 to 5 Thousands
13. During selling goats, what is the additional selling price per animal than purchase price? Castrated male goat: 4 to 5 Hundreds and female goat: 2 to 3 Hundreds
14. How much sheep do you trade in each month? None
15. During selling sheep, what is the additional selling price per animal than purchase price?
16. Do you collect required number of animals according to your need? Yes
17. Where do you sell your animals? Dhaka and butchers
18. Can you sell all of your collected animals? Yes
19. If not, then what do you do?
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? FMD, Fever, Cold, Injured
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Yes
24. In last one year, how many animals were died after purchase? 3 nos
25. During purchase, what phenotypic characters of animals do you observe? Soundness of health, color, skin, deformities of the body parts
26. How do you transport your animals? By Pick-up Van
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Increased
30. What problems are you facing during marketing animals?
    - Transport problems
    - High price
    - High market toll

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 13,000/-
23. What is the average monthly income from your secondary income source? Tk. 7,000/-

KII-7 (Animal Trader)

A. General Information

Name: Md. Abu Siddik Monna	Father: Late Khudu Monna

Village: Bandaikhara West Para		Union: Hatkalupara	
Upazilla: Atrai		District: Naogaon	
Age (Yrs): 55	Education: 8th		
Main income source: Animal Trader (Goat)		Secondary income source:	
Relation with DABI: Participant		Contact Number:	01746852645

B. Business Information

1. How long have you been in your profession? 18 yrs
2. What species of animal do you trade? Goat
3. From where do you collect animals? Directly from the farmers and market (Hat-bazar)
4. What types of cattle do you trade? None
5. How much cattle do you trade per week?
6. What is the cost of purchasing animals?
7. During selling animals, how much money is added with purchase price for each animal?
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?
10. During selling buffalo, what is the additional selling price per animal than purchase price?
11. How much goat do you trade in each week?
    Purchase: Castrated male goat = 5 nos and female goat = 3 nos
    Sell: Castrated male goat = 3 nos and female goat = 3 nos
12. What is the cost of purchasing goat?
    Castrated male goat: 10 to 15 Thousands and female goat: 4 to 7 Thousands
13. During selling goats, what is the additional selling price per animal than purchase price? Castrated male goat: 5 to 7 Hundreds and female goat: 3 to 4 Hundreds
14. How much sheep do you trade in each week? Purchase = 2 nos, Sell = 2 nos
15. During selling sheep, what is the additional selling price per animal than purchase price? BDT. 200.0
16. Do you collect required number of animals according to your need? Yes
17. Where do you sell your animals? In the market (Hat-Bazar)
18. Can you sell all of your collected animals? No
19. If not, then what do you do? Take back home for selling later
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? Fever, Cold
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Yes
24. In last one year, how many animals were died after purchase? 2 nos
25. During purchase, what phenotypic characters of animals do you observe? Soundness of health, free from any deformities of the body parts
26. How do you transport your animals? By walking on the foot or traditional vehicles (Votvoti)
27. Whether animals get injured during transport? Yes

28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Increased
30. What problems are you facing during marketing animals? No problem

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 18,000/-
23. What is the average monthly income from your secondary income source?

KII-8 (Animal Trader)

A. General Information

Name: Md. Jalal Mondal		Father: Md. Bonij Uddin Mondal	
Village: Sitola		Union: Nasratpur	
Upazilla: Adomdighi		District: Bogura	
Age (Yrs): 62	Education: 8th		
Main income source: Animal Trader (Goat)		Secondary income source:	
Relation with DABI: Non-Participant		Contact Number:	01727106972

B. Business Information

1. How long have you been in your profession? 40 yrs
2. What species of animal do you trade? Goat
3. From where do you collect animals? Directly from the farmers and market (Hat-bazar)
4. What types of cattle do you trade? None
5. How much cattle do you trade per week?
6. What is the cost of purchasing animals?
7. During selling animals, how much money is added with purchase price for each animal?
8. How much buffalo do you trade in each month? None
9. What is the cost of purchasing buffalo?
10. During selling buffalo, what is the additional selling price per animal than purchase price?
11. How much goat do you trade in each week?
    Purchase: Castrated male goat = 25 nos and female goat = 20 nos
    Sell: Castrated male goat = 20 nos and female goat = 15 nos
12. What is the cost of purchasing goat?
    Castrated male goat: 8 to 15 Thousands and female goat: 4 to 10 Thousands
13. During selling goats, what is the additional selling price per animal than purchase price? Castrated male goat: 5 to 8 Hundreds and female goat: 3 to 4 Hundreds
14. How much sheep do you trade in each week? Purchase = 5 nos, Sell = 2 nos
15. During selling sheep, what is the additional selling price per animal than purchase price? BDT. 500.0 to 600.0

16. Do you collect required number of animals according to your need? No
17. Where do you sell your animals? In the market (Hat-Bazar)
18. Can you sell all of your collected animals? No
19. If not, then what do you do? Take back home for selling later
20. After purchase, do animals get disease? Yes
21. If disease outbreaks, what are those? Cold, PPR
22. What do you do if disease outbreaks? Give treatment and sell thereafter
23. Whether animals die after purchase? Yes
24. In last one year, how many animals were died after purchase? 2 nos
25. During purchase, what phenotypic characters of animals do you observe? Age, color, horn
26. How do you transport your animals? By traditional vehicles (Votvoti/Nosimon)
27. Whether animals get injured during transport? Yes
28. For what causes animals get injured? During loading and unloading animals
29. What changes have you notice regarding demand of animals as compare to earlier? Increased
30. What problems are you facing during marketing animals?
    - Fari price is not obtained during marketing animals

C. **Family income of the respondent**

31. What is the main source of income to maintain your family expenditure? Current business
22. What is the average monthly income from your main income source? Tk. 21,600/-
23. What is the average monthly income from your secondary income source?

Annex III

FGD (All Narrative)

FGD-1

Adddress where FGD was conducted

Upazila: Naogaon Sadar, District: Naogaon

Identity of the participants

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
1.	Name: Alhaj Md. Taijul Islam Father: Azizar Rahman Address: Omardah, Shoilgachi	M	42	SSC	Business	01794700262
2.	Name: Md. Milon Shahana Father: Khoibar Ali Shahana Address: Omardah, Shoilgachi	M	50	5th	Agriculture	01745196526
3.	Name: Md. Faruk Hossain Father: Late Taser Ali Address: Mokrampur, Shoilgachi	M	40	7	Agriculture	01760272912
4.	Name: Sohag Ali Shahana Father: Hazer Ali Shahana Address: Omardah, Shoilgachi	M	35	5	Business	01766910463
5.	Name: Khaleque Sheikh Father: Late Khobir Sheikh Address: Singbacha, Shoilgachi	M	50	Can sign	Agriculture	01795467795
6.	Name: Rimon Father: Belal Mridha Address: Mokrampur, Shoilgachi	M	24	HSC	Farmer	01703552790
7.	Name: Most. Shilpi Husband: Khaleque Sheikh Address: Singbacha, Shoilgachi	F	32	5th	Housewife	01795467795
8.	Name: Most. Moyna Husband: Abdur Rashid Address: Omardah, Shoilgachi	F	35	1	Housewife	0171572928
9.	Name: Md. Raj Father: Md. Ratan Shahana Address: Mokrampur, Shoilgachi	M	18	SSC	Service	01746929106
10.	Name: Rozifa Yasmin Husband: Anisur Mridha Address: Omardah, Shoilgachi	F	35	HSC	Housewife	01300544219
11.	Name: Most. Joshna Begum Husband: Md. Azad Shahana Address: Omardah, Shoilgachi	F	45	Can sign	Housewife	01766910463
12.	Name: Md. Rabiul Islam Father: Md. Anisur	M	33	8th	Agriculture	01754676333

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
	Address: Singbacha, Shoilgachi					

Information realted to livestock

1. How many percentages of people keep dairy cattle in your areas? About 90 %
2. How many percentages of people keep crossbred dairy cattle in your areas? About 50 %
3. Among crossbreds, how many percentages of the following types?
    a) Friesian Cross- about 50%
    b) Sahiwal Cross- about 50%
    c) Jersey Cross- about %
    d) Other- about %
4. How many percentages of cattle are reared with the following system?
    a) Stall feeding- about 90%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 10%
5. How many cows are inseminated with the following breeding methods?
    a) Artificial Insemination (AI)- about 95%
    b) Natural Breeding- about 5%
    c) Both of those- about %
6. How many percentages of people keep fattening cattle in your areas? About 20%
7. How many percentages of the following type's beef cattle are reared?
    a) Native- about 50%
    b) Sahiwal Cross- about 20%
    c) Friesian Cross- about 30%
    d) Other- about %
8. How many percentages of fattening cattle are reared with the following system?
    a) Stall feeding- about 100%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about %
9. How many percentages of people keep goat in your areas? About 90%
10. How many percentages of the following goat breeds are reared?
    a) Native: 70
    b) Exotic/crossbred: 30
11. How many percentages of people keep sheep in your areas? About 5 %
12. How many percentages of the following sheep breeds are reared?
    a) Native: 95%
    b) Garole: 5%
13. What is the degree of quality and availability of the following necessary inputs and services related to livestock farming?
    13.1 Breed of dairy cows: Good-30%, Roughly-70%
    13.2 Breed of fattening cattle: Good-70%, Roughly-30%

13.3 Breed of goat: Good-100%
13.4 Breed of sheep: Roughly-70%, Poor-30%
13.5 Availability of bull semen (frozen): Available-100%
13.6 Quality of frozen bull semen: Roughly-70%, Poor-30%
13.7 Availability of buck: Available-100%
13.8 Quality of buck: Good-70%, Roughly-30%
13.9 Availability of ram: Available-100%
13.10 Quality of ram: Roughly
13.11 Availability of pasture/grazing land: Not available
13.12 Availability of animal feed: Available-100%
13.13 Quality of animal feed: Good
13.14 Availability of straw: Available-100%
13.15 Availability of green grass: Less available-100%
13.16 Availability of feed technology: Not available-100%
13.17 Availability of vaccine: Less available-100%
13.17 Quality of vaccine: Good-70, Roughly-30
13.18 Availability of anthelmantics: Available-100%
13.19 Quality of anthelmantics: Good-70%, Roughly-30%
13.20 Availability of veterinary medicine: Available-100%
13.21 Quality of veterinary medicine: Good-70%, Roughly-30%
13.22 Availability of veterinary treatment services: Available-100%
13.23 Quality of veterinary treatment services: Roughly-70%, Poor-30%
13.24 Availability of AI services: Available-100%
13.25 Quality of AI services: Roughly-70%, Poor-30%
13.26 Availability of livestock insurance: Not available
13.27 Availability of loan: Not available-100%
13.28 Availability of farm mechanization equipments: Not available-70%

14. What is the degree of quality and availability of the following animal products?

14.1 Availability of cow milk: Less available-100%
14.2 Quality of cow milk: Good-100%
14.3 Availability of milk products: Available-100%
14.4 Quality of milk products: Roughly-30%, Poor-70%
14.5 Availability of cattle meat (beef): Available-100%
14.6 Quality of beef meat: Roughly-100%
14.7 Availability of buffalo meat: Not available-100%
14.8 Quality of buffalo meat: Roughly-100%
14.9 Availability of goat meat (chevon): Available-70%, less available-30%
14.10 Quality of chevon: Good-70%, Roughly-30%
14.11 Availability of sheep meat (mutton): Not available-100%
14.12 Quality of mutton: Unknown

15. What types of problems are you facing related to the following issues in dairy, fattening and goat and sheep farming?

15.1 Breed of livestock: Not up to the mark of expectation

15.2 Animal Breeding: RB, Anestrous,

15.3 Animal feed: High cost of feeds, adulterated feeds

15.4 Animal diseases: Allergy, FMD, LSD, Fever, Swelling, Bloat.

15.5 Veterinary treatment: Treatment fees are very high, low quality treatment.

15.6 Milk marketing: Milk cannot be sold, very low price, milk market is not available.

15.7 Marketing of fatten cattle: Lack of buyers, over dominancy of animal broker/trader.

15.8 Marketing of goat-sheep: Fair price is not obtained.

16. What types of problems are there regarding farm management, disposal of farm waste and dead animals?

- Lack of space for keeping animals
- Lack of drainage facility
- Lack of space for disposing farm wastes

17. What types of problems are there regarding climate change and natural disaster?

- Flood
- Illness of animal (Fever, sneezing)
- Mosquito hazzard

FGD-2

Adddress where FGD was conducted

Upazila: Raninagar, District: Naogaon

Identity of the participants

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
1.	Name: Sri Kanak Kumer Father: Sri Kamo Sarker Address: W. Hindupara, Gona	M	20	SSC	Painter	01794567445
2.	Name: Sri Nimai Father: Late Nitai Address: W. Hindupara, Gona	M	39	JSC	Agriculture	01725281242
3.	Name: Sikha Parvin Husband: Abdus Salam Address: Betgari	F	45	SSC	Housewife	01751592704
4.	Name: Proddut Kumer Sarker Father: Srideb Nokul Sarker Address: Gosh gram, Gona	M	28	HSC	Pharmacy	01828146933
5.	Name: Nomita Rani Husband: Late Biltu Sarker Address: Gosh gram, Gona	F	35	5th	Housewife	01798649029
6.	Name: Sri Shaymol Mondal Father: Horipad Mondal Address: Gosh gram, Gona	M	33	5th	Agriculture	01976208923
7.	Name: Most Sultana Husband: Md. Zahedur Rahman	F	30	8th	Housewife	01317468628

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
	Address: Gosh gram, Gona					
8.	Name: Isha Rani Husband: Late Nirmal Chandra	F	50	Illiterate	Housewife	01727864289
	Address: Gosh gram, Gona					
9.	Name: Sri Krishna Sarker Father: Late Girza Sarker	M	40	5th	Motor cycle maker	01728394967
	Address: Gosh gram, Gona					

Information realted to livestock

1. How many percentages of people keep dairy cattle in your areas? About 30-40 %
2. How many percentages of people keep crossbred dairy cattle in your areas? About 50 %
3. Among crossbreds, how many percentages of the following types?
    a) Friesian Cross- about 55%
    b) Sahiwal Cross- about 40%
    c) Jersey Cross- about %
    d) Other- about 5%
4. How many percentages of cattle are reared with the following system?
    a) Stall feeding- about 80%
    b) Extensive/ Grazing- about 5%
    c) Semi-intensive- about 15%
5. How many cows are inseminated with the following breeding methods?
    a) Artificial Insemination (AI)- about 90-95%
    b) Natural Breeding- about 5-10%
    c) Both of those- about %
6. How many percentages of people keep fattening cattle in your areas? About 20-30%
7. How many percentages of the following type's beef cattle are reared?
    a) Native- about 20%
    b) Sahiwal Cross- about 40%
    c) Friesian Cross- about 40%
    d) Other- about %
8. How many percentages of fattening cattle are reared with the following system?
    a) Stall feeding- about 100%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about %
9. How many percentages of people keep goat in your areas? About 90%
10. How many percentages of the following goat breeds are reared?
    a) Native: 60
    b) Exotic/crossbred: 40
11. How many percentages of people keep sheep in your areas? About 1%
12. How many percentages of the following sheep breeds are reared?
    a) Native: 95%

b) Garole: 5%

13. What is the degree of quality and availability of the following necessary inputs and services related to livestock farming?

13.1 Breed of dairy cows: Good-30%, Roughly-70%
13.2 Breed of fattening cattle: Good-70%, Roughly-30%
13.3 Breed of goat: Roughly-100%
13.4 Breed of sheep: Roughly-100%
13.5 Availability of bull semen (frozen): Available-100%
13.6 Quality of frozen bull semen: Good-70%, Roughly-30%
13.7 Availability of buck: Available-70%, Less available-30%
13.8 Quality of buck: Roughly-100%
13.9 Availability of ram: Unknown
13.10 Quality of ram: Unknown
13.11 Availability of pasture/grazing land: Less available- 10%, Not available-90%
13.12 Availability of animal feed: Less available-100%
13.13 Quality of animal feed: Roughly-70%, Poor-30%
13.14 Availability of straw: Available-100%
13.15 Availability of green grass: Less available-70%, not available-30%
13.16 Availability of feed technology: Less available-10%, Not available-90%
13.17 Availability of vaccine: Available-100%
13.17 Quality of vaccine: Good-100%
13.18 Availability of anthelmantics: Available-100%
13.19 Quality of anthelmantics: Good-100%
13.20 Availability of veterinary medicine: Available-100%
13.21 Quality of veterinary medicine: Roughly-100%
13.22 Availability of veterinary treatment services: Available-100%
13.23 Quality of veterinary treatment services: Good-100%
13.24 Availability of AI services: Available-100%
13.25 Quality of AI services: Roughly-100%
13.26 Availability of livestock insurance: Not available-100%
13.27 Availability of loan: Available-100%
13.28 Availability of farm mechanization equipments: Not available-100%

14. What is the degree of quality and availability of the following animal products?

14.1 Availability of cow milk: Available-100%
14.2 Quality of cow milk: Good-100%
14.3 Availability of milk products: Less available-100%
14.4 Quality of milk products: Roughly-100%
14.5 Availability of cattle meat (beef): Available-100%
14.6 Quality of beef meat: Roughly-100%
14.7 Availability of buffalo meat: Less available-100%
14.8 Quality of buffalo meat: Roughly-100%
14.9 Availability of goat meat (chevon): Available-70%, Less available-30%

14.10 Quality of chevon: Roughly-100%

14.11 Availability of sheep meat (mutton): Not available-100%

14.12 Quality of mutton: Unknown

15. What types of problems are you facing related to the following issues in dairy, fattening and goat and sheep farming?

15.1 Breed of livestock: Unknown

15.2 Animal Breeding: RB, Anestrous

15.3 Animal feed: High cost and adulterated

15.4 Animal diseases: LSD, HS, FMD, Foot rot, PPR

15.5 Veterinary treatment: Not good, but high cost of treatment

15.6 Milk marketing: Milk price is very low, Lack of milkers

15.7 Marketing of fatten cattle: Low price

15.8 Marketing of goat-sheep: No fair price, over dominancy of brokers

16. What types of problems are there regarding farm management, disposal of farm waste and dead animals?

- Lack of knowledge
- Lack of caretakers
- Lack of adequate space
- Lack of financial support

17. What types of problems are there regarding climate change and natural disaster?

- Rising temperature in the cattle house
- Higher gas production in the cattle house resulting bloat
- Prevalence of new disease like LSD
- Weakness of the animals

FGD-3

Adddress where FGD was conducted

Upazila: Atrai, District: Naogaon

Identity of the participants

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
1.	Name: Md. Aminul Islam Father: Delowar Hossain Address: Boro Kalikapur	M	39	8th	Agriculture	01749845440
2.	Name: Md. Mostaque Pramanik Father: Late Sukhim Uddin Address: Boro Kalikapur	M	26	9th	Agriculture	01781239544
3.	Name: Md. Al-Amin Father: Aybor Ali Address: Boro Kalikapur	M	22	5th	Agriculture	01717449164
4.	Name: Most. Anju Ara Husband: Md. Moznu Address: Boro Kalikapur	F	32	5th	Agriculture	01303751768
5.	Name: Most. Taslima Banu	F	22	SSC	Housewife	01781606108

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
	Husband: Md. Morshed Ali Address: Boro Kalikapur					
6.	Name: Most. Moriam Husband: Md. Akbar Pamanin Address: Boro Kalikapur	F	35	5th	Housewife	01772871392
7.	Name: Most. Sheuly Husband: Md. Mokbul Pramanik Address: Kalikapur	F	38	5th	Housewife	01798090549
8.	Name: Most. Momtaz Husband: Md. Dholu Mondal Address: Kalikapur	F	43	5th	Housewife	01314845234
9.	Name: Morsheda Bibi Husband: Abdul Aziz Address: Kalikapur	F	45	-	Housewife	01772876377
10.	Name: Most. Nazma Akter Husband: Md. Taleb Pramanik Address: Kalikapur	F	35	-	Housewife	01781606108
11.	Name: Most. Mitu Akter Husband: Md. Sumon Miah Address: Boro Kalikapur	F	20	8th	Housewife	01748882178
12.	Name: Most. Romana Akter Husband: Md. Ziaur Rahman Address: Kalikapur	F	31	10th	Housewife	01774999358

Information realted to livestock

1. How many percentages of people keep dairy cattle in your areas? About 75%
2. How many percentages of people keep crossbred dairy cattle in your areas? About 60 %
3. Among crossbreds, how many percentages of the following types?
    a) Friesian Cross- about 25%
    b) Sahiwal Cross- about 75%
    c) Jersey Cross- about %
    d) Other- about 5%
4. How many percentages of cattle are reared with the following system?
    a) Stall feeding- about 50%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 50%
5. How many cows are inseminated with the following breeding methods?
    a) Artificial Insemination (AI)- about 50%
    b) Natural Breeding- about 50%
    c) Both of those- about %
6. How many percentages of people keep fattening cattle in your areas? About 40%
7. How many percentages of the following type's beef cattle are reared?
    a) Native- about 30%
    b) Sahiwal Cross- about 65%

c) Friesian Cross- about 5%

d) Other- about %

8. How many percentages of fattening cattle are reared with the following system?

a) Stall feeding- about 90%

b) Extensive/ Grazing- about %

c) Semi-intensive- about 10%

9. How many percentages of people keep goat in your areas? About 30%

10. How many percentages of the following goat breeds are reared?

a) Native: 80

b) Exotic/crossbred: 20

11. How many percentages of people keep sheep in your areas? About 10%

12. How many percentages of the following sheep breeds are reared?

a) Native: 100%

b) Garole: %

13. What is the degree of quality and availability of the following necessary inputs and services related to livestock farming?

13.1 Breed of dairy cows: Good-30%, Roughly-70%

13.2 Breed of fattening cattle: Good-70%, Roughly-30%

13.3 Breed of goat: Good-30%, Roughly-70%

13.4 Breed of sheep: Good-30%, Roughly-70%

13.5 Availability of bull semen (frozen): Available-100%

13.6 Quality of frozen bull semen: Good-100%

13.7 Availability of buck: Available-30%, Less available-70%

13.8 Quality of buck: Good-30%, Roughly-70%

13.9 Availability of ram: Available-70, Not available-30%

13.10 Quality of ram: Roughly-100%

13.11 Availability of pasture/grazing land: Available- 100%

13.12 Availability of animal feed: Less available-70%, Not available-30%

13.13 Quality of animal feed: Good-30%, Roughly-70%

13.14 Availability of straw: Available-100%

13.15 Availability of green grass: Less available-30%, not available-70%

13.16 Availability of feed technology: Less available-30%, Not available-70%

13.17 Availability of vaccine: Available-70%, Less available-30%

13.17 Quality of vaccine: Good-100%

13.18 Availability of anthelmantics: Available-70%, Less available-30%

13.19 Quality of anthelmantics: Good-70%, Roughly-30%

13.20 Availability of veterinary medicine: Available-100%

13.21 Quality of veterinary medicine: Good-70%, Roughly-30%

13.22 Availability of veterinary treatment services: Available-70%, Less available-30%

13.23 Quality of veterinary treatment services: Good-70%, Roughly-30%

13.24 Availability of AI services: Available-70%, Less available-30%

13.25 Quality of AI services: Good-70%, Roughly-30%

13.26 Availability of livestock insurance: Not available-100%

13.27 Availability of loan: Less available-70%, Not available-30

13.28 Availability of farm mechanization equipments: Not available-100%

14. What is the degree of quality and availability of the following animal products?

14.1 Availability of cow milk: Available-30%, Less available-70%

14.2 Quality of cow milk: Good-70%, Roughly-30%

14.3 Availability of milk products: Available-30%, Less available-70%

14.4 Quality of milk products: Good-70%, Roughly-30%

14.5 Availability of cattle meat (beef): Available-100%

14.6 Quality of beef meat: Good-100%

14.7 Availability of buffalo meat: Less available-70%, Not available-30%

14.8 Quality of buffalo meat: Roughly-70%, Poor-30%

14.9 Availability of goat meat (chevon): Available-70%, Less available-30%

14.10 Quality of chevon: Good-70%, Roughly-30%

14.11 Availability of sheep meat (mutton): Less available-70%, Not available-30%

14.12 Quality of mutton: Roughly-100%

15. What types of problems are you facing related to the following issues in dairy, fattening and goat and sheep farming?

15.1 Breed of livestock: Mixed, no purebreeding is followed

15.2 Animal Breeding:

15.3 Animal feed: High cost and adulterated

15.4 Animal diseases: Not properly cured despite administering medicines frequently

15.5 Veterinary treatment: High cost of medicine, lack of expert veterinarian, veterinarian not available in the hospital,

15.6 Milk marketing: No milk preservation facility resulting very low price given by goala

15.7 Marketing of fatten cattle: No local market, have to sell to the traders with low price

15.8 Marketing of goat-sheep: Same as fatten fatten cattle

16. What types of problems are there regarding farm management, disposal of farm waste and dead animals?

- Lack of knowledge and training
- Following traditional system

17. What types of problems are there regarding climate change and natural disaster?

- Scarcity of feeds
- Prevailing health problems and reproductive disorder

FGD-4

Adddress where FGD was conducted

Upazila: Dupchachia, District: Bogura

Identity of the participants

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
1.	Name: Most. Sabina Akter Husband: Sifat Hossain Address: Herinch, Zianagar	F	35	8th	Service	01748019233
2.	Name: Most. Momena Husband: Abdur Rashid Address: Zianagar	F	40	Can sign	Housewife	01748019233
3.	Name: Most. Sabina Husband: Md. Bokkor Address: Zianagar	F	50	JSC	Housewife	01747134026
4.	Name: Most. Saleha Husband: Md. Masud Address: Zianagar	F	45	9th	Housewife	01760794048
5.	Name: Most. Rina Akter Husband: Anisur Address: Zianagar	F	32	SSC	Housewife	01731733950
6.	Name: Most. Rozony Akter Husband: Khairul Address: Zianagar	F	28	9th	Tailor	01611243858
7.	Name: Md. Zakirul Islam Father: Abdul Karim Address: Masinda	M	22	BA	Student	01781007003
8.	Name: Most. Rokeya Husband: Yakub Address: Masinda	F	50	Can sign	Housewife	01783240496
9.	Name: Most. Jobeda Bibi Husband: Abdur Rahim Address: Masinda	F	55	Can sign	Housewife	01740906592
10.	Name: Sirazum Munira Husband: Selim Hossain Address: Masinda	F	28	Fazil/BA	Housewife	01761579235
11.	Name: Md. Alim Father: Md. Alal Address: Chawk Sokangari	M	39	Can sign	Agriculture	01740918447
12.	Name: Md. Jewel Hossain Father: Md. Mohsin Ali Address: South Alohali	M	40	SSC	Agriculture	01737838060

Information realted to livestock

1. How many percentages of people keep dairy cattle in your areas? About 80 %
2. How many percentages of people keep crossbred dairy cattle in your areas? About 70 %
3. Among crossbreds, how many percentages of the following types?
    a) Friesian Cross- about 90%
    b) Sahiwal Cross- about 10%
    c) Jersey Cross- about %
    d) Other- about %

4. How many percentages of cattle are reared with the following system?
    a) Stall feeding- about 90%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 10%
5. How many cows are inseminated with the following breeding methods?
    a) Artificial Insemination (AI)- about 95%
    b) Natural Breeding- about 5%
    c) Both of those- about %
6. How many percentages of people keep fattening cattle in your areas? About 5%
7. How many percentages of the following type's beef cattle are reared?
    a) Native- about 50%
    b) Sahiwal Cross- about 20%
    c) Friesian Cross- about 30%
    d) Other- about %
8. How many percentages of fattening cattle are reared with the following system?
    a) Stall feeding- about 95%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 5%
9. How many percentages of people keep goat in your areas? About 95%
10. How many percentages of the following goat breeds are reared?
    a) Native: 60
    b) Exotic/crossbred: 40
11. How many percentages of people keep sheep in your areas? About 10%
12. How many percentages of the following sheep breeds are reared?
    a) Native: 90%
    b) Garole: 10%
13. What is the degree of quality and availability of the following necessary inputs and services related to livestock farming?
    13.1 Breed of dairy cows: Good-40%, Roughly-60%
    13.2 Breed of fattening cattle: Roughly-100%
    13.3 Breed of goat: Roughly-100%
    13.4 Breed of sheep: Roughly-100%
    13.5 Availability of bull semen (frozen): Available-100%
    13.6 Quality of frozen bull semen: Good-100%
    13.7 Availability of buck: Available-100%
    13.8 Quality of buck: Good-100%
    13.9 Availability of ram: Available-100%
    13.10 Quality of ram: Unknown
    13.11 Availability of pasture/grazing land: Not available
    13.12 Availability of animal feed: Less available-100%
    13.13 Quality of animal feed: Good-60%, Roughly-40%
    13.14 Availability of straw: Available-100%

13.15 Availability of green grass: Less available-30%, not available-70%
13.16 Availability of feed technology: Not available-100%
13.17 Availability of vaccine: Available-30%, less available-70%
13.17 Quality of vaccine: Roughly-100
13.18 Availability of anthelmantics: Available-30%, less available-70%
13.19 Quality of anthelmantics: Good-10%, Roughly-90%
13.20 Availability of veterinary medicine: Available-100%
13.21 Quality of veterinary medicine: Roughly-100%
13.22 Availability of veterinary treatment services: Available-100%
13.23 Quality of veterinary treatment services: Roughly-100%
13.24 Availability of AI services: Available-100%
13.25 Quality of AI services: Good-70%, Roughly-30%
13.26 Availability of livestock insurance: Not available
13.27 Availability of loan: Less available-30%, Not available-70%
13.28 Availability of farm mechanization equipments: Not available-100%

14. What is the degree of quality and availability of the following animal products?

14.1 Availability of cow milk: Available-100%
14.2 Quality of cow milk: Good-100%
14.3 Availability of milk products: Available-100%
14.4 Quality of milk products: Good-100%
14.5 Availability of cattle meat (beef): Available-100%
14.6 Quality of beef meat: Roughly-100%
14.7 Availability of buffalo meat: Less available-100%
14.8 Quality of buffalo meat: Roughly-100%
14.9 Availability of goat meat (chevon): Less available-30%
14.10 Quality of chevon: Good-100%
14.11 Availability of sheep meat (mutton): Not available-100%
14.12 Quality of mutton: Unknown

15. What types of problems are you facing related to the following issues in dairy, fattening and goat and sheep farming?

15.1 Breed of livestock: Low production
15.2 Animal Breeding: RB, Anestrous
15.3 Animal feed: High cost of feeds
15.4 Animal diseases: LSD, PPR
15.5 Veterinary treatment: High cost of treatment
15.6 Milk marketing: Milk price is very low
15.7 Marketing of fatten cattle:
15.8 Marketing of goat-sheep:

16. What types of problems are there regarding farm management, disposal of farm waste and dead animals?

- Lack of housing facility
- Lack of cleanliness facility

- Lack of drainage facility
- Lack of facilities for disposing farm wastes

17. What types of problems are there regarding climate change and natural disaster? Unknown

FGD-5

Adddress where FGD was conducted

Upazila: Adomdighi, District: Bogura

Identity of the participants

Sl No	Name and Address	Sex	Age	Education	Occupation	Mobile No
1.	Name: Most. Aklima Bibi Husband: Md. Robiul Islam Address: Zinuyeer	F	32	SSC	Housewife	01718701643
2.	Name: Shahina Sultana Husband: Md. Azizul Haque Address: Zinuyeer	F	41	SSC	Housewife	01710702871
3.	Name: Most. Marzana Khatun Husband: Md. Ruhul Amin Address: Nasratpur	F	24	SSC	Housewife	01722688897
4.	Name: Most. Shamima Akter Husband: Md. Tajul Islam Address: Laxmipur	F	28	BA	Housewife	01706189463
5.	Name: Momina Khatun Husband: Mozaffar Address: Zinuyeer	F	40	8th	Housewife	01724081303
6.	Name: Sumon Ahammad Father: Late Monjur Rahman Address: Shuddhin	M	30	HSC	Farmer	01723551944
7.	Name: Reshma Akter Husband: Md. Liton Address: Zinuyeer	F	30	8th	Farmer	01751577813
8.	Name: Most.Rebeka Sultana Husband: Md. Mizanur Rahman Address: Shuddin	F	28	8th	Housewife	01739941528
9.	Name: Md. Barik Hossain Father: Md. Jamal Uddin Address: Nasratpur	M	38	HSC	Farmer	01757233938
10.	Name: Most. Sumaya Sultana Husband: Md. Biplob Hossain Address: Shuddhin	F	19	8th	Housewife	01775048047
11.	Name: Md. Ariful Islam Father: Abdul Gafur Address: Shuddhin	M	34	8th	Agriculture	01725698691
12.	Name: Most. Shyamoly Khatun Husband: Md. Azadul Islam Address: Nasratpur	F	36	SSC	Housewife	01738428118

Information realted to livestock

1. How many percentages of people keep dairy cattle in your areas? About 70 %
2. How many percentages of people keep crossbred dairy cattle in your areas? About 50 %
3. Among crossbreds, how many percentages of the following types?
    a) Friesian Cross- about 50%
    b) Sahiwal Cross- about 20%
    c) Jersey Cross- about 5%
    d) Other- about 35%
4. How many percentages of cattle are reared with the following system?
    a) Stall feeding- about 85%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 15%
5. How many cows are inseminated with the following breeding methods?
    a) Artificial Insemination (AI)- about 80%
    b) Natural Breeding- about 20%
    c) Both of those- about %
6. How many percentages of people keep fattening cattle in your areas? About 45%
7. How many percentages of the following type's beef cattle are reared?
    a) Native- about 60%
    b) Sahiwal Cross- about 10%
    c) Friesian Cross- about 30%
    d) Other- about %
8. How many percentages of fattening cattle are reared with the following system?
    a) Stall feeding- about 85%
    b) Extensive/ Grazing- about %
    c) Semi-intensive- about 15%
9. How many percentages of people keep goat in your areas? About 50%
10. How many percentages of the following goat breeds are reared?
    a) Native: 60
    b) Exotic/crossbred: 40
11. How many percentages of people keep sheep in your areas? About 35%
12. How many percentages of the following sheep breeds are reared?
    a) Native: 100%
    b) Garole: %
13. What is the degree of quality and availability of the following necessary inputs and services related to livestock farming?
    13.1 Breed of dairy cows: Good-30%, Roughly-70%
    13.2 Breed of fattening cattle: Good-30%, Roughly-70%
    13.3 Breed of goat: Roughly-100%
    13.4 Breed of sheep: Roughly-70%, Poor-30%
    13.5 Availability of bull semen (frozen): Less available-100%

13.6 Quality of frozen bull semen: Good-30%, Roughly-70%
13.7 Availability of buck: Available-70%, Not available-30%
13.8 Quality of buck: Good-70%, Roughly-70%
13.9 Availability of ram: Available-100%
13.10 Quality of ram: Good-30%, Roughly-70%
13.11 Availability of pasture/grazing land: Not available-100%
13.12 Availability of animal feed: Available-30%, Less available-70%
13.13 Quality of animal feed: Good-30%, Roughly-70%
13.14 Availability of straw: Available-100%
13.15 Availability of green grass: Less available-30%, not available-70%
13.16 Availability of feed technology: Less available-30%, Not available-70%
13.17 Availability of vaccine: Available-70%, Less available-30%
13.17 Quality of vaccine: Roughly-100%
13.18 Availability of anthelmantics: Available-100%
13.19 Quality of anthelmantics: Good-70%, Roughly-30%
13.20 Availability of veterinary medicine: Available-100%
13.21 Quality of veterinary medicine: Good-100%
13.22 Availability of veterinary treatment services: Available-70%, Less available-30%
13.23 Quality of veterinary treatment services: Roughly-100%
13.24 Availability of AI services: Available-100%
13.25 Quality of AI services: Good-30%, Roughly-70%
13.26 Availability of livestock insurance: Not available-100%
13.27 Availability of loan: Not available-100%
13.28 Availability of farm mechanization equipments: Not available-100%

14. What is the degree of quality and availability of the following animal products?

14.1 Availability of cow milk: Available-30%, Less available-70%
14.2 Quality of cow milk: Good-100%
14.3 Availability of milk products: Available-30%, Less available-70
14.4 Quality of milk products: Roughly-100%
14.5 Availability of cattle meat (beef): Available-100%
14.6 Quality of beef meat: Good-100%
14.7 Availability of buffalo meat: Less available-70%, Not available-30%
14.8 Quality of buffalo meat: Good-70%, Roughly-30%
14.9 Availability of goat meat (chevon): Available-30%, Less available-70%
14.10 Quality of chevon: Good-100%
14.11 Availability of sheep meat (mutton): Available-30%, Less available-30%, Not available-40%
14.12 Quality of mutton: Good-30%, Roughly-70%

15. What types of problems are you facing related to the following issues in dairy, fattening and goat and sheep farming?

15.1 Breed of livestock: Mixed, no purebreeding is followed

15.2 Animal Breeding: Conception is not retained

15.3 Animal feed: High cost and adulterated

15.4 Animal diseases: Not cured despite administering medicines

15.5 Veterinary treatment: Lack of quality veterinarian

15.6 Milk marketing: Milk price is very low

15.7 Marketing of fatten cattle: Low price

15.8 Marketing of goat-sheep: Low price

16. What types of problems are there regarding farm management, disposal of farm waste and dead animals?

- Lack of adequate lighting and ventilation facilities in the animal house
- Farm wastes are kept inside the animal house
- Lack of knowledge on disposal of dead animals

17. What types of problems are there regarding climate change and natural disaster?

- Scarcity of feeds
- Prevailing of different diseases

Annex IV
Questionnaire for HHS

Dabi Moulik Unnayan Songstha, Naogaon

"Safe Meat & Dairy Product Market Development Sub-project"

রেইজ লাইন জরিপ

১। খামারীর ঠিকানা

খামারীর নাম----------; পিতা/স্বামী:.....

ধর্ম....., **গ্রাম: ..... ইউনিয়ন: ..... ; মোবাইল:---------**

উপজেলা: নওগাঁ সদর / রানিনগর / আত্রাই / ডুপচাচিয়া / আদমদীঘি, জেলা: নওগাঁ / বগুড়া

ক	উৎপাদনকারী/উদ্যোক্তার সাধারণ তথ্যাবলী	
ক্র. নং	নির্দেশকসমূহ	উত্তর লিখুন
১।	**খামারীর পেশা-**	**কৃষি-১; পশু পালন-২; মৎস্যচাষ-৩; চাকুরী-৪; ব্যবসা-৫; শ্রমজীবি-৬; বৈদেশিক আয়-৭ অন্যান্য-৮ ..**
২।	**খামারীর শিক্ষাগত যোগ্যতা**	**অক্ষর-জ্ঞানহীন-১; স্বাক্ষরজ্ঞান সম্পন্ন-২; প্রাইমারী-৩; অষ্টম শ্রেণী-৪; এসএসসি-৫; এইচএসসি-৬; স্নাতক-৭; স্নাতকোত্তর-৮**
৩।	**খামারীর বয়স**	**১৮-৩৫ বছর-১; ৩৬-৫০ বছর-২; ৫১-৬০ বছর-৩; >৬০ বছর-৪**
৪।	**পরিবারের মোট সদস্য সংখ্যা (জন)**	**পুরুষ----------; মহিলা----------**
৫।	**পরিবারে মোট কতজন আয় করে**	**পুরুষ----------; মহিলা----------**
৬।	**পরিবারের প্রধান?**	**পুরুষ-১; মহিলা-২**
৭।	**মোট জমির পরিমান**	**বসতবাড়ী: শতাংশ, আবাদী জমি: শতাংশ, মোট: শতাংশ**
৮।	**প্রধান আয়ের উৎস**	**কৃষি-১, গরু পালন-২, ব্যবসা-৩, শ্রম বিক্রি-৪, চাকুরি-৫, বিদেশী-৬, অন্যান্য-৭**
৯।	**প্রধান আয়ের উৎস থেকে প্রাপ্ত আয়**	**মাসিক---------- টাকা**
১০।	**অন্যান্য উৎস থেকে আয়**	**মাসিক---------- টাকা**
১১।	**খামারির ধরন**	**অতি দরিদ্র-১ {০-৪ শতক জমি}, দরিদ্র-২ {৫-১৪৯ শতক জমি}, ক্ষুদ্র উদ্যোক্তা-৩ {১৫০ বা তদোর্ধ্ব}**
১২।	**দাবী মৌলিক উন্নয়ন সংস্থার**	**সদস্য বা সুবিধাভোগী/ সুবিধাভোগী নয়**

খ.	খামারির ধরন, পশুর জাত, পশুপালন পদ্ধতি	উত্তর লিখুন
১।	**আপনি কি কি পশু পালেন?**	**গাভি-১, মোটাতাজা ষাঁড়-২, মহিষ-৩, ছাগল-৪, ভেড়া-৫, মুরগি-৬, হাঁস-৭, অন্যান্য-৮**
২।	**গাভীর জাত কি?**	**দেশি-১, সংকর-২**
৩।	**মোটাতাজা ষাঁড়ের জাত কি?**	**দেশি-১, সংকর-২**
৪।	**ছাগলের জাত কি?**	**দেশি-১, যমুনাপাড়ী-২, তোতাপুড়ী-৩, বিটাল-৪, অন্যান্য-৫**
৫।	**ভেড়ার জাত কি?**	**দেশি-১, গাড়োল-২, অন্যান্য-৩**
৬।	**আপনি কি পদ্ধতিতে গাভী পালন করেন?**	**মাঠে/ক্ষেতে ছেড়ে-১, গৃহে আবদ্ধ রেখে-২, উভয়ই-৩**
৭।	**আপনি কি পদ্ধতিতে মোটাতাজা ষাঁড় পালন করেন?**	**মাঠে/ক্ষেতে ছেড়ে-১, গৃহে আবদ্ধ রেখে-২, উভয়ই-৩**
৮।	**আপনি কি পদ্ধতিতে ছাগল পালন করেন?**	**মাঠে/ক্ষেতে ছেড়ে-১, গৃহে আবদ্ধ রেখে-২, উভয়ই-৩**
৯।	**আপনি কি পদ্ধতিতে ভেড়া পালন করেন?**	**মাঠে/ক্ষেতে ছেড়ে-১, গৃহে আবদ্ধ রেখে-২, উভয়ই-৩**

গ. বিভিন্ন বয়সের পশুর সংখ্যা

গ.১ গরু

দুধের গাভী	গর্ভবতি গাভী	শুষ্ক গাভী (দুধ দেয়া বন্ধ)	বকনা (১২ মাসের উপর)	বকনা বাছুর (১২ মাসের নীচে)	ষাঁড় বাছুর	ষাঁড়/মোটাতাজা ষাঁড়

গ.২ ছাগল

দুগ্ধবতি ছাগী	গর্ভবতি ছাগী	শুষ্ক ছাগী (দুধ বন্ধ)	বাড়ন্ত ছাগী (৩ মাসের উপর)	বাচ্চা ছাগী (৩ মাসের কম)	খাসী	পাঁঠা

গ.৩ ভেড়া

দুগ্ধবতি ভেড়ী	গর্ভবতি ভেড়ী	শুষ্ক ভেড়ী (দুধ বন্ধ)	বাড়ন্ত ভেড়ী (৩ মাসের উপর)	বাচ্চা ভেড়ী (৩ মাসের কম)	খাসী ভেড়া	পাঁঠা ভেড়া/মেড়া

ঘ.	**পশুখাদ্য ও খাদ্যাভাস**	উত্তর
১.	গাভীকে **কি ধরনের খাদ্য সরবরাহ করেন?**	**মাঠে চড়ে খায়-১**, **শুকনা খড়-২**, **দানাদার** খাদ্য (**ভূষি**, কুড়া, **খৈল**)-**৩**, **কেটে আনা চাষ করা ঘাস-৪**, **কেটে আনা দেশি ঘাস-৫**
২.	মোটাতাজা ষাঁড়কে **কি ধরনের খাদ্য সরবরাহ করেন?**	**মাঠে চড়ে খায়-১**, **শুকনা খড়-২**, **দানাদার** খাদ্য (**ভূষি**, কুড়া, **খৈল**)-**৩**, **কেটে আনা চাষ করা ঘাস-৪**, **কেটে আনা দেশি ঘাস-৫**
৩.	**ছাগলকে কি ধরনের খাদ্য সরবরাহ করেন?**	**মাঠে চড়ে খায়-১**, **শুকনা খড়-২**, **দানাদার** খাদ্য (**ভূষি**, কুড়া, **খৈল**)-**৩**, **কেটে আনা চাষ করা ঘাস-৪**, **কেটে আনা দেশি ঘাস-৫**
৪.	ভেড়াকে **কি ধরনের খাদ্য সরবরাহ করেন?**	**মাঠে চড়ে খায়-১**, **শুকনা খড়-২**, **দানাদার** খাদ্য (**ভূষি**, কুড়া, **খৈল**)-**৩**, **কেটে আনা চাষ করা ঘাস-৪**, **কেটে আনা দেশি ঘাস-৫**
৫.	উন্নতজাতের কাঁচাঘাসের চাষ করেন?	হ্যাঁ-**১** ; না-২, করলে্ .শতাংশ জমিতে
৬.	কি কি ঘাস চাষ করেন?	নেপিয়ার-**১**; জার্মান-২; জাম্বু-৩; ভুট্টা-৪; দেশী-৫; অন্যান্য-৬.....
৭.	আপনি চাষ **করা** কাঁচা ঘাস বিক্রয় করেন?	হ্যাঁ-**১** ; না-২
৮.	চাষ **করা** কাঁচা ঘাস ক্রয় করেন?	হ্যাঁ-**১** ; না-২
৯.	বছরের কোন সময়ে ঘাসের চাহিদা বেশী?	বর্ষাকালে-**১**; শীতকালে-২; গ্রীষ্মকালে-৩
১০.	খড় ক্রয় করেন?	হ্যাঁ-**১** ; না-২
১১.	খড় বিক্রয় করেন?	হ্যাঁ-**১** ; না-২
১২.	গাভীকে দানাদার খাদ্য প্রদান করলে কি কি দানাদার খাদ্য প্রদান করেন?	গমের ভূষি-১, চালের কুড়া-২, ভূট্টার গুড়া-**৩**, খৈল-৪, চালের খুদ-৫, রেডি ফিড-৬, অন্যান্য-৭.....
১৩.	প্রত্যহ মোট কয়টি গাভীকে এবং কতটুকু দানাদার খাদ্য প্রদান করেন?	..... টি, ... কেজি
১৪.	মোটাতাজা ষাঁড়কে দানাদার খাদ্য প্রদান করলে কি কি দানাদার খাদ্য প্রদান করেন?	গমের ভূষি-১, চালের কুড়া-২, ভূট্টার গুড়া-**৩**, খৈল-৪, চালের খুদ-৫, রেডি ফিড-৬, অন্যান্য-৭.....
১৫.	প্রত্যহ মোট কয়টি মোটাতাজা ষাঁড়কে এবং কতটুকু দানাদার খাদ্য প্রদান করেন?	..... টি, ... কেজি
১৬.	ছাগলকে দানাদার খাদ্য প্রদান করলে কি কি দানাদার খাদ্য প্রদান করেন?	গমের ভূষি-১, চালের কুড়া-২, ভূট্টার গুড়া-**৩**, খৈল-৪, চালের খুদ-৫, রেডি ফিড-৬, অন্যান্য-৭.....
১৭.	প্রত্যহ মোট কয়টি ছাগলকে এবং কতটুকু দানাদার খাদ্য প্রদান করেন?	..... টি, ... কেজি
১৮.	ভেড়াকে দানাদার খাদ্য প্রদান করলে কি কি দানাদার খাদ্য প্রদান করেন?	গমের ভূষি-১, চালের কুড়া-২, ভূট্টার গুড়া-**৩**, খৈল-৪, চালের খুদ-৫, রেডি ফিড-৬, অন্যান্য-৭.....
১৯.	প্রত্যহ মোট কয়টি ভেড়াকে এবং কতটুকু দানাদার খাদ্য প্রদান করেন?	..... টি, ... কেজি

ক্র. নং	নির্দেশকসমূহ	দেশী	ক্রস
ঙ.	গাভীর দুধ উৎপাদন দক্ষতা		

ক্র. নং	নির্দেশকসমূহ	দেশী	ক্রস
১।	**আপনার গাভীর দৈনিক সর্বোচ্চ দুধ উৎপাদন কত?**	**..... কেজি**	**..... কেজি**
২।	**আপনার গাভী কতমাস পর্যন্ত দুধ দেয়?**	**..... মাস**	**..... মাস**
চ.	গাভীর প্রজনন দক্ষতা	দেশী	ক্রস
১।	**বকনা কত মাস বয়সে প্রথম গরম হয়?**	**..... মাস**	**..... মাস**
২।	**সাধারনত কয়বার পালে গর্ভধারন করে?**	**..... বার**	**..... বার**
৩।	**বাচ্চা দেয়ার কতদিন পরে পূণরায় গরম হয়?**	**..... দিন**	**..... দিন**
৪।	**কয়মাস পর পর বাচ্চা দেয়?**	**.....মাস**	**.....মাস**

ছ। ছাগলের উৎপাদন সক্ষমতা					
ক্র. নং	নির্দেশকসমূহ	দেশি	যমুনাপাড়ী		
১।	ছাগী **কত মাস বয়সে প্রথম গরম হয়?**				
২।	ছাগী **বাচ্চা দেয়ার কতদিন পরে পূণরায় গরম হয়?**				
৩।	ছাগী **কয়মাস পর পর বাচ্চা দেয়?**				
৪।	প্রতিবার কয়টি করে বাচ্চা দেয়?				
৫।	ছাগীর দুধ দোহালে আনুমানিক দৈনিক কি পরিমান দুধ হবে?	.....কেজি	.....কেজি		

জ। ভেড়ার উৎপাদন সক্ষমতা				
ক্র. নং	নির্দেশকসমূহ	দেশি	গাড়োল	অন্যান্য
১।	**ভেড়ী কত মাস বয়সে প্রথম গরম হয়?**	মাস	মাস	মাস
২।	**ভেড়ী বাচ্চা দেয়ার কতদিন পরে পূণরায় গরম হয়?**	দিন	দিন	দিন
৩।	**ভেড়ী কয়মাস পর পর বাচ্চা দেয়?**	মাস	মাস	মাস
৪।	**ভেড়ী প্রতিবার কয়টি করে বাচ্চা দেয়?**	টি	টি	টি
৫।	**ভেড়ীর দুধ দোহালে আনুমানিক দৈনিক কি পরিমান দুধ হবে?**			

ঝ। মোটাতাজা ষাঁড়ের উৎপাদন দক্ষতা			
ক্র. নং	নির্দেশকসমূহ	দেশি	সংকর
১।	গরু মোটাতাজা করলে কয়মাস বয়সের ষাঁড় সংগ্রহ করেন?	মাস	মাস
২।	কয়মাস পালার পরে তা বিক্রয় করেন?	মাস	মাস
৩।	ক্রয় থেকে বিক্রয় পর্যন্ত কতটুকু দৈহিক ওজন বৃদ্ধি পায়	কেজি/মন	কেজি/মন

ঞ।	গত এক বছরে বিভিন্ন ধরনের প্রাণী বিক্রয়ের পরিসংখ্যান			
ক্র. নং	**নির্দেশকসমূহ**	**সংখ্যা**	**প্রতিটির গড় বিক্রয় মূল্য**	**মোট মূল্য**
১।	**বড় দুধের গাভী**			
২।	**বাছুর**			
৩।	**মোটাতাজা ষাঁড়**			
৪।	**বড় ছাগল**			
৫।	**বাচ্চা ছাগল**			
৬।	**বড় ভেড়া**			
৭।	**ছোট ভেড়া**			

ট।	**বিভিন্ন প্রাণী উৎপাদনে বাৎসরিক খরচ**				
ক্র. নং	নির্দেশকসমূহ	**দুধের গাভী**	**মোটাতাজা ষাঁড়**	**ছাগল**	**ভেড়া**
১।	খাদ্য খরচ				
২।	চিকিৎসা ও ঔষধ খরচ				
৩।	প্রজনন ব্যয়				
৪।	বিদ্যুৎ বিল ও পানির খরচ				
৫।	শ্রমিক খরচ (বেতনভূক্ত)				
৬।	বিবিধ খরচ				
৭।	**সর্ব মোট খরচ**				

ঠ।	**প্রাণী উৎপাদনে অত্যাবশ্যকীয় উপাদানের প্রাপ্যতা**	
ক্র. নং	নির্দেশকসমূহ	উত্তর লিখুন
১।	**আপনার এলাকাতে প্রাণি খাদ্যোপাদানের প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২ থাকলে তা কি ভাল মানের? হ্যাঁ-১, না-২**
২।	**উন্নত জাতের ঘাসের প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২**
৩।	**ভ্যাকসিন, কৃমিনাশক এবং মেডিসিনের প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২ থাকলে তা কি ভাল মানের? হ্যাঁ-১, না-২**
৪।	**ষাঁড়ের বীজের প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২ থাকলে তা কি ভাল মানের? হ্যাঁ-১, না-২**
৫।	**কোন কোন ষাঁড়ের বীজের প্রাপ্যতা আছে?**	**ফ্রিজিয়ান-১, শাহিওয়াল-২, সিন্ধি-৩, জার্সি-৪, দেশি-৫, অন্যান্য৫**
৬।	**কোন ষাঁড়ের বীজের চাহিদা সবচেয়ে বেশি?**	**ফ্রিজিয়ান-১, শাহিওয়াল-২, সিন্ধি-৩, জার্সি-৪, দেশি-৫, অন্যান্য৫**
৭।	**আপনার এলাকাতে ছাগলের পাঁঠার প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২ থাকলে তা কি ভাল মানের? হ্যাঁ-১, না-২**
৮।	**কোন কোন পাঁঠার প্রাপ্যতা আছে?**	**ব্ল্যাকবেঙ্গল-১, যমুনাপাড়ী-২, অন্যান্য-৩.....**
৯।	**কোন পাঁঠার চাহিদা সবচেয়ে বেশি?**	**ব্ল্যাকবেঙ্গল-১, যমুনাপাড়ী-২, অন্যান্য-৩.....**
১০।	**আপনার এলাকাতে ভেড়া পাঁঠার প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২ থাকলে তা কি ভাল মানের? হ্যাঁ-১, না-২**
১১।	**কোন কোন ভেড়া পাঁঠার প্রাপ্যতা আছে?**	**দেশি-১, গাড়োল-২, উভয়ই-৩**
১২।	**কোন ভেড়া পাঁঠার চাহিদা সবচেয়ে বেশি?**	**দেশি-১, গাড়োল-২**
ড।	প্রাণী সেবার সহজপ্রাপ্যতা ও মান	
১।	**আপনার এলাকাতে প্রাণী চিকিৎসা সেবার প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২**
২।	**আপনি চিকিৎসা সেবা কার নিকট থেকে গ্রহন করেন?**	**পল্লী চিকিৎসক-১, সরকারী অফিসের ভেটেরিনারী চিকিৎসক-২**
৩।	**তাদের চিকিৎসার মান কেমন?**	**ভাল-১, মোটামুটি-২, ভাল নয়-৩**
৪।	**আপনার এলাকাতে কৃত্রিম প্রজনন সেবার প্রাপ্যতা আছে?**	**হ্যাঁ-১, না-২**
৫।	**আপনি কৃত্রিম প্রজনন সেবা কার নিকট থেকে গ্রহন করেন?**	**সরকারী অফিসের কর্মী-১, বেসরকারী কর্মী (ব্রাক/লালতীর/এডিএল)-২**
৬।	**তাদের কৃত্রিম প্রজনন সেবার মান কেমন?**	**ভাল-১, মোটামুটি-২, ভাল নয়-৩**
ঢ।	**আর্থিক সেবা** গ্রহন	
১।	**চলতি বছরে আপনি কি কোন ঋণ নিয়েছেন?**	**হ্যাঁ-১, না-২**
২।	**নিয়ে থাকলে কার কাছ থেকে নিয়েছেন?**	**এনজিও-১, সরকারী/বেসরকারী ব্যাংক-২, ব্যাক্তির কাছ থেকে-৩**
৩।	**কত টাকা নিয়েছেন?**	**----------টাকা**
৪।	**কি প্রয়োজনে ঋণ নিয়েছেন?**	**প্রাণী ক্রয়-১, অন্যান্য-২ .....**
৫।	**আরও ঋণের প্রয়োজন আছে কি?**	**হ্যাঁ-১, না-২**
ন।	প্রাণী ব্যবস্থাপনা বিষয়ক তথ্যাবলী	
১।	**আপনি কি পরিবেশ বান্ধব (জিএপি) এবং স্বাস্থ্যসম্মত (হ্যাছাপ) খামার ব্যবস্থাপনা সম্পর্কে অবহিত আছেন?**	হ্যাঁ-১, না-২
২।	**হ্যাঁ হলে খামার ব্যবস্থাপনায় তা অনুসরন করেন?**	হ্যাঁ-১, না-২
৩।	খামারের বর্জ্য (গোবর-মূত্র) দিনে কয়বার পরিস্কার করেন?	**..... বার**
৪।	খামারের বর্জ্য কি করেন?	নিজে ব্যবহারের জন্য সংরক্ষণ করি-১, বিক্রয় করি-২, মানুষে ফ্রি নেয়-৩, পুকুর, ডোবা, নদী-নালায় গিয়ে নষ্ট হয়-৪
৫।	খামারের সংগৃহিত বর্জ্য কোথায় সংরক্ষণ করেন?	**গোয়াল ঘরের ভেতরে-১, বাইরে** খোলা জায়গায়-২, **বাইরে** উন্মুক্ত গর্তে-৩, **বাইরে** আবদ্ধ গর্তে-৪,
৬।	**গোয়াল ঘরের বর্জ্য নিজে কোন কাজে ব্যবহার করেন?**	**জমিতে সার-১, জ্বালানী-২, বায়োগ্যাস-৩, কম্পোষ্ট-৪**
৭।	**মোটাতাজা ষাঁড়ের স্বাস্থ্য বৃদ্ধির জন্য ভিটামিন ছাড়া বিশেষ কোন ঔষধ খাওয়ান?**	**হ্যাঁ-১, না-২**
৮।	**গাভীর দুধ ও দুধে চর্বি বৃদ্ধির জন্য ভিটামিন ছাড়া বিশেষ কোন ঔষধ খাওয়ান?**	**হ্যাঁ-১, না-২**

ঠ।	**প্রাণী উৎপাদনে অত্যাবশ্যকীয় উপাদানের প্রাপ্যতা**	
ক্র. নং	নির্দেশকসমূহ	উত্তর লিখুন
৯।	**আপনি গাভীর দুধ দোহনের পূর্বে গাভীর ওলান পরিস্কার করেন?**	হ্যাঁ-১, না-২
১০।	**দুধ দোহনকারীর হাত পরিস্কার করেন?**	হ্যাঁ-১, না-২
১১।	**করলে কি দিয়ে পরিস্কার করেন?**	**পানি দিয়ে-১, সাবান ও পানি দিয়ে-২, জীবানুনাশক ও সাবান-পানি দিয়ে-৩**
১২।	**গোয়াল ঘর কিভাবে পরিস্কার-পরিচ্ছন্ন ও জীবানুমুক্ত করেন?**	**শুধু ঝাড়ু দিয়ে-১, ঝাড়ু ও পানি দিয়ে-২, ঝাড়ু, পানি ও জীবানুনাশক দিয়ে-৩**
১৩।	**খামারের আয়-ব্যয়সহ টিকা প্রদান, কৃমিনাশক খাওয়ানো এবং প্রজনন বিষয়ক তথ্য রাখেন?**	**হ্যাঁ-১, না-২**
ত।	খামারির উৎপাদিত পন্যের বাজারজাতকরন	
১।	**আপনার ফার্মে উৎপাদিত দুধ কার কাছে বিক্রি করেন?**	**গোয়ালা-১, স্থানীয় ক্রেতা-২, স্থানীয় বাজার -৩, চা-মিষ্টির দোকান-৪**
২।	**বর্তমানে দুধের মূল্য কত?**	**প্রতি লিটার দুধের মূল্য ----------টাকা**
৩।	**খামারের গরু-বাছুর, মোটাতাজাকৃত ষাঁড়, ছাগল-ভেড়া কোথায় বিক্রি করেন?**	**স্থানীয় হাট-বাজারে-১, দূরের নামকরা হাট-বাজারে-২, বাসা থেকেই ক্রেতা/ দালাল নিয়ে যায়-৩, কশাইয়ের নিকট-৪, অন্য-৫ .....**
৪।	**দুধ, গরু, ছাগল ও ভেড়া বিক্রয় করে ন্যর্য মূল্য পান?**	**হ্যাঁ-১, না-২**
থ।	খামর থেকে সঞ্চয় ও সম্পদ অর্জণ	
১।	**প্রানী পালনের মাধ্যমে আয়ের টাকা কি করেন?**	**সংসারের খরচ-১, সঞ্চয়-২, প্রাণী ক্রয়-৩, জমি ক্রয়-৪, জমি বন্ধক-৫ গৃহ নির্মান-৬, অন্যান্য-৭.....**
২।	**সঞ্চয় করলে বাৎসরিক কত টাকা সঞ্চয় করেন?**	**---------- টাকা**
৩।	**প্রাণী ক্রয় করলে বিগত ১ বছরে কি প্রাণী কিনেছেন?**	**গরু-১, ছাগল-২, ভেড়া-৩, অন্যান্য-৪ .....**
৪।	**কয়টি প্রাণী কিনেছেন?**	**গরু .....টি, ছাগল.....টি, ভেড়া .....টি, অন্যান্য.....টি**
৫।	**জমি ক্রয় বা বন্ধক নিলে কতটুকু জমি?**	**..... শতাংশ**
দ।	খামারির পেশাগত দক্ষতা অর্জণ	
১।	**গবাদি পশু** পালনের উপর প্রশিক্ষণ পেয়েছেন?	হ্যাঁ-১, না-২
২।	**প্রশিক্ষণ পেলে কোন প্রাণী পালনের উপর?**	**দুধের গাভী-১, গরু মোটাতাজাকরন-২, ছাগল-ভেড়া পালন পালন**
৩।	কোথায় থেকে প্রশিক্ষণ পেয়েছেন?	সরকারী **সংস্থা-১; এনজিও-২;** উভয় জায়গা থেকে-৩
৪।	**এরকম** কতবার প্রশিক্ষণ পেয়েছেন?	**..... বার**
৫।	মোট কত দিনের প্রশিক্ষণ পেয়েছেন?	**..... দিন**
৬।	প্রশিক্ষণের ফলে আপনার **ঐ** বিষয়ে জ্ঞান বৃদ্ধি পেয়েছে?	হ্যাঁ-১, না-২
৭।	বর্তমানে প্রশিক্ষণলব্দ জ্ঞানের আলোকে **প্রাণী** পালন করছেন?	হ্যাঁ-১, না-২
ধ।	বাজার ও সেবা সংস্থার সহিত সংযোগ স্থাপন	
১।	স্থানীয় গুনগতমানের উপকরণ (খাদ্য/মেডিসিন/ভ্যাকসিন/কাঁচাঘাস ইত্যাদি) সরবরাহকারী সাথে সংযুক্ত হয়েছেন?	হ্যাঁ-১, না-২
২।	স্থানীয় দক্ষ চিকিৎসা **ও** কৃত্রিম প্রজনন সেবা প্রদানকারী (এআই কর্মী) এলএসপিদের সাথে সংযুক্ত হয়েছেন?	হ্যাঁ-১, না-২
৩।	স্থানীয় দুধ ক্রয়কারী ব্যবসায়ী/গোয়ালাদের সাথে সংযুক্ত হয়েছেন?	হ্যাঁ-১, না-২
৪।	আর্থিক সেবা প্রদানকারী **কোন** প্রতিষ্ঠানের সাথে সংযুক্ত হয়েছেন?	হ্যাঁ-১, না-২
৫।	**পন্য বিক্রয়ে অনলাইনে সংযুক্ত হয়েছেন?**	হ্যাঁ-১, না-২
ম.	রোগের প্রকোপ, মৃত্যুহার এবং স্বাস্থ্যের যত্ন ও ব্যবস্থাপনা	

ঠ।	**প্রাণী উৎপাদনে অত্যাবশ্যকীয় উপাদানের প্রাপ্যতা**	
ক্র. নং	নির্দেশকসমূহ	উত্তর লিখুন
১।	**খামারের গরুর রোগ প্রতিরোধে কি কি ভ্যাক্সিন প্রয়োগ করেন?**	**ক্ষুরা-১, তড়কা-২, বাদলা-৩, গলাফোলা-৪, লাম্পি/চামড়া ফোস্কা-৫**
২।	**উপরোক্ত ভ্যাক্সিন গুলো কি সময়মত নিয়মিত দেন?**	হ্যাঁ-১, না-২
৩।	**ছাগল-ভেড়ার রোগ প্রতিরোধে কি কি ভ্যাক্সিন প্রয়োগ করেন?**	**ক্ষুরা-১, পিপিআর-২, গোট পক্স-৩**
৪।	**উপরোক্ত ভ্যাক্সিন গুলো কি সময়মত নিয়মিত দেন?**	হ্যাঁ-১, না-২
৫।	**খামারের গরুকে কৃমিমুক্ত করেন?**	হ্যাঁ-১, না-২
৬।	**কৃমিমুক্ত করলে বছরে কয়বার করেন?**	**একবার-১, দুইবার-২, তিনবার-৩, চারবার-৪**
৭।	**ছাগল ও ভেড়াকে কৃমিমুক্ত করেন?**	হ্যাঁ-১, না-২
৮।	**কৃমিমুক্ত করলে বছরে কয়বার করেন?**	**একবার-১, দুইবার-২, তিনবার-৩, চারবার-৪**
৯।	**বিগত ১ বছরে আপনার কোন গরু রোগাক্রান্ত হয়েছে?**	হ্যাঁ-১, না-২
১০।	**রোগাক্রান্ত হলে কয়টি গরু রোগাক্রান্ত হয়েছে?**	**বড় গরু ..... টি, বাছুর ..... টি**
১১।	**কি রোগে গরু আক্রান্ত হয়েছে?**	তড়কা (অ্যানথ্রাক্স)-১, বাদলা (বিকিউ)-২, ক্ষুরারোগ (এফএমডি)-৩, গলাফুলা-৪, ব্লট (পেটফাপা)-৫, ডায়রিয়া-৬, এলএসডি (লাম্পি স্কিন ডিজিজ)-৭, নিউমোনিয়া-৮, এলার্জি-৯, ক্ষুদামন্দা-১০, কৃমিতে-১১
১২।	**রোগাক্রান্ত কোন গরু কি মারা গেছে?**	হ্যাঁ-১, না-২
১৩।	**মারা গেলে কয়টি গরু মারা গেছে?**	**বড় গরু ..... টি, বাছুর..... টি**
১৪।	**কোন রোগে গরু মারা গেছে?**	তড়কা (অ্যানথ্রাক্স)-১, বাদলা (বিকিউ)-২, ক্ষুরারোগ (এফএমডি)-৩, গলাফুলা-৪, ব্লট (পেটফাপা)-৫, ডায়রিয়া-৬, এলএসডি (লাম্পি স্কিন ডিজিজ)-৭, নিউমোনিয়া-৮, বিষয়ক্রিয়া (নাইট্রেট পয়জনিং)-৯, **অন্যান্য-১০**.....
১৫।	**কোন মৌশুমে গরু মারা গেছে?**	বর্ষাকালে-১, শীতকালে-২, গরমকালে-৩
১৬।	বিগত ১ বছরে আপনার কোন **ছাগল** রোগাক্রান্ত হয়েছে?	**হ্যাঁ-১ না-২**
১৭।	**রোগাক্রান্ত হলে কয়টি ছাগল রোগাক্রান্ত হয়েছে?**	**বড় ছাগল, টি, বাচ্চা ছাগল..... টি**
১৮।	**কি রোগে ছাগল** আক্রান্ত হয়েছে?	**পিপিআর-১, অন্যান্য-২** .....
১৯।	**রোগাক্রান্ত কোন ছাগল কি মারা গেছে?**	**হ্যাঁ-১, না-২**
২০।	**মারা গেলে কয়টি ছাগল মারা গেছে?**	**বড় ছাগল**..... **টি, বাচ্চা ছাগল**..... **টি**
২১।	**কোন রোগে ছাগল মারা গেছে?**	**পিপিআর-১, অন্যান্য-২**.....
২২।	**কোন মৌশুমে ছাগল মারা গেছে?**	বর্ষাকালে-১, শীতকালে-২, গরমকালে-৩
২৩।	বিগত ১ বছরে আপনার কোন **ভেড়া** রোগাক্রান্ত হয়েছে?	**হ্যাঁ-১ না-২**
২৪।	**রোগাক্রান্ত হলে কয়টি ভেড়া রোগাক্রান্ত হয়েছে?**	**বড় ভেড়া ..... টি, বাচ্চা ভেড়া ..... টি**
২৫।	**কি রোগে ভেড়া** আক্রান্ত হয়েছে?	**পিপিআর-১, অন্যান্য-২** .....
২৬।	**রোগাক্রান্ত কোন ভেড়া কি মারা গেছে?**	**হ্যাঁ-১, না-২**
২৭।	**মারা গেলে** কয়টি **ভেড়া** মারা গেছে?	**বড় ভেড়া ..... টি, বাচ্চা ভেড়া ..... টি**
২৮।	**কোন রোগে ভেড়া মারা গেছে?**	**পিপিআর-১, অন্যান্য-২**.....
২৯।	**কোন মৌশুমে** ভেড়া **মারা গেছে?**	বর্ষাকালে-১, শীতকালে-২, গরমকালে-৩
৩০।	**গরু, ছাগল, ভেড়ার** মৃত্যু ও আক্রান্তের হার উভয়ই **পূর্বের তুলনায় কি পরিবর্তণ হয়েছে?**	হ্রাস পেয়েছে-১, **বৃদ্ধি পেয়েছে-২, আগের মতই-৩**
প.	প্রাণী পালনে সময় ব্যয় ও কর্মসংস্থান	
১।	গরু পালনে দৈনিক কতসময় ব্যয় হয় ?	পুরুষ---------- ঘন্টা; মহিলা---------- ঘন্টা
২।	ছাগল পালনে দৈনিক কত সময় ব্যয় হয়?	পূরুষ ..... ঘন্টা, মহিলা ..... ঘন্টা
৩।	ভেড়া পালনে দৈনিক কত সময় ব্যয় হয়?	পূরুষ ..... ঘন্টা, মহিলা ..... ঘন্টা
৪।	মজুরি ভিত্তিক শ্রমিক আছে কিনা ?	হ্যাঁ/না; হ্যা হলে কত জন----------
৫।	হ্যাঁ হলে মাসিক খাবারসহ বেতন কত ?	..... **টাকা**

ঠ।	**প্রাণী উৎপাদনে অত্যাবশ্যকীয় উপাদানের প্রাপ্যতা**	
ক্র. নং	নির্দেশকসমূহ	উত্তর লিখুন
ফ.	**খাদ্য ও পুষ্টি গ্রহন সম্পর্কিত**	
১।	আপনার পরিবারের সদস্যগন গত ২৪ ঘন্টায় উল্লেখিত ১০ প্রকার খাদ্যোপাদানের মধ্যে কোনগুলো গ্রহণ করেছে?	১. শস্য, সাদামূল বা মূল জাতীয় এবং কন্দ বা আলু জাতীয়, ২. মটরশুটি, মটর এবং মশুর ডাল, ৩. বাদাম এবং বীজ, ৪. দুধ এবং দুগ্ধজাত পন্য, ৫. মাংস, মুরগী এবং মাছ, ৬. ডিম, ৭. গাঢ় সবুজ রংয়ের শাক-সবজি, ৮. ভিটামিন এ সমৃদ্ধ শাক-সবজি, ৯. অন্যান্য শাক-সবজি, ১০. ফলমূল।

********** এতক্ষণ ধৈর্য্য ধরে সময় দেয়ার জন্য আপনাকে অনেক ধন্যবাদ **********

Annex V

Term of Reference (ToR)

Terms of Reference

For hiring a Consultant to conduct Baseline Study for the "Safe Meat & Dairy Product Market Development Sub-project."

Implemented by: Dabi Moulik Unnayan Songstha, Naogaon
Supported by: Palli Karma-Sahayak Foundation (PKSF)

Summary

Type of study	Baseline
Purpose	To measure the key conditions (indicators) before the project begins, ensure that the project indicators are SMART, develop practical tools for monitoring and learning, and suggest new indicators if relevant, also to measure current conditions as per project indicators.
Audience	Dabi Moulik Unnayan sangstha, PKSF, IFAD, DANIDA and others
Reports to	Dabi Moulik Unnayan sangstha
Expected start/end dates, number of work days	10 August 2022 to 30 September 2022
Location	Naogaon and Bogura District
Deadline for receiving applications	8 August 2022

1. Background

Dabi Moulik unnayan sangstha is implementing the sub-project titled "Safe Meat and Dairy Product Market Development" at Naogaon Sadar, Raninagar and Atrai Upazina at Naogaon District and Dupchachia and Adomdhighi under Bogura District of Bangladesh". This sub-project is jointly funded by the Palli Karma-Sahayak Foundation (PKSF), IFAD and DANIDA under Rural Microenterprise Transformation Project (RMTP) of PKSF. The sub-project will enable rural producers to expand sustainable micro-enterprises through efficient production methods and strong market connectivity, implemented for the overall business development of small entrepreneurs. The project is providing support to produce and distribute safe dairy and meat products following the Global GAP and HACCP protocols. Traceability and certification of those products will be introduced for the branding of dairy/meat products and help equip the participants with a valuable business tool for compliance of product quality. The objective of the sub-project is to increase the income, food security and nutrition situation of marginal, small farmers and small entrepreneurs in the project area through value chain activities. Now, Dabi moulik unnayan songstha has taken the initiative to hire a consultant for baseline survey of safe meat and dairy products project beneficiaries in the project area.

2. Sub-project Goal and Outcome

The chain activities will gradually increase the income, food security and nutrition situation of marginal, small farmers and small entrepreneurs under the project. In other words, the implementation of the sub-project will increase the income of 60 percent of the entrepreneurs by at least 50 percent and 30 percent of the project members will be able to add nutritious food to their regular food list.

3. Study Overview

3.1 Objective of Study (two types, 1. Overall and 2. Specific in points as per sub-project objectives)

- to measure current perception, attitude, knowledge and behaviour
- study will further explore existing support system and linkage of the beneficiaries with local government institute and service providing agencies
- the study will serve the purpose of ensuring that the project indicators are SMART (specific, measurable, achievable, relevant, and targeted) and can be used for the study as well as future project monitoring and learning
- The baseline data will consider various socio-economic indicators including income, gender, nutrition etc. as per project log-frame.

The main objective of the baseline study is to collect data and information from a representative sample of project participants to gain a clear picture of their preprogram socio-economic status to allow for project management to measure improvement/ change of their status at the middle and at the end of the project based on the baseline information. The baseline data will consider various socio-economic indicators including income, gender, nutrition etc. as per project log frame. The baseline will also measure gender (55%) and youth (11.24%) targets. Details of project targets and log frame indicators can be found in the Project Proposal. The Consultant will support the project team in developing a strategy for implementing the baseline survey, SWOT analysis, existing business models for small entrepreneurs/producers/processors/ Local service providers and identifying further market opportunities for our entrepreneurs related to safe meat & dairy product market development.

3.2 Scope of work

The sub-project aims to benefit 25,000 households including marginal, small farmers and microentrepreneurs consisting of ultra-poor, transitional poor and enterprising poor. In line with project targets, the baseline survey will collect information against all socio-economic indicators to measure project performance. 55% targeted project participants will be women. The youth (18-35) target will be 11.24% among the project participants. The baseline study will assess the present condition of gender and youth coverage. The sub-project has specific indicators to measure its performance in improving the nutritional status of its participants. By creating self and wage employment and expanding microenterprises, sub-project will contribute to the national target of poverty reduction. It is estimated that with project support a total of 25,000 entrepreneurs will adopt environmentally sustainable and climate-resilient technologies. The study will assess the present situation of the microenterprises regarding this issue. To cover indicators like the increase of income and production of the project households, profit increase in the enterprises, the study should investigate the present situation of project households and microenterprises. The study should look into the initial status on financial and technical supports, adopting of Global GAP and HACCP at the enterprise

level, skill on production practices and technologies, adoption of technologies and/or management practices, rural enterprises accessing to business development services, persons in rural areas accessing financial services etc. The study should provide gender-segregated data against all log frame indicators for the sake of future outcome and impact assessments.

3.3 Main audience of study

The main audiences for the baseline study include project staff of Dabi moulik unnayan sangstha, PKSF, IFAD and DANIDA. The project beneficiaries are also part of the audience of this study and the baseline findings will be disseminated to them by Dabi moulik unnayan sangstha.

3.4 Coverage of study

The baseline study will draw conclusions that are valid for Naogaon Sadar, Raninagar and Atrai Upazina at Naogaon District and Dupchachia and Adomdhighi under Bogura District of Bangladesh, the baseline study will apply a standard sample design procedure.

4. Approach, Methodology and Sample size determination

The project area is Naogaon and Bogura district of the country. The VCD sub-projects will be implemented in different sub-districts among 25,000 participants considering the potentiality of the business cluster of dairy and meat sub-sector. Considering the above, this study will select the area and propose an appropriate sample size.

4.1 Approaches

The consultant approach will be in line with the main objective of the study that seeks to gather information and provide a complete picture of the project participants at the project implementing areas. The approach will involve wide-ranging and sequenced discussion with project professionals and officials related to know the prevailing situation of the targeted project participants.

4.2 Methodology

The methodology of data collection will be both qualitative and quantitative in nature, and will include information gathered on the outcome and project goal indicators on knowledge, attitudes and practices. The baseline study will be done in project area. All data, qualitative and quantitative, collected through the assessment must be disaggregated by age, sex, ethnicity, poverty and wherever appropriate as per project design. Finally, consultant/s are expected to propose a suitable methodology for carrying out the work and fulfil the objectives of the study. The methodology should adhere to the ethical standard, but bidders are free and encouraged to be as creative as possible in arriving at a suitable methodology that will ensure that the objectives of the study are fully met in a timely and efficient way. The baseline study will involve collecting:

4.3 Quantitative data collection

The consultant will design the questionnaire for quantitative survey based on the logical model. This will be finalized by incorporating feedback from Dabi moulik unnayan songstha including pretesting. The data collection modality will be mobile based but exemption might be allowed in consultation with Dabi moulik unnayan sangstha.

4.4 Qualitative data collection

The consultant should use qualitative approaches, such as focus group discussions and key informant interviews, as well as participatory exercises and approaches. The following should at least be done in each selected community:

- # FGD with producers
- # FGD with processors
- # FGD with LSPs and Backward market actors
- # FGD with Input dealers and others
- # KII with GoB officials.
- # KII with Paiker/Private sector/Forward market actors
- # KII with Business Management Organization
- # KII with AVCF/VCF
- # KII with others (Those who are involved in business enabling environment and carrying out/supporting rural microenterprises/support function actors)

4.5 Sample size determination of project participants

The baseline study will be conducted in the project areas following appropriate, applicable statistical sampling procedures. However, significant the sample size could be finalized after discussion with the project professionals to have representative sample for two components of the project. The consulting firm should ensure representation of sub-sectors, gender, age group and poverty. A detailed approach and methodology to conduct the baseline study should be suggested by the consultants in compliance with the goal, objective and log-frame of sub-project.

4.6 Services and Facilities to be provided by Dabi moulik unnayan sangstha

Dabi moulik unnayan sangstha will supply all necessary documents and information for designing an appropriate questionnaire to cover all project indicators including Project Proposal, Project Implementation Guideline (PIG), area demography, list of microenterprises etc.

4.7 Services and Facilities to be provided by the consultant

The firm should have physical strength to collect and manage real time data. Geo-referencing of the respondent should be applied by the firm to track the respondent in future. All analyses related to the assignment should be preserved and supplied with the report by the consultant so that any information could be verified as and when necessary.

5. Duration of the study and schedule of the reports

The total time duration of the assignment will be 90 days. A detailed implementation plan will be agreed upon in consultation with the programme, however, it is anticipated that the inception report should be submitted within 10 days upon signing the contract. The draft report of the study should be submitted by the consultant within 65 days, and presentation on the draft report should be given at **Dabi moulik unnayan sangstha** within 75 days after signing the agreement.

The consulting firm should finalize the baseline report by incorporating comments and queries of **Dabi moulik unnayan sangstha** /PKSF. The final report of baseline study should be submitted within 90 days from the date of agreement signing.

6. Quality and Ethical Standard

The consultant hired should take all reasonable steps to ensure that the baseline study is designed and conducted to respect and protect the rights and welfare of people and the communities of which they are members, and to ensure that the baseline study is technically accurate, reliable, and legitimate, conducted in a transparent and impartial manner, and contributes to organizational learning and accountability.

1. Utility: Evaluations must be useful and used.

2. Feasibility: Evaluations must be realistic, diplomatic, and managed in a sensible, cost-effective manner.

3. Ethics & Legality: Evaluations must be conducted in an ethical and legal manner, with particular regard for the welfare of those involved in and affected by the evaluation.

4. Impartiality & Independence; Evaluations should be impartial, providing a comprehensive and unbiased assessment that considers the views of all stakeholders.

5. Transparency: Evaluation activities should reflect an attitude of openness and transparency.

6. Accuracy: Evaluations should be technical accurate, providing sufficient information about the data collection, analysis, and interpretation methods so that its worth or merit can be determined.

7. Participation: Stakeholders should be consulted and meaningfully involved in the evaluation process when feasible and appropriate.

8. Collaboration: Collaboration between key operating partners in the evaluation process improves the legitimacy and utility of the evaluation.

7. Reports and deliverables

The consulting firm should provide the following deliverables:

i) **An inception report** with a detailed work plan, schedule (Gantt chart) in line with the time limit mentioned in this ToR and a detailed questionnaire for interviewing respondents. The inception report should elaborate on the proposed schedule of tasks, activities and deliverables, and designate a team member with lead responsibility for the study. The inception report will also contain a sample size with a detailed study methodology. The inception report will also include an outline of contents of the final survey report, the training plan for enumerators, data quality control measures.
ii) **A detailed determination of sample size and sampling frame** using statistical tools and formula.
iii) **Baseline survey questionnaire, FGD and KII checklist** to capture all required data and information of the study.
iv) **Baseline Study design** with data analysis and findings provided to **Dabi moulik unnayan sangstha** before the presentation.
v) **Final study presentation.** The consulting firm will have to give a presentation at **Dabi moulik unnayan sangstha** on the draft report highlighting major findings on baseline status. The final report of the study should be written in common English. The final report should have the reflections of the comments

made by the **Dabi moulik unnayan sangstha** /PKSF officials on the draft report. The hard copies (if applicable) of all filled up questionnaires must be submitted along with the final report. The report should include the list of respondents with their contact details. Five (05) copies of the final report and a soft copy with data sets exported to SPSS files in a CD/DVD must be submitted to **Dabi moulik unnayan sangstha**.

vi) **Findings brief.** The consulting firm should provide a brief of the findings corresponding to the objectives of the study that can be widely circulated. The brief of the study could be within three pages.

vii) **Indicator Table with Value:** The consulting firm should provide an indicator table including the values which got in the baseline study.

viii) **Final Report will sketch with the following headings:** The final report will contain a short executive summary (not more than 1,000 words) and a main body of the report (not more than 10,000 words) covering the background of the intervention evaluated, a description of the evaluation methods and limitations, findings, conclusions, lessons learned, recommendations and action points related to these.

- Acknowledgements
- Acronyms
- Glossary
- Executive Summary
- Introduction/Background
- Rationale and Objectives of the Baseline Study
- Scope of the Baseline Study
- Evaluation Methodology
- Findings and Discussion
- Recommendations
- Conclusion and lessons learned (if any)
- References
- Annex (including a copy of the ToR with questionnaire, cited resources or bibliography/reference, a list of those interviewed, case studies and any other relevant materials etc.).

8. Qualifications of the consultant (National)

- Proven extensive experience in being the lead in conducting base line and end line study of a resilience program
- The lead consultant should have University degree at the post-graduate level in Business Administration/Economics/Social Science/Ecology and Environmental Science/Anthropology/Livestock/Statistics/Engineering or other relevant subjects, However, PhD degree in relevant sector will get priority.
- Strong analytical skills and ability to clearly synthesize and present findings, draw practical conclusions, make recommendations and to prepare well-written reports in a timely manner;
- Excellent in English and Bangla writing and presentation skills
- Immediate availability for the period indicated
- At least two relevant recent reports (soft copy) written by the lead consultant.
- Must have necessary computer skills with necessary hardware.
- Should have good understanding of the local language.

9. Individual Consultant (National) Selection Process:

Individual Consultant Selection (ICS) method and Standard Request for Application (SRFA:PS-3) Documents on lump-sum contracts of Schedule 1 of the Public Procurement Rules-2008 of the Government of Bangladesh should be followed in preparation of short-listing the consultants, evaluation of applications, selection the consultant, negotiation, signing of contract and receipt of survey reports for conducting this study.

10. Mode of Payment

Dabi moulik unnayan sangstha will pay the cost of the study to the assigned firm subject to the completion of all deliverables and reports acceptance of PKSF by deducting VAT and TAX at source as per the Government rules of Bangladesh. Payments will be made based on the following percentages and milestones:

a) 1st Payment (30% of total contract value): The 1st payment will be made upon submission and acceptance of the inception report by PKSF.

b) 2nd Payment (30% of total contract value): The 2nd payment will be made upon submission and acceptance of the draft report by PKSF.

c) Final Payment (40% of total contract value): The final payment will be made upon acceptance of the final report by PKSF.

11. Timeframe

The study shall be conducted expectedly in two months from start of the study, and is scheduled to preferably start in the (10 August 2022). The consultant will submit the final report latest by (30 September 2022). The timeline will be finalized as agreed by the consultant and **Dabi moulik unnayan sangstha**.

12. Disclaimer

The **Dabi moulik unnayan sangstha** management reserves the right to amend the terms of reference at any time as required upon mutual discussion with the lead researcher. **Dabi moulik unnayan sangstha** reserves the right to terminate the contract at its sole discretion in case of non-compliance of the terms and conditions that will be finally agreed.

13. Proposal Submission/ Application and Selection Details

The proposal should include the following below six items. Please note that any proposal which does not contain all six items will be rejected.

Cover letter: clearly summarizing your experience and competency as it pertains to this assignment

Technical proposal: not exceeding eight (08) pages expressing an understanding and interpretation of the ToR, the proposed methodology, relevant experience and time and activity schedule.

Financial proposal: itemizing estimated costs for services rendered (daily consultancy fees), accommodation and living costs, transport costs, stationery costs, and any other related supplies or services required for the review in BDT and modality of payment. Please also attach a TIN/Registration Certificate.

Detailed CVs of all professionals who will work on the process. CVs of proposed study team, please attach a table describing the level of effort (in number of days) of each team member in each of the Baseline activities.

Professional references needed to provide two or three references from your previous clients.

Short example from previous Baseline study report (Dairy products value chain/marketing preferred) that is relevant to this work (5-7 pages)

(Application materials are non-returnable, and we thank you in advance for understanding that only short-listed candidates will be contacted for the next step in the application process and the selection panel does not have the capacity to respond to any requests for application feedback. Please take note that expressions of interest that do not cover these requirements will not be considered.)

14. **Application Procedure:** Please email complete applications to dabi@rocketmail.com. Or dabirmtppm@gmail.com

15. **Deadline for Application:** The application deadline is 07th October, 2022.

Annex VI

List of project participant interviewers (HHS)

Sl	Name	Religion	Cell Phone	Village	Union	Upazila	District
1	Rupali	Islam	1730939509	Bandaikhara	Hutkhalipara	athrai	Naogaon
2	Kulsum	Islam	1754345960	Bandaikhara	Hutkhalipara	athrai	Naogaon
3	Ferdousi	Islam	1788182782	Bandaikhara	Hutkhalipara	athrai	Naogaon
4	Nazma	Islam		Bandaikhara	Hutkhalipara	athrai	Naogaon
5	Nurjahan	Islam		Bandaikhara	Hutkhalipara	athrai	Naogaon
6	Anjuara	Islam	1794660480	Bandaikhara	Hutkhalipara	athrai	Naogaon
7	Kohinur begum	Islam	1743882086	Bandaikhara	Hutkhalipara	athrai	Naogaon
8	Rahman	Islam	1763308568	Nondonali	hutkalupara	athrai	Naogaon
9	Morshida	Islam	1713720070	Bandaikhara	hutkalupara	athrai	Naogaon
10	Ariful	Islam	1740008781	Bandaikhara	hutkalupara	athrai	Naogaon
11	Anes	Islam	1747675634	Bandaikhara	hutkalupara	athrai	Naogaon
12	Nadira	Islam	1723363678	Nondonali	hutkalupara	athrai	Naogaon
13	Rehena	Islam		Bandaikhara	Hutkhalipara	athrai	Naogaon
14	Shirin	Islam	1762419285	Huturia	Bandaikhara	athrai	Naogaon
15	Shanaj Begum	Islam	1773056516	Huturia	Bandaikhara	athrai	Naogaon
16	Fensi	Islam	1733908320	Huturia	hutkalupara	athrai	Naogaon
17	Chondon	Islam	1772055406	Huturia	hutkalupara	athrai	Naogaon
18	Shajeda	Islam		Huturia	hutkalupara	athrai	Naogaon
19	Goyna	Islam	1771821327	Huturia	Bandaikhara	athrai	Naogaon
20	Nasrin Akhter	Islam	1725904808	Bandaikhara	Hutkhalipara	athrai	Naogaon
21	Feroza	Islam	1721126802	Bandaikhara	Hutkhalipara	athrai	Naogaon
22	Nurjahan	Islam	1758752659	Bandaikhara	Hutkhalipara	athrai	Naogaon
23	Habiba	Islam	1750979588	Bandaikhara	Hutkhalipara	athrai	Naogaon
24	Shukheda	Islam	1779321256	Bandaikhara	Hutkhalipara	athrai	Naogaon
25	Afroj	Islam	1320562085	Bandaikhara	Hutkhalipara	athrai	Naogaon
26	Morjina Bibi	Islam	1776507693	Bandaikhara	Hutkhalipara	athrai	Naogaon
27	Moriom	Islam	1730939509	Bandaikhara	hutkalupara	athrai	Naogaon
28	Shorifa	Islam	1704011471	Bandaikhara	Hutkhalipara	athrai	Naogaon
29	Hasina	Islam	1782124993	Bandaikhara	Hutkhalipara	athrai	Naogaon
30	Shirina Begum	Islam	1751664426	Bandaikhara	Hutkhalipara	athrai	Naogaon
31	Shilpi	Islam	1748342928	Nondonali	hutkalupara	athrai	Naogaon
32	Minara	Islam	1765294237	Logipur	Bandaikhara	athrai	Naogaon
33	Sharmin	Islam	1750757510	Bandaikhara	Hutkhalipara	athrai	Naogaon
34	Shekender	Islam	1312132803	Nondonali	hutkalupara	athrai	Naogaon
35	Ianus	Islam	1705053552	Nondonali	hutkalupara	athrai	Naogaon
36	Mofij Mondol	Islam		Nondonali	hutkalupara	athrai	Naogaon
37	Morsheda	Islam	1776507842	Logipur	Bandaikhara	athrai	Naogaon
38	Aleban	Islam	1716229810	Bandaikhara	hutkalupara	athrai	Naogaon
39	Reja	Islam	1713136935	Nondonali	hutkalupara	athrai	Naogaon
40	Fulena	Islam		Bandaikhara	Hutkhalipara	athrai	Naogaon
41	Morlina	Islam	1733412417	Bandaikhara	Hutkhalipara	athrai	Naogaon
42	Khotejan	Islam	1781239595	Bandaikhara	Hutkhalipara	athrai	Naogaon
43	Laila	Islam	1324140714	Bandaikhara	Hutkhalipara	athrai	Naogaon

44	Nargis	Islam	1770961255	Haturia	hutkalupara	athrai	Naogaon
45	Forida	Islam	1763904054	Haturia	hutkalupara	athrai	Naogaon
46	Amnul	Islam	1754641735	Haturia	hutkalupara	athrai	Naogaon
47	Sonia	Islam	1300556112	Bandaikhara	Hutkhalipara	athrai	Naogaon
48	Hasina	Islam	1757747120	Bandaikhara	Hutkhalipara	athrai	Naogaon
49	Rubi	Islam	1726720695	Nondonali	hutkalupara	athrai	Naogaon
50	Sharmin	Islam	1750397604	Haturia	hutkalupara	athrai	Naogaon
51	Sabina	Islam	1751881127	Nondonali	hutkalupara	athrai	Naogaon
52	Samsunnahar	Islam	1754252486	Nondonali	hutkalupara	athrai	Naogaon
53	Shata	Islam	1772716121	Nondonali	hutkalupara	athrai	Naogaon
54	Minu Khatun	Islam	1746496526	Nondonali	hutkalupara	athrai	Naogaon
55	Ranuka	Islam	1706426308	Nondonali	hutkalupara	athrai	Naogaon
56	Kajol Rekha	Islam	1727564580	Nondonali	hutkalupara	athrai	Naogaon
57	Montu	Islam	1742390286	Sorrampur	Kashimpur	Raninogor	Naogaon
58	Abul Hossain	Islam	1752235328	Dhonpara	Mirat	Raninogor	Naogaon
59	Abubokor	Islam	1315385897	Dhonpara	Mirat	Raninogor	Naogaon
60	Joynal	Islam		Dhonpara	Mirat	Raninogor	Naogaon
61	Mijanur	Islam	1746347475	Dhonpara	Mirat	Raninogor	Naogaon
62	Lobir	Islam	1783273852	Dhonpara	Mirat	Raninogor	Naogaon
63	Alamin	Islam	1700884562	Dhonpara	Mirat	Raninogor	Naogaon
64	Babul	Islam	1739636559	Dhonpara	Mirat	Raninogor	Naogaon
65	Faruk	Islam	1747382789	Dhonpara	Mirat	Raninogor	Naogaon
66	Nazmul	Islam	1321324600	Ghoshgram	Gona	Raninogor	Naogaon
67	Krishno	Shonaton	1728394967	Ghoshgram	Gona	Raninogor	Naogaon
68	Earali	Islam	1731147707	Ghoshgram	Gona	Raninogor	Naogaon
69	Imon	Islam	1761573730	Dangapara	Kashimpur	Raninogor	Naogaon
70	Afjal	Islam	1731338626	Dangapara	Kashimpur	Raninogor	Naogaon
71	Kamal	Islam	1727439793	Dangapara	Kashimpur	Raninogor	Naogaon
72	Faruk	Islam	1767544681	Dangapara	Kashimpur	Raninogor	Naogaon
73	Ershad	Islam	1774881259		Kashimpur	Raninogor	Naogaon
74	Ajijur	Islam	1771289984	Kashimpur	Kashimpur	Raninogor	Naogaon
75	Juel	Islam	1726635776		Kashimpur	Raninogor	Naogaon
76	Ajijur	Islam	1727301335	Dhonpara	Mirat	Raninogor	Naogaon
77	Milon	Islam	1783005623	Dhonpara	Mirat	Raninogor	Naogaon
78	Ershad	Islam	1762119162	Dhonpara	Mirat	Raninogor	Naogaon
79	Ferdousi	Islam	1775035603	Dhonpara	Mirat	Raninogor	Naogaon
80	Faruk	Islam	1739027467	Dhonpara	Mirat	Raninogor	Naogaon
81	Elahi	Islam	1739758193	Dhonpara	Mirat	Raninogor	Naogaon
82	Jiarul	Islam	1739048894	Dhonpara	Mirat	Raninogor	Naogaon
83	Raju	Islam		Dhonpara	Mirat	Raninogor	Naogaon
84	Moksed	Islam	1732622515	Dhonpara	Mirat	Raninogor	Naogaon
85	Abdul Jolil	Islam	1734485096	Dhonpara	Mirat	Raninogor	Naogaon
86	Shilpi	Islam	1317468628	Ghoshgram	Gona	Raninogor	Naogaon
87	Shahinur	Islam	1748090332	Dhonpara	Mirat	Raninogor	Naogaon
88	Saiful	Islam	1786157796	Ghoshgram	Gona	Raninogor	Naogaon
89	Norottom	Shonaton	1734165558	Ghoshgram	Gona	Raninogor	Naogaon
90	Shikha	Islam	1751592704	Ghoshgram	Gona	Raninogor	Naogaon
91	Raton	Shonaton	1782964684	Ghoshgram	Gona	Raninogor	Naogaon

92	Moksed	Islam	1773575113	Betgari	Gona	Raninogor	Naogaon
93	Shonjit	Shonaton	1733176715	Ghoshgram	Gona	Raninogor	Naogaon
94	Nazrul	Islam	1766844099	Ghoshgram	Gona	Raninogor	Naogaon
95	Shamol	Shonaton	1976208923	Ghoshgram	Gona	Raninogor	Naogaon
96	Unnati	Shonaton	1731757853	Ghoshgram	Gona	Raninogor	Naogaon
97	Nimai	Shonaton	1725281242	Ghoshgram	Gona	Raninogor	Naogaon
98	Shukumar	Shonaton	1712706381	Ghoshgram	Gona	Raninogor	Naogaon
99	Nomita	Shonaton	1798649029	Ghoshgram	Gona	Raninogor	Naogaon
100	Gojen	Shonaton		Ghoshgram	Gona	Raninogor	Naogaon
101	Topon	Shonaton	1767640382	Betgari	Gona	Raninogor	Naogaon
102	Konok	Shonaton	1794567445	Ghoshgram	Gona	Raninogor	Naogaon
103	Moazzem	Islam	1713742073	Durgapur	Gona	Raninogor	Naogaon
104	Ponkoj	Shonaton	1717289043	Kashimpur	Kashimpur	Raninogor	Naogaon
105	Morjina Bibi	Islam	1732961835	Kashimpur	Kashimpur	Raninogor	Naogaon
106	Kholilur	Islam	1721087192	Ghoshgram	Gona	Raninogor	Naogaon
107	Mojibor	Islam	1721415583	Ghoshgram	Gona	Raninogor	Naogaon
108	Sekender	Islam	1932742571	Ghoshgram	Gona	Raninogor	Naogaon
109	Aklima	Islam	1764219601	Khoyrabad	Boalia	Naogasodor	Naogaon
110	Moni	Islam	1321047211	Khoyrabad	Boalia	Naogasodor	Naogaon
111	Aysha	Islam	1720094220	Khoyrabad	Boalia	Naogasodor	Naogaon
112	Baby	Islam	1745317037	Khoyrabad	Boalia	Naogasodor	Naogaon
113	Bithi	Islam	1912501479	Khoyrabad	Boalia	Naogasodor	Naogaon
114	Fatema	Islam	1724358328	Tajnogor	Tilokpur	Naogasodor	Naogaon
115	Moushumi	Islam	1839025020	Tajnogor	Tilokpur	Naogasodor	Naogaon
116	Julekha	Islam	1735150958	Tajnogor	Tilokpur	Naogasodor	Naogaon
117	Merina	Islam	1789953647	Tajnogor	Tilokpur	Naogasodor	Naogaon
118	Kolpona	Islam	1745598682	Tajnogor	Tilokpur	Naogasodor	Naogaon
119	Khaleda	Islam	1715721413	Tajnogor	Tilokpur	Naogasodor	Naogaon
120	Mahmuda	Islam	1719069541	Tajnogor	Tilokpur	Naogasodor	Naogaon
121	Rita	Islam	1768792853	Tajnogor	Tilokpur	Naogasodor	Naogaon
122	Jinnah	Islam	1309627333	Tajnogor	Tilokpur	Naogasodor	Naogaon
123	Jems	Islam	1772923499	Pathorkota	Boalia	Naogasodor	Naogaon
124	Marufa	Islam	1798667512	Khoyrabad	Boalia	Naogasodor	Naogaon
125	Khoteja	Islam	1890389946	Shingbacha	Shoilogasi	Naogasodor	Naogaon
126	Nasima	Islam	1837826481	Shingbacha	Shoilogasi	Naogasodor	Naogaon
127	Halima	Islam	1768866386	Shingbacha	Shoilogasi	Naogasodor	Naogaon
128	Forida	Islam	1700251577	Shingbacha	Shoilogasi	Naogasodor	Naogaon
129	Anguri	Islam	1735249189	Shingbacha	Shoilogasi	Naogasodor	Naogaon
130	Foara	Islam	1890389946	Shingbacha	Shoilogasi	Naogasodor	Naogaon
131	Marufa	Islam	1739028360	Shingbacha	Shoilogasi	Naogasodor	Naogaon
132	Salma	Islam	1721513375	Shingbacha	Shoilogasi	Naogasodor	Naogaon
133	Asma	Islam	1724020972	Shingbacha	Shoilogasi	Naogasodor	Naogaon
134	Masuda	Islam	1727445191	Shingbacha	Shoilogasi	Naogasodor	Naogaon
135	Mukti	Islam	1707740477	Shingbacha	Shoilogasi	Naogasodor	Naogaon
136	Hamida	Islam	1758231477	Shingbacha	Shoilogasi	Naogasodor	Naogaon
137	Samsunnahar	Islam	1747335499	Mukrampur	Shoilogasi	Naogasodor	Naogaon
138	Afroja	Islam	1893975821	Mukrampur	Shoilogasi	Naogasodor	Naogaon
139	Shilpi	Islam	1749367399	Mukrampur	Shoilogasi	Naogasodor	Naogaon

140	Parul	Islam	1793492735	Mukrampur	Shoilogasi	Naogasodor	Naogaon
141	Moslema	Islam	1837826481	Shingbacha	Shoilogasi	Naogasodor	Naogaon
142	Tarabanu	Islam	1740807632	Shingbacha	Shoilogasi	Naogasodor	Naogaon
143	Kiron	Islam	1745533728	Shingbacha	Shoilogasi	Naogasodor	Naogaon
144	Merina	Islam	1779605441	Tajnogor	Tilokpur	Naogasodor	Naogaon
145	Shumi	Islam	1755561693	Tajnogor	Tilokpur	Naogasodor	Naogaon
146	Tanjila	Islam	1324069492	Tajnogor	Tilokpur	Naogasodor	Naogaon
147	Julekha	Islam	1787223155	Tajnogor	Tilokpur	Naogasodor	Naogaon
148	Laboni	Islam	1837826181	Shingbacha	Shoilogasi	Naogasodor	Naogaon
149	Shilpi	Islam	1888332977	Shingbacha	Shoilogasi	Naogasodor	Naogaon
150	Sabina	Islam	1793492785	Mukrampur	Shoilogasi	Naogasodor	Naogaon
151	Rubi	Islam	1772135918	Tarnogor	Tilokpur	Naogasodor	Naogaon
152	Monakka	Islam		Khoyrabad	Boalia	Naogasodor	Naogaon
153	Parul	Islam	1745533728	Shingbacha	Shoilogasi	Naogasodor	Naogaon
154	Nilufa	Islam	1798082615	Khoyrabad	Boalia	Naogasodor	Naogaon
155	Salma	Islam	1735351694	Shingbacha	Shoilogasi	Naogasodor	Naogaon
156	Romi	Islam	1734287588	Shingbacha	Shoilogasi	Naogasodor	Naogaon
157	Minara	Islam	1839205020	Tarnogor	Tilokpur	Naogasodor	Naogaon
158	Shahida	Islam	1735150958	Tarnogor	Tilokpur	Naogasodor	Naogaon
159	Anjuara	Islam		Tajnogor	Tilokpur	Naogasodor	Naogaon
160	Mahbubur	Islam	1760682527		Tilokpur	Naogasodor	Naogaon
161	Anguri	Islam	1738675623	Khoyrabad	Boalia	Naogasodor	Naogaon
162	Jannati	Islam	1768338882	Noudapara	Alora	Dupchachia	Bogura
163	Shimu	Islam	1743214518	Poulla	Jianogor	Dupchachia	Bogura
164	Kamrunnahar	Islam	1784284645	Hutshajapur	Dupchachia	Dupchachia	Bogura
165	Masuda	Islam	1773260537	Hutshajapur	Dupchachia	Dupchachia	Bogura
166	Parvin	Islam	1739594751	Hutshajapur	Dupchachia	Dupchachia	Bogura
167	Beuti	Islam	1767983315	Hutshajapur	Dupchachia	Dupchachia	Bogura
168	Adori	Islam	1763904142	Noudapara	Talora	Dupchachia	Bogura
169	Taslima	Islam	1775892874	Noudapara	Talora	Dupchachia	Bogura
170	Rasheda	Islam	1766459639	Lokhimondop	Jianogor	Dupchachia	Bogura
171	Shajeda	Islam	1720377579	Lokhimondop	Jianogor	Dupchachia	Bogura
172	Roli	Islam	1749333329	Lokhimondop	Jianogor	Dupchachia	Bogura
173	Minara	Islam	1760799419	Lokhimondop	Jianogor	Dupchachia	Bogura
174	Shahanara	Islam	1306247090	Lokhimondop	Jianogor	Dupchachia	Bogura
175	Rahena	Islam	1741639289	Lokhimondop	Jianogor	Dupchachia	Bogura
176	Aklima	Islam	1766479646	Lokhimondop	Jianogor	Dupchachia	Bogura
177	Buli	Islam		Hutshajapur	Dupchachia	Dupchachia	Bogura
178	Illin	Islam	1731952998	Hutshajapur	Dupchachia	Dupchachia	Bogura
179	Sonia	Islam	1728945854	Shukhangari	Dupchachia	Dupchachia	Bogura
180	Khuki	Islam	1831989223	Shukhangari	Dupchachia	Dupchachia	Bogura
181	Jakia	Islam	1719708017	Shukhangari	Dupchachia	Dupchachia	Bogura
182	Shahara	Islam	1737128900	Lokhimondop	Jianogor	Dupchachia	Bogura
183	Shahida	Islam		Lokhimondop	Jianogor	Dupchachia	Bogura
184	Rojina	Islam	1777896226	Lokhimondop	Jianogor	Dupchachia	Bogura
185	Salema	Islam	1763997910	Lokhimondop	Jianogor	Dupchachia	Bogura
186	Roshida	Islam	1768944840	Lokhimondop	Jianogor	Dupchachia	Bogura
187	Aktarun	Islam	1770655231	Lokhimondop	Jianogor	Dupchachia	Bogura

188	Alpona	Islam	1749282421	Lokhimondop	Jianogor	Dupchachia	Bogura
189	Salma	Islam	1767426011	Lokhimondop	Jianogor	Dupchachia	Bogura
190	Monjuara	Islam	1749675716	Lokhimondop	Jianogor	Dupchachia	Bogura
191	Taslima	Islam	1755045357	Lokhimondop	Jianogor	Dupchachia	Bogura
192	Sufia	Islam		Noudapara	Talora	Dupchachia	Bogura
193	Hajera	Islam	1722848617	Noudapara	Talora	Dupchachia	Bogura
194	Peara	Islam		Noudapara	Talora	Dupchachia	Bogura
195	Anoara	Islam	1310959530	Noudapara	Talora	Dupchachia	Bogura
196	Anoara	Islam		Noudapara	Talora	Dupchachia	Bogura
197	Sheuli	Islam		Noudapara	Talora	Dupchachia	Bogura
198	Lovely	Islam	1812188586	Shukhangari	Dupchachia	Dupchachia	Bogura
199	Aktarun	Islam	1752488770	Shukhangari	Dupchachia	Dupchachia	Bogura
200	Nipa	Islam	1738470493	Shukhangari	Dupchachia	Dupchachia	Bogura
201	Fensi	Islam	1729187994	Shukhangari	Dupchachia	Dupchachia	Bogura
202	Salema	Islam	1710055876	Shukhangari	Dupchachia	Dupchachia	Bogura
203	Forida	Islam	1731697008	Shukhangari	Dupchachia	Dupchachia	Bogura
204	Nazma	Islam	1703430501	Shukhangari	Dupchachia	Dupchachia	Bogura
205	Roksana	Islam	1887311478	Shukhangari	Dupchachia	Dupchachia	Bogura
206	Rojina	Islam	1742384821	Noudapara	Talora	Dupchachia	Bogura
207	Jemi	Islam	1755392918	Noudapara	Talora	Dupchachia	Bogura
208	Anjuara	Islam		Noudapara	Talora	Dupchachia	Bogura
209	Rajia	Islam		Noudapara	Talora	Dupchachia	Bogura
210	Saleha	Islam	1784284645	Hutshajapur	Dupchachia	Dupchachia	Bogura
211	Femida	Islam	1735255856	Hutshajapur	Dupchachia	Dupchachia	Bogura
212	Shahnaj	Islam	1726262685	Hutshajapur	Dupchachia	Dupchachia	Bogura
213	Anjuara	Islam	1701936110	Hutshajapur	Dupchachia	Dupchachia	Bogura
214	Nurjahan	Islam	1784686909	Hutshajapur	Dupchachia	Dupchachia	Bogura
215	Rahid	Islam	1765606128	Sudin	Adomdighi	Adomdighi	Bogura
216	Ajijul	Islam	1764223433	Sudin	Adomdighi	Adomdighi	Bogura
217	Roshid	Islam	1304258442	Sudin	Adomdighi	Adomdighi	Bogura
218	Hasan	Islam	1772961692	Sudin	Adomdighi	Adomdighi	Bogura
219	Riad	Islam	1751074915	Sudin	Adomdighi	Adomdighi	Bogura
220	Manjar	Islam	1304258442	Sudin	Adomdighi	Adomdighi	Bogura
221	Piara	Islam	1714945693	Koshaigari	Satiangram	Adomdighi	Bogura
222	Alamin	Islam	1753600280	Sudin	Adomdighi	Adomdighi	Bogura
223	Hakim	Islam	1730559389	Sudin	Adomdighi	Adomdighi	Bogura
224	Lokman	Islam	1726590891	Komarpur	Satiangram	Adomdighi	Bogura
225	Mojaher	Islam	1725019576	Salgram	Satiangram	Adomdighi	Bogura
226	Liton	Islam	1768747241	Salgram	Adomdighi	Adomdighi	Bogura
227	Alauddin	Islam		Komarpur	Satiangram	Adomdighi	Bogura
228	Abul Kalam	Islam	1724627582	Shalgram	Satiangram	Adomdighi	Bogura
229	Hasan	Islam	1784708439	Shalgram	Satiangram	Adomdighi	Bogura
230	Nargis	Islam	1783725077	Koshaigari	Satiangram	Adomdighi	Bogura
231	Sattar	Islam	1751254942	Koshaigari	Satiangram	Adomdighi	Bogura
232	Shopon	Islam	1925407049	Koshaigari	Satiangram	Adomdighi	Bogura
233	Alefuddin	Islam	1716408484	Noshrotpur	Noshrotpur	Adomdighi	Bogura
234	Fojlul	Islam	1314728046	Noshrotpur	Noshrotpur	Adomdighi	Bogura
235	Nazrul	Islam	1940014273	Dumrigram	Noshrotpur	Adomdighi	Bogura

236	Nibaron	Sonaton	1726193469	Noshrotpur	Noshrotpur	Adomdighi	Bogura
237	Shujon	Sonaton	1763916200	Noshrotpur	Noshrotpur	Adomdighi	Bogura
238	Chanmondol	Islam	1751308210	Dohorpur	Adomdighi	Adomdighi	Bogura
239	Nibaron	Sonaton	1716193469	Noshrotpur	Noshrotpur	Adomdighi	Bogura
240	Poddut	Sonaton	1780496289	Noshrotpur	Noshrotpur	Adomdighi	Bogura
241	Nupur	Sonaton	1531751741	Noshrotpur	Noshrotpur	Adomdighi	Bogura
242	Prodip	Sonaton	1723294017	Noshrotpur	Noshrotpur	Adomdighi	Bogura
243	Shujibbo	Sonaton	1722504083	Noshrotpur	Noshrotpur	Adomdighi	Bogura
244	Abdul	Islam	1731657709	Dumrigram	Noshrotpur	Adomdighi	Bogura
245	Akkar	Islam	1325708023	Dumrigram	Noshrotpur	Adomdighi	Bogura
246	Raton	Islam	1300343869	Dumrigram	Noshrotpur	Adomdighi	Bogura
247	Parul	Islam	1732007332	Dumrigram	Noshrotpur	Adomdighi	Bogura
248	Robiul	Islam	1718701643	Jinoir	Adomdighi	Adomdighi	Bogura
249	Robiul	Islam	1793737296	Noshrotpur	Noshrotpur	Adomdighi	Bogura
250	Shahajahan	Islam	1741639514	Dumrigram	Noshrotpur	Adomdighi	Bogura
251	Abdul mojit	Islam	1721013846	Noshrotpur	Noshrotpur	Adomdighi	Bogura
252	Asadul	Islam	1738428118	Noshrotpur	Noshrotpur	Adomdighi	Bogura
253	Mannan	Islam	1728029126	Koshaigari	Satiangram	Adomdighi	Bogura
254	Barik	Islam	1757233938	Noshrotpur	Noshrotpur	Adomdighi	Bogura
255	Jillur rahman	Islam	1758000068	Koshaigari	Satiangram	Adomdighi	Bogura
256	Jakir	Islam	1752858114	Koshaigari	Satiangram	Adomdighi	Bogura
257	Bafu Sorder	Islam	1727637415	Koshaigari	Satiangram	Adomdighi	Bogura
258	Amir	Islam	1758329202	Koshaigari	Satiangram	Adomdighi	Bogura
259	Ilias	Islam	1728679346	Noshrotpur	Noshrotpur	Adomdighi	Bogura
260	Hossain Ali	Islam	1776611416	Noshrotpur	Noshrotpur	Adomdighi	Bogura
261	Jalaluddin	Islam	1741155534	Noshrotpur	Noshrotpur	Adomdighi	Bogura
262	Alam	Islam	1783328038	Sudin	Adomdighi	Adomdighi	Bogura
263	Shobuj	Islam	1743036499	Sudin	Adomdighi	Adomdighi	Bogura
264	Ansar	Islam	1741532887	Sudin	Adomdighi	Adomdighi	Bogura
265	Bulbul	Islam	1796621485	Sudin	Adomdighi	Adomdighi	Bogura
266	Samiur	Islam	1728764819	Shalgram	Satiangram	Adomdighi	Bogura
267	Fulbor	Islam	1783207142	Sudin	Adomdighi	Adomdighi	Bogura
268	Rasel	Islam	1919263480	Sudin	Adomdighi	Adomdighi	Bogura
269	Ruhulamin	Islam	1747020994	Noshrotpur	Noshrotpur	Adomdighi	Bogura