Dairy Cow Farming under National Agricultural Technology Project: Phase-I in Bangladesh

The Case of Dairy Cow Farming CIGs in Sherpur, Bogra
Acknowledgement

We would like to express our gratitude and appreciation to all without whose support this book would not have been completed. A special gratitude to Dr. Md. Abdur Razzaque, Project Director, National Agricultural Technology Project (NATP), Bangladesh Agriculture Research Council (BARC) and his team for their guidance and constant support throughout the whole process of this documentation. Furthermore, we would like to acknowledge with much appreciation the role of the local community as well as the local staff of the project for extending their kind cooperation towards us. We would also like to take this opportunity to thank International Fund for Agricultural Development (IFAD) for their overall contribution from the beginning till end.

INAFI Bangladesh and PROCASUR Corporation
List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>Artificial Insemination</td>
</tr>
<tr>
<td>BARC</td>
<td>Bangladesh Agriculture Research Council</td>
</tr>
<tr>
<td>BDT</td>
<td>Bangladeshi Taka</td>
</tr>
<tr>
<td>BQ</td>
<td>Black Quarter disease</td>
</tr>
<tr>
<td>CCMC</td>
<td>Commodity Collection and Marketing Center</td>
</tr>
<tr>
<td>CEAL</td>
<td>Community Extension Agent for Livestock</td>
</tr>
<tr>
<td>CIG</td>
<td>Common Interest Group</td>
</tr>
<tr>
<td>DAE</td>
<td>Department of Agricultural Extension</td>
</tr>
<tr>
<td>DLS</td>
<td>Department of Livestock Services</td>
</tr>
<tr>
<td>DoF</td>
<td>Department of Fisheries</td>
</tr>
<tr>
<td>EC</td>
<td>Executive Committee</td>
</tr>
<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td>FIAC</td>
<td>Farmers’ Information and Advice Center</td>
</tr>
<tr>
<td>FMD</td>
<td>Food and Mouth Disease</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>INAFI</td>
<td>International Network of Alternative Financial Institutions</td>
</tr>
<tr>
<td>KGF</td>
<td>Krishi Gobeshona Foundation</td>
</tr>
<tr>
<td>LEAF</td>
<td>Local Extension Agent for Fisheries</td>
</tr>
<tr>
<td>NATP</td>
<td>National Agricultural Technology Project</td>
</tr>
<tr>
<td>SAAO</td>
<td>Sub-Assistant Agriculture Officer</td>
</tr>
<tr>
<td>UECC</td>
<td>Upazila Extension Coordination Committee</td>
</tr>
<tr>
<td>UEFT</td>
<td>Upazila Extension Facilitation Team</td>
</tr>
<tr>
<td>ULO</td>
<td>Upazila Livestock Officer</td>
</tr>
<tr>
<td>UMS</td>
<td>Urea, Molasses and Straw</td>
</tr>
</tbody>
</table>
**Table of Content**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>5</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>6</td>
</tr>
<tr>
<td>2. Overview of the National Agricultural Technology Project: Phase-I (NATP)</td>
<td>6</td>
</tr>
<tr>
<td>2.1 The Project</td>
<td>6</td>
</tr>
<tr>
<td>2.2 Formation of Common Interest Group (CIG)</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Technology Dissemination</td>
<td>7</td>
</tr>
<tr>
<td>3. The Case of Dairy Cow Farming under NATP</td>
<td>8</td>
</tr>
<tr>
<td>3.1 Background and Location: The CIGs</td>
<td>8</td>
</tr>
<tr>
<td>3.2 Dairy Cow Rearing: The Traditional Way</td>
<td>9</td>
</tr>
<tr>
<td>3.3 Improving Livestock Management System through NATP</td>
<td>10</td>
</tr>
<tr>
<td>3.4 Impact of Behavioral Changes among the CIG Farmers over Time</td>
<td>11</td>
</tr>
<tr>
<td>4. Lessons Learned</td>
<td>12</td>
</tr>
<tr>
<td>5. Recommendations</td>
<td>14</td>
</tr>
</tbody>
</table>
Executive Summary

This case study analyses the experiences and the successful factors in Dairy Cow Farming of two Common Interest Groups (CIGs) developed under the National Agricultural Project: Phase I (NATP) in Bangladesh.

The NATP is the first five-year project of 3 project program that seeks to improve the effectiveness of the national agricultural technology system through strengthening the National Agricultural Research and Agricultural Extension Systems in Bangladesh. The objective of this project is to increase national agricultural productivity and farm income. The project has four components: (i) agricultural research support component, (ii) agricultural extension support component, (iii) supply chain development component and (iv) project coordination and management component.

Kaliakoir Gabhi Palon CIG and Garidoho Shushomo Khadya CIG, located in Sherpur upazila of northern district of Bogra, are considered as two of the more successful CIGs in terms of experiencing significant positive impact in their farm productivity due to adoption of improved management practices of cow rearing as promoted by NATP.

Under NATP, training was provided to the CIG farmers on improved management practices of cow rearing such as fodder management, shed management, livestock health management, caring for the cattle etc. by the DLS. The CIG farmers were informed about the high yielding and nutritious Napier grass that increases milk production even in local breeds. The farmers also became familiar with balanced diet for the cows through NATP. The project provided vaccines for various diseases. The project has made livestock health services available at the farmers’ doorsteps through CEALs, temporary local agents who have been trained under the project. NATP also provided artificial insemination services to produce crossbred at an affordable price.

Overall productivity of dairy farms increased as a result of these changes in practice. Using fresh grass as fodder has increased the milk production by 2-3 liters per cow. Napier grass cultivation has also been proven to be profitable for the farmers. Providing balanced diet for the cows has also increased milk production and decreased the cost of food. Timely vaccinations and deworming have had positive impact on the health of livestock and reduced cattle mortality rate.

The CIG farmers also have a mandatory monthly savings which is deposited into a bank account. The fund is invested in various agricultural productions. The trainings, however, included only CIG farmers. Even though many non-CIG farmers in the area have adopted these methods after witnessing their impact on the farms’ productivity, including them in the training program will help minimize the productivity gap between CIG and non-CIG farms. Involvement of CEALs in the livestock service delivery has made the services more efficient and easily accessible. The project has not given much emphasis on strengthening market linkage in the area. Though the popular yoghurt and sweet making industry absorbs most of the supply of milk produced in the area the farmers are at the mercy of these market and hotel representatives who buy this milk in bulk. Since there is no chilling station in the area they have no option but to sell the produce daily as they have no other way to preserve the milk.

The households with animal farms have the opportunity of using the animal waste to produce biogas with the support of proper technology. Biogas is already being used in some of the households for cooking purposes. The project encourages the farmers to use this technology but does not provide any technical or financial support.

It is recommended that the project continues and scales up demonstration of technology through Field Days, exposure visits etc. in its next phase. It is important to include the non-CIG farmers in the training programs as well. The project could promote commercialization of green fodder production as this will reduce the cost of fodder as well as grass cultivation itself can be profitable for the farmers. In the next phase the project could expand livestock health services by training more local agents for livestock health service delivery. Developing linkages with regional and national market have to be given emphasis in order to ensure fair price for the milk produced. It is also recommended that the project establishes linkage with relevant technical assistance provider to motivate the farmers to adopt biogas technology.
1. Introduction

This case study analyses the experiences and the successful factors in Dairy Cow Farming of two Common Interest Groups (CIGs) developed under the National Agricultural Project: Phase-I (NATP) in Bangladesh. The Kaliakoir Gabhi Palon (Dairy Cow Rearing) CIG is located in the village of Kaliakoir under the Shimabari Union of Sherpur Upazila in Bogra; the other CIG, Garidoho Shushomo Khadya (Balanced Diet) CIG, includes members from three nearby villages under Garidoho Union in Sherpur.

The study was conducted by INAFI (International Network of Alternative Financial Institutions) Bangladesh and PROCASUR Corporation in collaboration with NATP, and thanks to the full support provided by the International Fund for Agricultural Development (IFAD).

Information pertaining to the case was collected from both primary and secondary sources. Literature review included NATP’s various documents including Annual Reports and Impact Assessment Report of NATP Phase I. One day field visit to Sherpur, Bogra included household visits to both CIG and non-CIG farmers and focus group discussions (FGDs) with both CIGs.

Kaliakoir Gabhi Palon CIG and Garidoho Shushomo Khadya CIG have been selected by NATP as they are considered as two of the more successful CIGs in terms of experiencing significant positive impact in their farm productivity due to adoption of improved management practices of cow rearing promoted by NATP.

Section two of this document provides an overview of the project including details on CIG formation methodology and technology dissemination; section three describes the experiences of the two CIGs involved in dairy cow farming and the impact of NATP in their farming activities; sections four and five focus on lessons learned from the project and recommendations for the next phase respectively.

2. Overview of the National Agricultural Technology Project: Phase-I (NATP)

2.1 The Project

The National Agricultural Technology Project: Phase-I (NATP) was initiated in February 2008 with the financial support from the World Bank, the International Fund for Agricultural Development (IFAD), and since 2014 also from the United States Agency for International Development (USAID). NATP, which started activities in October 2008, is the first project of a three project program. The project is being implemented in 120 upazila (sub-district) of 25 districts spread throughout the country. During the whole project implementation, 330,000 households are expected to be benefited.

NATP seeks to improve the effectiveness of the national agricultural technology system by strengthening the National Agricultural Research and Agricultural Extension Systems in Bangladesh. The objective of this project is to increase national agricultural productivity and farm income.

The Project has four components: (i) agricultural research support component, (ii) agricultural extension support component, (iii) supply chain development component and (iv) project coordination and management component.

Under the research component, different high yielding crop/vegetables were developed, existing technologies have been refined and improved and new production strategies have been verified. Trainings were provided on different technologies under this project to farmers by establishing Common Interest Groups (CIGs). Trainings have also been provided to the project staffs. The adoption of new technologies was promoted through farmers’ field days, agricultural fair at district and upazila level, exposure visit to the research center etc. which have resulted in increased productivity, income and profitability. The project also established a one-stop advisory service center at Union level called Farmer’s Information and Advice Center (FIAC). Through FIAC even the non-CIG farmers can have access to new information and technologies. Under the supply chain development component Commodity Collection and Marketing Center (CCMC) was established which provides the CIGs linkage with various marketing companies.
The project has been a collaborative effort of Department of Agricultural Extension (DAE) under the Ministry of Agriculture, Department of Livestock Services (DLS) and Department of Fisheries (DoF) under the Ministry of Fisheries and Livestock, Bangladesh Agriculture Research Council (BARC), Krishi Gobeshona Foundation (KGF) and Hortex Foundation.

2.2 Formation of Common Interest Groups (CIGs)

The project has successfully created a platform for the farmers in their respective areas to discuss problems and share experiences to improve their farming activities and to increase the overall productivity of their farms. Under NATP, three types of CIGs have been formed depending on the common interest of the farmers: Crop CIGs, Livestock CIGs and Fisheries CIGs. In total, 20,012 CIGs have been formed of which 13,450 are Crop CIGs, 3,892 are Livestock CIGs and 2,670 are Fisheries CIGs. Each CIG is established focusing a specific product or activity. For example, a Crop CIG may include 20 farmers involved in the cultivation of sweet pumpkins; or a Livestock CIG may include 20 farmers involved in either dairy cow rearing or beef fattening (not both at the same time).

As the first step to forming CIGs, general meetings were organized in target areas in order to share advantages of becoming associated with the project through forming a CIG such as receiving training on new methods and technologies for dairy cow rearing or beef fattening (in case of livestock), starting their own savings and credit activities etc. The meetings were organized by Sub-Assistant Agricultural Officer (SAAO) for Crop CIGs, Community Extension Agent for Livestock (CEAL) for Livestock CIGs and Local Extension Agent for Fisheries (LEAF) for Fisheries CIGs. Groups were then formed of no more than 20 members from one single village or two to three adjoining villages. The CIGs were formed based on the concentration of livestock activities in the villages. During formation of the CIGs some of the following selection criteria were followed:

- **Group size:** a group should have 20 members.
- **Socioeconomic status:** members of a group should be of the same socioeconomic status and of a specific gender, male or female; but in case of livestock and fisheries, there could be mixed groups.
- **Category of groups:** small and marginal farmer groups 80 percent, medium and large farmer groups 20 percent and women farmer groups 30 percent of all groups.
- **Dwelling status:** the member has to be a permanent resident of the concerned para/village.
- **Membership:** one from one family.
- **Other considerations:** the above criteria may be flexibly considered, in areas where they are difficult to follow. In such cases, process has to be recorded very clearly.

Each CIG has a nine-member Executive Committee (EC), which is responsible for the overall management of CIG and the contributory fund maintained by the group. Each CIG maintains a bank account for accumulating the fund. The CIGs usually invest the savings in various production and/or post-production activities. After the group is formed a contract is signed between the EC of the CIG and the Upazila Extension Coordination Committee (UECC) to formalize the establishment of the CIG. As part of the CIG development and management, the Chairman, Vice-chairman and Treasurer of each group receive training on leadership and group management.

2.3 Technology Dissemination

The project provided trainings to the CIGs on respective interest areas. For example, the dairy cow farming CIGs received training from the Department of Livestock at their respective Upazila or Union Parishad Office. In some cases, depending on the distance of the villages from the Union Parishad, some of the trainings were organized in the nearby schools. The one-day training on dairy cow rearing included methods of fodder cultivation, shed management, caring for the cow and calf etc. It was noted in the Impact Assessment Report that the farmers applied these techniques in their farming activities and were benefited by it. The farmers also expressed their willingness to continue the application of the newly acquired knowledge pertaining to their farming activities. Moreover, CIG farmers are replacing their local cows by cross breed cows due to its increased milk production and having training on improved management practices of cross breed milking cows.

---


2 CEALs and LEAFs are temporary technical service provider in the community for livestock services and fisheries respectively. SAAOs, on the other hand, are directly employed by the DAE for this project. SAAOs, CEAL and LEAF are part of the Union Extension Facilitation Team (UEFT) that is responsible for CIG formation and providing continuous support.
3. The Case of Dairy Cow Farming under NATP: Phase-I

3.1 Background and Location: The CIGs

Sherpur upazila in the northern district of Bogra is well-known for its high quality and delicious sweet yogurt. Therefore, it is not surprising that one of the major income generating activities in the area includes dairy cow rearing. In most of the villages in the area, almost all the households have at least one or two milk producing cow. In fact, it can also be construed that the dairy product industry has flourished in the area due to the abundant supply of milk.

The main occupation in the villages of Sherpur upazila is agricultural farming. Rice paddy and vegetable cultivation have been the main source of income for the farmers. Each household, therefore, had at least one cow which was used for ploughing the land. This also provided them the opportunity to sell the milk in the local market. However, milk production was at most at subsistence level as the cows were of local breed and were given traditional cattle feed rather than a balanced diet.

Kaliakoir Gabhi Palon CIG

In 2009, NATP started its activity in Kaliakoir village; one of the objectives pursued by the project was to encourage cattle farmers to form a CIG in order to receive support from the project, to get organized as a group and to start savings to generate their own fund. In this framework, the CEAL assigned to the area visited the village and informed the cattle farmers about the upcoming activities of the project which included training, technology transfer and services related to livestock management. A group of 20 interested farmers from the village formed the Kaliakoir Gabhi Palon CIG in 2009. The CIG has 2 female members.

As part of the capacity building of the CIG, NATP provided training on dairy cow rearing process including balanced diet, livestock health management, shed management, caring for cattle etc. The initial training was organized at Upazila Parishad (Council) Office. The refreshers were held at local schools in the community from time to time. The Chairman, Vice-chairman and the Treasurer received further training on leadership and group management.

The CIG has a 9 member Executive Committee (EC) which is responsible for overall management of the group. The group has a mandatory monthly savings of BDT 100 per member. Till date, BDT 48,000 has been saved in the bank. The fund is used to provide loans to the CIG members. The CIG members get priority in getting loan. Non-CIG farmers are not explicitly excluded from getting the loan; however, till now the CIG has only provided loans to its members. If someone wishes to get loans, he has to apply to the EC and get the approval of the Committee in order to receive the funds. Last year the CIG provided BDT 20,000 as loan to one of its members. In return the CIG received approximately 190 kg of rice paddy as interest for the loan provided. This year they received around 330 kg of rice paddy investing another BDT 20,000 and 130 kg of paddy from investing BDT 10,000. The profit of BDT 5,440 from selling the paddy in this season and profit of BDT 3,150 from last season was added to the savings of the CIG. The time for returning the principal amount is flexible. The understanding is to provide rice paddy per season as decided at the time of providing the loan.

The dairy farmers of Kaliakoir village usually sell the milk twice a day in two different markets. On an average, the total milk production by the farms of CIG members is approximately 500 liters per day.

Garidoho Shushomo Khadya CIG

NATP started its activity in Garidoho union in 2009. Garidoho CIG includes members from four adjoining villages: Garidoho, Juanpur, Ramnogor and Bangra. Even though the CIG was officially formed in 2009, most of its activities started in later years. The 20 CIG farmers received training from NATP. The training focused on improved dairy cow rearing practices including preparation of balanced food to increase productivity, benefits of Napier grass, importance of deworming medicine for the pregnant cow etc. The CIG has 4 female members.

The CIG members have all been involved in cow rearing for a long time. However, only after getting training from NATP they realized that dairy cow rearing could have been highly profitable.

The CIG members started their monthly savings activity in 2011. In the beginning, they started with BDT 100 per month per member. Then they increased the monthly amount twice by BDT 100. Now they collect BDT 300 per month from each member. They have a savings account at Sonali Bank, Rural Development Academy
(RDA) branch in the name “Garidoho CIG”. At present the CIG has a balance of BDT 52,000 in their account as savings. The CIG uses this fund to provide loans to its members and other farmers though the members get preference. Last year the CIG provided loan of BDT 10,000 to one of its members. The borrower has to pay a service charge of BDT 2,000 in addition to the principal amount at the end of one year. So far the CIG has given loans to 8 members. With the savings the CIG has plans to buy a CNG auto rickshaw. Any income earned from the auto rickshaw will be added to the existing fund of the CIG.

The CIG has contract with a van puller who collects milk from all members’ houses and sells it in the nearby market. Before this arrangement each farmer would have to take the milk to the market either by foot or by bicycle. After the formation of CIG, this arrangement has made it more convenient to transport the milk. In exchange for this service the van puller is paid BDT 1 per liter per day. On average, the total milk produced by all the farms of the CIG amounts to 300 to 400 liters a day.

3.2 Dairy Cow Rearing: The Traditional Way

Traditionally, the cattle farmers would raise local breeds as they were easily available and less expensive than the improved breeds. The amount of milk produced per day by a local breed on average is 2-3 liters whereas a cow of improved breed can produce more than 25 liters a day. The amount of milk produced also depends on the livestock management including diet, vaccination and disease control. Switching from straw to green grass for cattle feed can boost milk production even in local breeds. The cattle farmers were also unfamiliar with the concept of balanced diet for their cattle. They would feed their cattle only silage, molasses and dry straw rather than green grass or other balanced diet. No additional vitamins or minerals were usually given to the cattle. The farmers would not care much about vaccinations or deworming the cow during pregnancy as they were not aware of the benefits of these practices. As a result, the milk production hardly reached the optimal level. Before the project’s interventions very poor standards were maintained in terms of livestock management.

In Bangladesh, DLS has been providing services related to artificial insemination (AI) to produce improved breeds of cattle for more than two decades. However, cattle breeding using AI technique had been very limited until very recently, mostly due to lack of awareness. Most cattle farmers did not bother about upgrading local species by AI. This could have been due to lack of understanding about the AI technology and potential of producing crossbreds. DLS have been using the semen of Friesian breed which are known for their outstanding milk production. The AI services have been available at upazila level at a subsidized rate of BDT 30 per insemination.
3.3 Improving Livestock Management System through NATP: Phase-I

The National Agricultural Technology Project: Phase-I (NATP) targeted existing interested dairy cow farmers with the objective to enhance the cumulative milk production of the dairy cows both local and crossbreds by introducing new and more effective methods of dairy cow rearing.

Farmers’ Field Days and Exposure Visits were some of the other methods used by the project to disseminate technology in the targeted areas. The Field Days organized by the CIG members and local UEFT members target the non-CIG members in order to demonstrate the technology and encourage them to adopt the improved methods of farming. It has been evident from the Impact Assessment Survey that quite a few non-CIG farmers (5 percent of total non-CIG participants for dairy cow technology) have been motivated to adopt the improved management practices for rearing the dairy cow and have been benefited by it.

Increased Productivity through Adoption of Improved Management Practices of Cow Rearing

With the gradual adoption of improved practices of livestock management as promoted by NATP, productivity of milk producing cows has increased significantly across CIG and non-CIG farmers.

According to the baseline figures (2007-08) a cow of local breed would produce on average 1.2 Liter/day. For both CIG and non-CIG farmers there has been approximately 83 percent increase in the production. On the other hand, a crossbred cow of the CIG farmer on average produces 8.7 Liter/day (71 percent increase) and that of a non-CIG farmer produces 7.5 Liter/day (47 percent increase) in comparison to the baseline figure of 5.1 Liter/day/cow.

The increased productivity is due to the change in livestock management techniques. More than 90 percent CIG members now maintain proper hygiene for their livestock whereas before the project only 55-70 percent farmers (depending on the type of breed) concentrated on hygiene. 85-90 percent non-CIG farmers maintain the standard hygiene level for the livestock. Both groups also practice timely deworming of their cows, which was not so prevalent before the project. Before 2007 only 50 percent CIG members and 44 percent non-CIG farmers used this practice. After the trainings all CIG members and more than 75 non-CIG farmers provide deworming medicine timely.

Use of fresh green fodder for the cattle has increased for both CIG and non-CIG farmers. Intake of green fodder contributes to increase in milk production. More than 50 percent of CIG farmers now produce some type of green fodder in their own field. Around 40 percent of non-CIG farmers produce green fodder. Before 2007 the figures were 30 percent and 16 percent respectively for CIG and non-CIG farmers. Additionally the farmers have been trained on providing balanced diet for the cattle.
Increased Income of Dairy Cow Farmers

The increased productivity of the cows as well as decreased production cost due to better fodder management has contributed to an increase in farmers’ net income. On average gross margin generated by CIG and non-CIG farmers were BDT 9,025/cow and BDT 8,891/cow respectively for local breeds. For crossbreds, the gross margin generated by CIG farmers on average is BDT 47,682/cow and BDT 32,281/cow by non-CIG farmers. The margins for local breed are 13 and 11 percent higher respectively for CIG and non-CIG farmers than the gross margin generated in non-project areas. Similarly, the margins of CIG and non-CIG farmers for crossbreds are respectively 48 and 34 percent higher than that of the farmers in non-project areas.

3.4 Impact of Behavioral Changes among the CIG Farmers over Time

Balanced Diet Resulting in Better Livestock Health and Reduced Cost

After receiving trainings from NATP the 20 CIG farmers from Kaliakoir village started applying their knowledge in their farming activities. The behavioral changes over time led to increased productivity, decreased cost, improved livestock health and overall increase of income. Mr. Monir, Secretary of the Kaliakoir CIG, found Napier grass cultivation to be quite profitable. Aside from increasing the milk production of his cows, cultivation of Napier grass earned him a profit of BDT 35,000 last year. He and his wife now grow this grass in around 66 decimals of land.

High Productivity from Using Green Grass for Fodder

Through the project the CIG farmers became aware that switching from straw to green grass increases the milk production even in the local breeds. Md. Moniruzzaman, Secretary of Kaliakoir CIG, came to know about Napier grass from the training provided under NATP. Napier grass is a high yielding green fodder that requires very little water and has low nutrition requirement and hence can be grown easily in most types of land. Napier grass has been proved to be a very nutritious fodder for the cattle. Before he knew about Napier grass, he used to feed his cows mostly straw or hay alongside chaff, molasses, bran etc. However, when he started feeding his cows Napier grass the milk production increased by 2-3 liters per cow. Garidoho CIG members also observed the change in milk production after including Napier grass to the cattle diet.

At the beginning the farmers were reluctant to switch to green fodder as grass is not easily available in the area. So in an effort to provide for his cattle Mr. Monir started growing Napier grass in his field. Many farmers in the area now grow Napier grass which itself is a profitable venture.

Balanced Diet Resulting in Better Livestock Health and Reduced Cost

Providing balanced diet for proper nutrition is very important in cow rearing. Through NATP the CIG farmers have come to know about UMS, a nutritious low-cost diet of urea, molasses and straw for the cows, which is also used for beef fattening.

According to Mr. Hatem Ali, Cashier of Garidoho CIG, after feeding the cow balanced food regularly each cow’s weight increased by 2 to 3 kg. After including the Napier grass in the diet, the milk production has increased. One of his crossbred cows now gives milk 3 times per day which amount to 22 to 23 liters, while before it was used to give up to 15 liter of milk daily.

Mr. Monir, Secretary of the Kaliakoir CIG, found Napier grass cultivation to be quite profitable. Aside from increasing the milk production of his cows, cultivation of Napier grass earned him a profit of BDT 35,000 last year. He and his wife now grow this grass in around 66 decimals of land.

Mr. Hatem Ali, Cashier of Garidoho CIG, has been involved in cow rearing since 2000. He now has 9 cows and can earn a net income of up to BDT 1500 a day. From his involvement with the project, Mr. Hatem has been benefited by applying the modern methods of livestock health management in cow rearing.

The balanced diet includes UMS, green grass, and different minerals and vitamins such as di-calcium phosphorus powder, calcium syrup etc. Previously most farmers would feed each cow with 2-2.5 kg of grains a day. After the trainings provided by NATP, the farmers learned that for every 6 cows they could use 5 kg grain
per day. The vitamins and minerals are easily available in the local market and their cost is around BDT 250 per cow per month. Therefore, putting the livestock on balanced diet has not only increased productivity but has also decreased the cost of feeding significantly.

**Improved Health Management of Livestock**

The project provided vaccines for various diseases such as Foot and Mouth Disease (FMD), Anthrax, Black Quarter (BQ) etc. to the CIG. The CEAL maintains the timely vaccination schedules of all the cows. However, there is currently a shortage of vaccine for FMD in the local market as well as at the DLS.

The project also advised the farmers to provide deworming medicine to the livestock. The CIG farmers were not aware of the importance of deworming while the cow is pregnant. Deworming the mother cow ensures a healthy calf as well as increased milk production.

Making livestock health services available through CEAL has been a very effective way to ensure better health management for the dairy cows. Both CIG and non-CIG farmers can contact with the CEAL through mobile phone if there is any problem with their cattle. If CEAL is not able to solve the problem the Upazila Livestock Officer (ULO) is contacted. As a result of the project’s intervention, cattle mortality in the area has been reduced significantly.

**Improved Breed of Cows by Artificial Insemination**

The project has made the service of artificial insemination of cows to produce improved breed available at farmers’ doorsteps through CEAL. DLS has been providing artificial insemination service for cows since before the project was initiated. However, the practice was not so widespread. Due to this project, the farmers are now more aware of the advantage of raising crossbred cows and have access to the AI service in their locale. DLS uses the semen of Friesian bull for artificial insemination of the local cows to produce improved breeds.

The crossbreds can produce milk up to 25 liters per day whereas the local breeds only gives up to 4-5 liters. The fee for artificial insemination provided by DLS is BDT 30; this price is fixed by the government. However, the CEAL usually charges between BDT 100 to 150 for his service including the semen that is still quite affordable. Through artificial insemination farmers can use their local breeds to produce improved crossbreds. On the other hand, the price of a fully grown crossbred cow is on average BDT 40,415 whereas a local breed costs BDT 11,750 on average.

Through this project the service of artificial insemination has become easily available in the villages and non-CIG farmers also feel motivated to avail this service. This has increased the overall productivity for the dairy farms in the area.

4. Lessons Learned

**More in-depth training for longer duration on cow rearing**

As part of the technology transfer process, NATP only offered one day training on cow rearing to its CIG members with regular refreshers from time to time. However, the CIG farmers feel that more in-depth training on cow rearing would be more helpful for them.

**Demonstrating positive impact due to more effective dissemination of technology**

NATP included both training and technology demonstration in order to disseminate improved management practices of dairy cow farming. Even though only CIG farmers received trainings from the project, many other farmers in the village also adopted the improved management practices of cow rearing as they observed the success of the CIG farmers using the newly acquired knowledge. Demonstrations of positive impact on productivity of the farms have been more encouraging for other farmers to adopt similar methods.
Existing productivity gap between CIG and non-CIG farmers

From the Impact Assessment Report it is evident that there is a gap in productivity between the CIG and non-CIG farms. This gap indicates that the non-CIG farmers are yet to reach their optimal level of production. The true potential may be realized if non-CIG farmers are also included in the training program. It has been mentioned by both the project and its beneficiaries that the impact might be more sustainable if other interested farmers would also be able to receive the training. Not including other farmers in the process also poses a threat to CIG farms as non-CIG farmers may not always follow the proper health management process making their farms, and in turn also CIG farms, vulnerable to disease outbreaks.

Using local agents for efficient livestock service delivery

The CEAL is the Community Extension Agent for Livestock who provides livestock services to farmers. They acquired expertise with the support of the project through trainings. Using this expertise they can now deliver services related to livestock to the farmers’ doorstep. This system has successfully created a source of income for the CEALs as well as made the livestock services more accessible in the community. Through this service both CIG members and non-CIG farmers are being benefited. The farmers can contact the CEAL in their respective areas in case they require any assistance or information regarding livestock health.

Low selling price of milk due to underdeveloped market linkage

The dairy farmers sell the milk directly at the nearby markets. There is no collection point of any milk processors (i.e. MilkVita or Aarong) in the Sherpur upazila which has become a growing need in this village. Though the popular yoghurt and sweet making industry absorbs most of the supply of milk produced in the area the farmers are at the mercy of these market and hotel representatives who buy this milk in bulk. Since there is no chilling station in the area they have no option but to sell the produce daily as they have no other way to preserve the milk. Even though the project has a Supply Chain Development component under which Commodity Collection and Marketing Centers (CCMC) were established at various points, no such centers were located in the area. As a result, not much emphasis was given in strengthening the market linkages in this area.

High potential for adopting biogas technology

The households with animal farms have the opportunity of using the animal waste to produce biogas with the support of proper technology. In both Kaliakoir and Garidoho villages some of the households are already using their animal waste to produce biogas that meets their daily need of fuel for cooking. The farmers who are already using biogas have received technical support from Infrastructure Development Company Limited (IDCOL), a public company specializing in renewable energy, and its partner NGOs. The infrastructure required for this has been built by the NGOs. The project is encouraging farmers to establish biogas plant as well as linking them with NGOs to built biogas plant. They are also following the activities of biogas plant after its establishment. The advantage of using biogas is that it is environment friendly, reduces the fuel cost, and the organic manure produced as a byproduct during the fermentation of the waste is of better quality that helps increase the soil fertility. There is potential for this activity to be scaled-up in the area.
5. Recommendations

Following recommendations are provided for the second phase of the project:

Include interested non-CIG farmers in the training program

In NATP Phase I, only CIG farmers have been included in the training program. Both NATP staff members and CIG members recommend that other interested farmers should also be offered training under the project. Even though many non-CIG farmers have been inspired by the success of CIG farmers to adopt improved management practices of dairy cow farming, the impact can be more sustainable if it is supported with in-depth training on cow rearing as the trainings are provided by the trained staff of DLS including ULOs and CEALs.

Continue demonstration of technologies through Field Days

It is recommended that the project continues demonstration of technologies through Field Days in its next phase. This method has proven to be an effective way of disseminating the technology and, hence, has the potential to be scaled-up.

Promote commercialization of green fodder production

The project could promote commercialization of green fodder production and motivate the farmers to cultivate high yield variety grass such as Napier grass in large scale. Fodder cultivation is more profitable than rice cultivation in a given land area. The farmers can have access to low-cost highly nutritious fodder for the cattle which will ensure improved livestock health management. On the other hand, the farmer will be able to supply the grass in local market as there is high demand for green fodder in the area.

Expand livestock health services through developing more CEALs

More local expertise in other geographic locations can be developed by training community personnel who will be able to provide support in their respective villages/communities for livestock health management such as vaccination, artificial insemination, fodder management etc. It will create income opportunities for the community agents as well as making livestock services more accessible in other areas.

Strengthen market linkages

At present, the farmers are dependent on the local market demand only which is more or less fixed. Developing linkages with the regional and national markets may ensure fair price for the produce. The project can develop partnership with private sector to build a chilling station that can be used to preserve the milk on a daily basis.
About IFAD:
The International Fund for Agricultural Development (IFAD) invests in rural people, empowering them to reduce poverty, increase food security, improve nutrition and strengthen resilience. Since 1978, we have provided about US$15.8 billion in grants and low-interest loans to projects that have reached some 430 million people. IFAD is an international financial institution and a specialized United Nations agency based in Rome – the UN’s food and agriculture hub. IFAD has been working in Bangladesh since 1978. With 29 projects, IFAD and the Government of Bangladesh reached more than 9 million household. www.ifad.org

About INAFI Bangladesh:
INAFI Bangladesh is the country chapter of global INAFI (International Network of Alternative Financial Institutions), a network of development practitioners. INAFI envisions a world where the poor are empowered and ensured sustainable livelihood with dignity. INAFI has more than 300 NGOs/ MFIs globally as members and 28 member NGOs/ MFIs in Bangladesh. INAFI works on various thematic issues such as microfinance, migration and development, mainstreaming gender and micro insurance among others in development sector through capacity building, research and knowledge management, and advocacy. http://inafiasia.net/bangladesh_chapter.htm

About PROCASUR Corporation:
Is a global organization specialized in harvesting and scaling-up homegrown innovations. Its mission is to foster local knowledge exchange to end rural poverty. By sharing innovations through customized local knowledge-management tools and methodologies, the organization connects global institutions with local talents, providing the structured learning platforms necessary to spread innovation. PROCASUR has facilitated learning opportunities in over 20 countries in Africa, Asia, and Latin America and the Caribbean, affecting the lives and livelihoods of thousands of rural talents across the globe. To learn more, visit www.procasur.org.