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PRICE
POVERTY REDUCTION BY INCREASING
THE COMPETITIVENESS OF ENTERPRISES

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BANGLADESH

ANNUAL REPORT FOR FISCAL YEAR 2011



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POVERTY REDUCTION BY INCREASING THE COMPETITIVENESS OF ENTERPRISES (PRICE)

ANNUAL REPORT FOR FISCAL YEAR 2011

Contract No. 388-C-00-08-00021-00

TABLE OF CONTENTS

List of Acronyms	7
Executive Summary.....	8
Section I. Horticulture Sector.....	12
A. Potato	15
B. Eggplant	24
C. Mango	29
D. Cross-Cutting Activities in Horticulture ...	33
E. Gender Integration in Horticulture	38
Section II. Aquaculture	39
A. Fish	41
B. Shrimp	48
C. Gender Integration in Aquaculture	55
Section III. Leather Products Sector	56
A. Workforce Development	58
B. Assistance to SME Development	61
C. Quality Improvement of Basic Raw Materials	67
D. Others	68
Equity Integration	70
ANNEX A PRICE Performance reports: FY 2011	73
ANNEX B Success Stories	83





Horticulture



Aquaculture



Leather Products

LIST OF ACRONYMS

A

AAFL Apex Adelchi Footwear Ltd.
ALFAL Apex Leather Craft & Footwear Ltd.

B

BADC Bangladesh Agricultural Development Corporation
BBMS Bamunji Beel Motsojibi Samity
BDT Bangladeshi taka (currency)
BFFEA Bangladesh Frozen Food Exporter Association
BFL Bay Footwear Ltd
BFLLEA Bangladesh Finished Leather, Leather Goods & Footwear Exporters' Association
BPC Business Promotion Council
BSFF Bangladesh Shrimp and Fish Foundation
BSIL Bengal Shoe Industries Ltd.
BMCSS Bhaluka Motso Chasi Somoboy Somity

C

COC Codes of Conduct
COEL Center of Excellence for Leather
CST Closed System Pond Technology

D

DAE Department of Agriculture Extension
DITF Dhaka International Trade Fair
DOF Department of Fisheries
DMBBS Digherkanda Motsa-pona, Beboshahi-Kallan Bohumukhi-Somabaya-Samity

E

EBL Eastern Bank Limited
EFADF Environment Friendly Agricultural Development Foundation
ELISA Enzyme-linked Immunosorbent Assay
EPB Export Promotion Bureau
EU European Union

F

FCR Feed Conversion Rates
FFL FB Footwear Ltd.
FSPEG Frozen Fish & Shrimp Processors and Exporters Group
FY Financial Year

G

GAP Good Aquaculture Practice
GFL Gazi Fish Ltd.
GFFM good fish farm management
GHERS Greater Harvest and Economic Return from Shrimp project
GIP goods in process
GKSSE Grameen Krishok Shahyak Sangstha Enterprise
GMSS Goldhamari Motshojibi Samabay Somity
GUKED Gram Unnayan Kendra Enterprise Development

H

HACCAP Hazard Analysis and Critical Control Points

I

ILO International Labour Organization
IPM integrated pest management
ISC Industry Skill Council
ITA Imam Training Academy

J

JSK Janaseba Kendra

K

KMCSS Kahaloo Matshya Chashi Samoby Samity
KMFMCSL Kansat Mango Farmers Cooperative Society Limited

L

LDC Least Developed Country

LFMEAB Leather Goods & Footwear Manufacturers & Exporters Association of Bangladesh
LSBPC Leather Sector Business Promotion Council
LTSE Leather Technologist Small Entrepreneurs

M

MMCSS Murail Matsya Chashi Samoby Samity
MOU Memorandum of Understanding
MRDMCSL Murail Rural Development Multipurpose Cooperative Society Ltd
MT Metric Ton
MTT Modified Traditional Technology

N

NFMC Nazirtek Fish-Dryer's Multipurpose Cooperative's
NGO Non-governmental Organization
NMS Nokla Motsojibi Samity

O

OJT On the job training
OSEL Organic Shrimps Export Ltd
OW over-wintering

P

PBKS Palli Bandhu Kallan Sangstha
PBL PICARD Bangladesh Limited
PCR Polymerase Chain Reaction
PFI Partner Financial Institution
PFPPA Phulpur Fish and Prawn Farmers' Association post-larvae
PL Pachpir Bazar Matsya Chashi Samoby Samity
PMCS Productivity Efficiency Costing

R

RDA Rural Development Academy
RDF Rakhaing Development Foundation
RHFL Rupali Sea Foods Ltd.

S

SABINCO Saudi-Bangladesh Industrial & Agricultural Investment Company, Ltd
SLG small leather goods
SOP standard operating procedures
SSFP Smiling Sun Franchise Program
SSOP sanitary standard operating procedures
SSS Society For Social Services
SSURDA Sustainable Development for Rural and Urban Areas
SME Small and Medium Enterprise
SMSC S&M Shrimp Culture Ltd
STC short term consultant
SW Southwest

T

TBMP traditional best management practices
TFFS Trisal Fish Farmers-Beboshsi Somity
TFRD Technology For Rural Development
TMBS Tarakanda Satata Motso Beboshahi Somity
TOT training of trainers
TVET Technical and Vocational Education and Training

U

UAE United Arab Emirates
US Unnayan Sangha
USA United States of America
USD United States dollar

V

VAP value added product

W

WSSV White Spot Syndrome Virus

EXECUTIVE SUMMARY

The USAID-funded PRICE project works with the Government of Bangladesh and with private sector farmers and firms to alleviate constraints hindering the competitiveness of the aquaculture, horticulture and leather products sectors. PRICE encourages broad-based economic development throughout these value chain to improve competitiveness, while simultaneously engendering a higher than average rate of growth among low income target groups.

During the financial year (FY) ending September 30, 2011, the project's sector activities were expanded, making considerable progress towards achieving the project's overall goals and targets, including sales growth, job creation, and increased investment.

Horticulture: In the case of horticulture, economic growth, rising incomes, and urbanization have led to a growing domestic demand for fresh fruits, vegetables and spices that vastly exceeds current supplies, making Bangladesh a net importer of horticultural products. During FY 2011 PRICE trained and assisted over 11,300 farmers in the northwest and southwest of the country to improve the domestic supply and export potential of potato, eggplant, and mango. In the case of potato, PRICE provided technical support to local seed companies for the production of clean seed and provided technical assistance and training to over 1,000 seed potato contract farmers. As a result of PRICE's technical assistance and market linkages, one partner was able to produce the first ever export of Bangladeshi potato to the international retail giant TESCO. PRICE trained 840 eggplant farmers on production technology, safe pest management and post-harvest handling, and facilitated the introduction of improved varieties for sustained higher production. In mango, the project assisted five associations to train nearly 2,864 farmers in orchard management, pest control, harvesting and post-harvest technology. As a result of these interventions horticulture sales increased by almost \$12.8 million, 3453 jobs were created, and 2,700 farmers received help accessing finance.

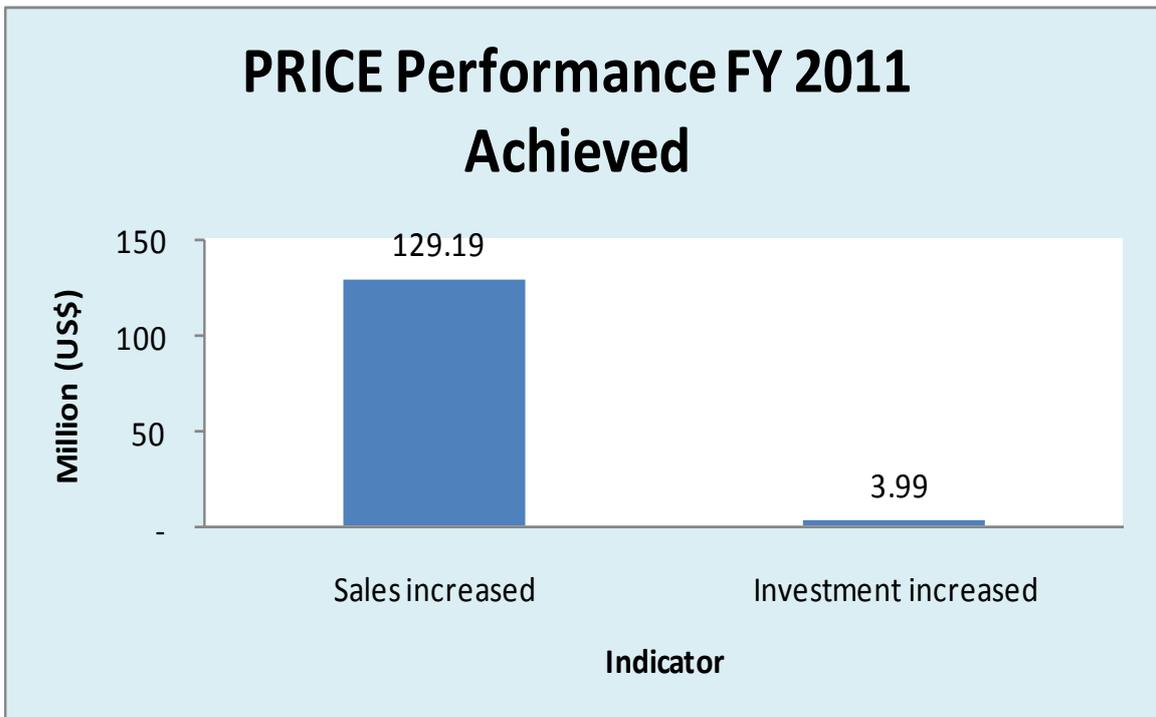
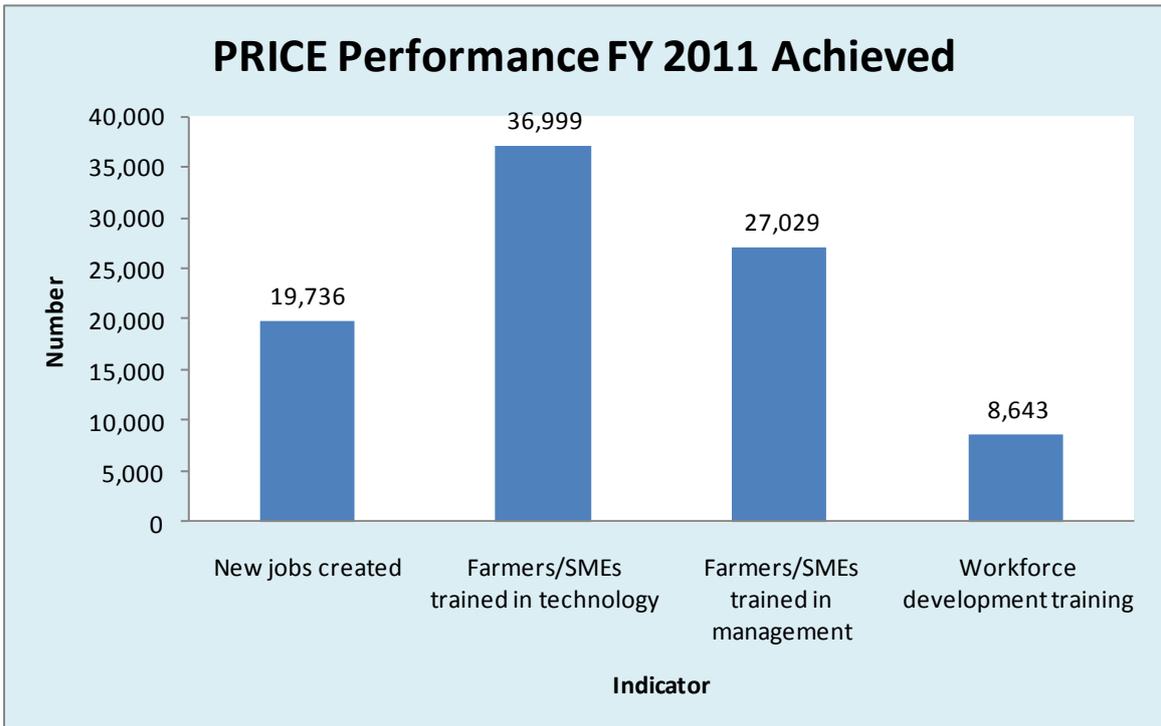
Aquaculture: Both fisheries and shrimp farms play a major role in meeting Bangladesh's food requirements, generating employment, and contributing to export sales, but productivity is poor and there are significant problems related to quality control, food safety and post-harvest handling. During FY 2011, PRICE collaborated with over 50 fish farmers associations and other value chain actors throughout the country, with special emphasis in the Jessore, Mymensingh, Bogra, and Cox's Bazar regions. Almost 30,000 fish and shrimp farmers were trained on good aquaculture practices, management, and group marketing, and were linked to quality seed-producing hatcheries, nurseries, feed millers, and micro credit. PRICE promoted the development of the dry fish manufacturing industry by training 400 yard owners and more than 2,000 female workers on hygienic dry fish production, personal hygiene and packaging. Shrimp processing firms received assistance to improve food safety and to open new markets in the Middle East. As a combined result of these efforts, \$94.8 million in new sales were generated, of which \$68.6 million were in fish and \$26.2 million were in shrimp, and private investment was increased by \$3.5 million. The increased economic activity also led to the creation of 13,758 full-time equivalent jobs, almost a quarter of them for women.

Leather Products: The Bangladeshi leather industry generates a large number of jobs and foreign revenue for the country. Although there are few large companies, over 2,000 SMEs participate in the production of leather goods and over 700,000 jobs are associated with the sector. During FY 2011, PRICE continued its support to the value-added subsectors by linking SMEs with lead firms such as Aarong, and assisted them both with workforce training and capacity development. Over 3,300 workers were trained and 2,524 new jobs were created, of which 71% were for women. To ensure the sustainability of this effort, PRICE joined the Leather Footwear Association and the International Labor Organization in promoting the creation of the Center of Excellence for Leather and co-financed the first batch of 1,000 apprentices trained through this institution. PRICE promoted the development of an association of leather products SMEs, and supported its successful participation in the Dhaka International Trade Fair. PRICE helped generate \$21.6 million in new sales, the vast majority for export, and \$320,000 in private investment.

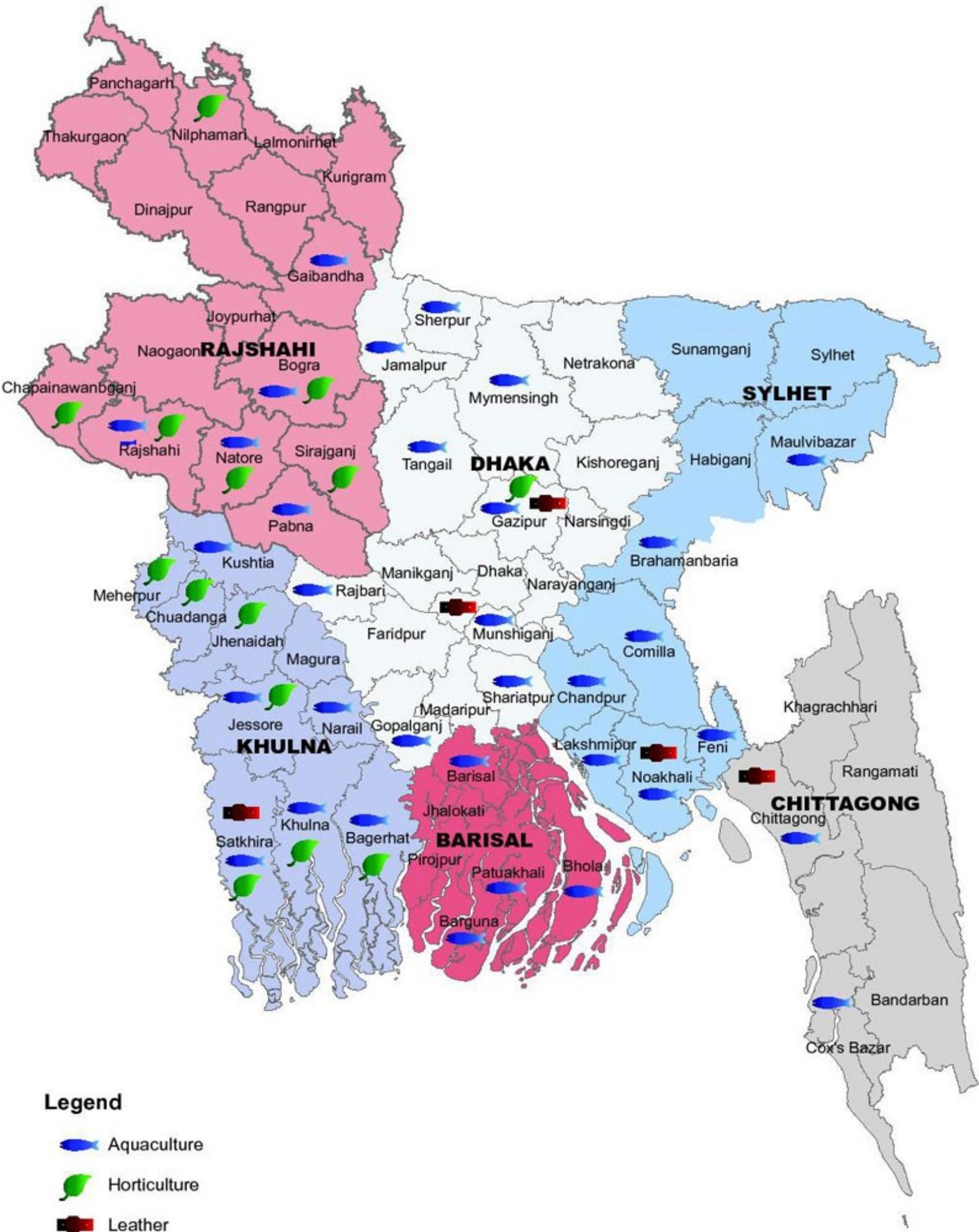
PRICE is currently strongly expanding its aquaculture and horticulture activities in the southwest of the country to support USAID Feed the Future priorities. However, it will begin downscaling activities in mid-2012, as it is scheduled to conclude in February of 2013.

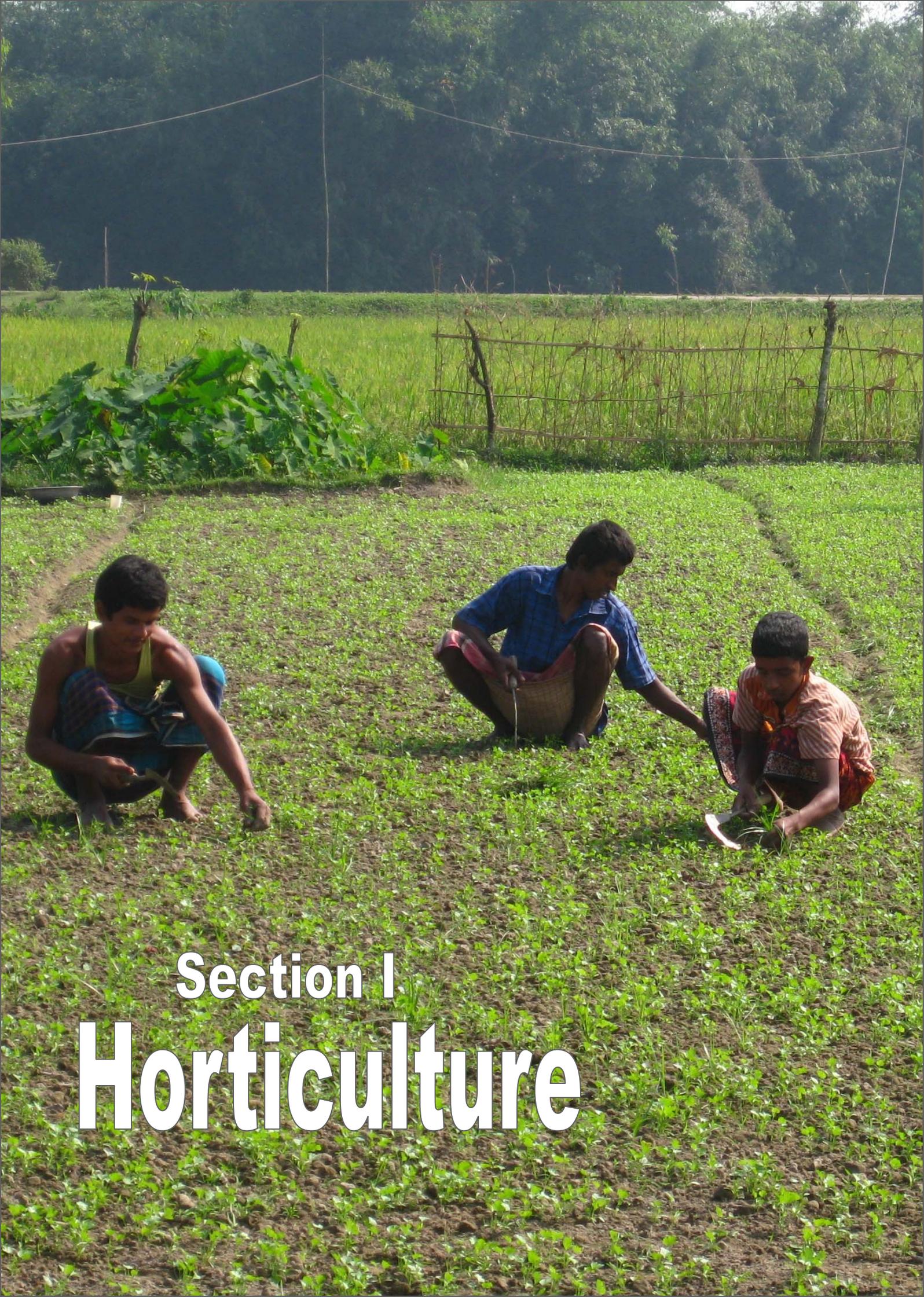
PRICE PERFORMANCE Oct'10-Sep'11

INDICATOR	ACHIEVED
<i>Sales increased</i>	\$129.19 million
<i>New jobs created</i>	19,736
<i>Investment increased</i>	\$3.99 million
<i>Farmers/SMEs trained in technology</i>	36,999
<i>Farmers/SMEs trained in management</i>	27,029
<i>Workforce development training</i>	8,643



PRICE WORK AREAS





Section I.
Horticulture

OVERVIEW

During the 2010-2011 fiscal year, increased domestic demand and strong export earnings have bolstered the incomes of horticultural farmers. This led to further growth and increased efforts by the farmers to invest more in their production processes and inputs, allot more land for agricultural use, and work to make additional improvements where they could. This is very good for the sector as a whole, however the prevailing low price of potato throughout the year could affect potato production in the coming year if the situation does not improve within a few months.

PRICE is improving the domestic supply of vegetables and fruit, with focused efforts on three key crops - potato, eggplant, and mango. PRICE has facilitated the export of potato and addressed several cross-cutting issues in its production; promoted safe production practices and the use of compost and bio-fertilizer; and assisted its partners in the production and promotion of high quality vegetable seeds. PRICE's efforts in strengthening horticulture crop value chains mainly covered the southwest and northwest regions of Bangladesh.

In 2011, PRICE helped several local companies produce clean seeds to decrease their dependence on imported and locally multiplied low quality seeds. Through receiving support from PRICE, Ferdous Biotech (PVT) Limited, Technology for Rural Development, Sajib Seeds, Seed Potato Growers Association, Unique Seed Company, and Konica Seed Company successfully produced clean, different generation seeds of three major table potato varieties - Cardinal, Diamant and Granola. These potato seeds were grown from the tissue-cultured plantlets and the pre-breeders and breeder seeds were tended to under strict isolation in net houses and open fields. PRICE provided technical support to the enterprises to ensure best practices for hygiene and disease management were being used to maintain genetic purity and produce clean seeds through several cycles. Additionally, the support aimed to help achieve a profitable output in the end. PRICE's training improved the production capacity of 1,029 seed potato contract farmers.

PRICE also promoted production of processing types of potato through two of its partners, Gram Unnayan Kendra Enterprise Development (GUKED) and Murail Cooperative Society, and linked these group farmers with processing companies, such as Bombay Sweets and Co.

PRICE continued to improve the productivity of table potato farmers through contract farming. PRICE, through its partners Muktir Alo Agro Business, PRIDE Agro Enterprise, Krishok Bandhob Karmosuchi, and Golden Seed Processing Farm in the south and GUKED and MRDMCSL in the north encouraged farmers to undertake and expand potato cultivation. To this end, PRICE helped the enterprises and associations to train 3,762 farmers on modern potato cultivation techniques and provided technical support to the farmers during the growing season. With PRICE's support, table potato production increased more than 35 percent.

PRICE strengthened the Bangladeshi potato export sector through breaking into the untapped high end market in Malaysia through TESCO - an international retail chain company. PRICE provided technical assistance to the contract farmers of GUKED to grow high quality potatoes, and in sorting, grading and packaging. PRICE also helped Golden Harvest Agro Industries to understand and comply with the international standards for exporting potatoes to the foreign market. As a result of working with a group of 1,500 GUKED contract farmers and Golden Harvest, PRICE helped to successfully close the first deal ever for the export of 300 metric tons of quality potatoes to TESCO Malaysia.

PRICE accelerated improvements in post-harvest handling of potato. It supported several seed and table potato companies to train 1,250 farmers and potato field workers, most of whom were women, on harvesting and post-harvest handling, maturity index, haulm pulling, digging, curing in the field, storing, sorting, grading, and cleaning, and final packing for storage or marketing.

PRICE supported commercial eggplant farmers groups through Muktir Alo Agro Enterprise, Krshok Bandhu Karmashuchi, PRIDE Agro Enterprise, Vaterchar Farmers Association, EFADF Agro Enterprise, and GUKED to train 840 farmers on production technology, safe pest management, and post-harvest handling, and facilitated the introduction of new and improvement of existing varieties for sustained higher production.



OVERVIEW

PRICE helped its farmers in sourcing good quality seeds and selecting better local varieties. Additionally, PRICE provided regular technical support on different production techniques starting from the seedling raising and transplantation stages to the adoption of a mix of biological and chemical control measures against pests and diseases and the establishment of demonstration plots and field schools. Interventions focused on safe eggplant production, minimizing production costs, and developing market linkages.

In mango production, the project assisted two associations in the north and three enterprises in the south to train nearly 2,864 farmers on orchard management, pest control, harvesting and post-harvest technology. As a result PRICE farmers received better yields and fetched competitive prices for their produce. PRICE helped three of its partners establish market linkages for selling garden-fresh chemical-free mangoes directly to the consumers. PRICE also supported KFMCSL in marketing these safe mangoes through launching a mango fair in Dhaka.

PRICE's support has led to increased yields of horticultural crops, mainly potato, eggplant, mango, and other high value vegetables, safer pest management practices, improved post-harvest handling and storage, and greater use of eco-friendly inputs and techniques. As a result of interventions in the reporting period, horticulture sector partners increased sales by more than \$12.8 million; the project helped to create 3,453 jobs; and, investments in fixed assets increased by approximately \$175,785. In addition, 11,339 farmers received assistance in improved technology and management, and 2,700 farmers received help accessing finance.



A. POTATO



PRICE focused interventions on production, availability and access to good quality potato seeds during the period. PRICE helped several local companies to produce clean seeds to decrease their dependence on imported and locally multiplied low-quality seeds.

Konica Seed Company Limited, a PRICE supported company, is one of those. Their seed quality was compromised due to the use of locally multiplied 3rd/ 4th generation certified low-quality seeds as a base seed. As a result, the farmers experienced low average potato yields. However, with support from PRICE, the situation has drastically improved. PRICE stimulated the production of tissue cultured basic plant materials in the country and the subsequent seed production is in compliance with strict protocols. PRICE supported Ferdous Biotech (PVT) Limited, Technology for Rural Development, and the Rural Development Academy, Bogra by providing technical staff to strengthen the capacity of biotechnology laboratories so they could produce high quality plantlets and subsequent generation of seeds. Additionally, PRICE linked these laboratories to the Konica Seed Company, Sajib Seeds, Unique Seeds, Ankur Seeds, Himghar Limited, and PRIDE Agro-enterprise to develop the foundation of certified seed production through contract farming. The companies were also linked with the Seed Certification Agency for proper certification.

PRICE introduced processing type of potatoes – such as Asterix - among the Bogra farmers linked with its partners Gram Unnayan Kendra Enterprise Development (GUKED) and Murail Cooperative Society, and then linked these groups of farmers with processing companies. PRICE signed an MOU with Bombay Sweets and Co to support it in getting processing varieties of potatoes through developing linkages with the potato growers.

While the potatoes exported from Bangladesh usually only go to Bangladeshi ethnic markets in very small quantities, PRICE has helped leverage high end market access through ensuring better quality and standard packaging of the potatoes. PRICE assisted Golden Harvest and Ferdous Biotech, who have successfully exported Bangladeshi potatoes to Malaysia and Vietnam.

A. POTATO

A.1. Assisting Tissue Culture Laboratories to Strengthen their Capacity

The domestic production of potato seeds and imports hardly exceeds 15 percent of the local demand. To address this shortage, PRICE has undertaken a comprehensive strategy to improve the country's potato seed sector through supporting tissue culture technology for disease-free and clean potato tuber seed production cycles. PRICE supported four organizations: Potato Seed Growers Cooperatives, Technology for Rural Development, Ferdousi Biotech, and Rural Development Academy to build their capacity and human resource development for running tissue culture laboratories and to efficiently produce increased numbers of disease-free plantlets of different varieties of potato, including processing types.



Tissue culture laboratories

To strengthen the labs, PRICE provided training to tissue culture technicians to make the production of disease free plantlets more efficient. Moreover, in order to provide hands-on training to new recruits, training courses were specifically developed to build a critical mass of trained technicians.

A2. Creating a Critical Mass of Trained Manpower for TC-based Seed Production



Residential Training course on Tissue Culture Technology held in RDA campus.

A two week residential training course on Tissue Culture Technology was organized during the last week of October 2010 and during first week of March 2011 at the RDA campus. PRICE supported the initiative in order to increase the capacity of the companies and seed growers engaged in disease free planting material production. The training course included methodology of plant biotechnology, including meristem culture, media preparation, growth chambers and illumination requirements, laminar flow and autoclave handling, testing for virus elimination at different stages of growth, requirements for enzyme-linked immunosorbent assay (ELISA) testing, transfer from bottle, hardening, isolation, net houses, and quarantines. 20 participants, mostly technical personnel associated with seed potato production have enrolled into each of the one week long training course. PRICE also helped in developing a manual on tissue culture technology of potato for future use by the tissue culture labs.

PRICE partners could successfully produce 710,000 disease free potato plantlets of which Rural Development Academy produced 1,30,000 plantlets, Ferdousi Biotech, 2,00,000 plantlets, Potato Seed Growers Association of Rajshahi, 3,00,000 plantlets and Technology For Rural Development 80,000 plantlets.

A. POTATO

A.3. Facilitating Production of Disease-Free Breeder and Pre-Breeder Seed

PRICE has encouraged several potato seed enterprises to follow control measures for disease-free seed production instead of simple multiplication from certified seeds. PRICE supported Sajib Seed, Technology for Rural Development, Ferdousi Biotech Ltd, Potato Seed Growers Association, Ankur Seeds, Konica Seed Company Ltd., and Unique seed to organize pre-breeder seed production from tissue cultured plantlets. After production of pre-breeder seed, breeder and foundation seed production in net houses under the supervision of experts was conducted.

Through PRICE's technical support, Sajib Seed of Nilphamari established 1.65 acres of net houses for production of pre-breeder and breeder seeds of Diamant, Cardinal, Granola and Asterix potatoes. The planting material was obtained from RDA, Bogra. Among the enterprises that had their own TC labs, Ferdousi Biotech organized net houses for establishing plantlets and tuber-lets of Granola, Cardinal, Diamant on 10 acres; TFRD on five acres; RDA on 3.26 acres; and Potato Seed Growers Association on 8.1 acres; all of which used their own sources. Ankur planted tissue culture plantlets on 1.65 acres, sourcing plantlets from Ferdous Biotech and Konica seeds planted on 0.35 acres sourcing from RDA's TC laboratory. All the breeder and pre-breeder seed producers mainly selected table potato varieties due to the high demand of these popular varieties among the farmers. However, Sajib and Ferdous Biotech also planted the processing type of potato following PRICE's advice.

For the first time, Konica Seed Company was able to produce good quality breeder seeds during the 2011 growing season, resulting in the production of 300 kilograms of disease free pre-breeder seeds, 500 kilograms of breeder seeds, and 3,200 kilograms of foundation seeds. PRICE also established a link with the Seed Certification Agency to help Konica obtain certification of breeder seeds. With PRICE's support, Ferdous Biotech Limited successfully produced 97 MT of breeder seeds from their 8.25 acre farm at Nilphamari, while Sajib Seeds produced 1,950 kg of pre-breeder seeds from 15,000 plantlets brought from RDA, in Asurkhai village of Syedpur upazilla, in a 0.33 acre net house.

PRICE provided technical assistance to Konica Seed Company, Technology For Rural Development, Sajib Seed Company and Ferdousi Biotech during the production period of seed potato which was proved to be very useful in getting successful seed potato from plant materials. Technical assistance included hardening the plantlets to minimize shock, bed preparation, micro and macro nutrient management, pest control and quarantine, haulm pulling at proper time, curing, sorting, and grading and packing. Through this support, Sajib Seeds were able to achieve a 100% survival rate of their plantlets and successfully produced 8,042 kg of breeder seeds from their one acre of land.

PRICE also supported Unique Seed Company of Bogra in the successful production of 11.9 MT of breeder seeds and 117.72 MT of foundation seeds of Cardinal, Diamant and Granola variety in their 22.3 acres of leased land. The company received disease-free pre-breeder and breeder seeds from RDA Bogra.



A. POTATO

A.4. Potato Seed Plot Demonstrations and Field Days for Knowledge Sharing

PRICE helped Ferdousi Biotech and the Konica Seed Company establish five potato seed demonstration plots with cardinal and diamond varieties, in collaboration with the seed potato farmers of Joldhaka of Nilphamari and Loknathpur, Gokundia and Akundabaria of Chudanga and Dahijuri of Jhenaidaha district. After the seed sowing was completed in mid-November, PRICE provided technical supervision to ensure quality seed was produced. With Unique Seed Company, PRICE arranged field days to help farmers better understand proper conditions and management for potato growing.

A.4.a. Konica Seed Company

Although the production of disease free pre-breeder seed was not new in Nilphamari and northern districts, no potato seed producers of south had yet been exposed to the technology. While PRICE advised its partner, Konica Seed Company Limited, to undertake pre-breeder and breeder seed production, it linked the enterprise with another PRICE partner organization, Rural Development Academy. As a result of the linkage PRICE established, RDA trained one technical person from Konica and RDA supplied its pre-breeder seeds to Konica. Through PRICE's support, Konica has established the first net house in the south of Bangladesh for disease-free breeder seed production.



To celebrate their achievement and share the success of producing breeder seeds with farmers, experts, extension staff of the Department of Agriculture Extension (DAE) and the Seed Certification Agency, Konica Seed Company organized a field day in February in Lokanathpur, Chuadanga. A number of experts from the DAE, the Director General of RDA, and farmers visited the potato seed field and learned about Konica's efforts to produce high quality seeds. Furthermore, Konica thanked PRICE for their support in building linkages between Konica and RDA, increasing access to pre-breeder seeds, training its field staff, and providing technical assistance during the growing season. Konica produced 3,310 kg of breeder seeds of the Cardinal variety for further multiplication. Other partners also successfully produced good quantities of breeder seeds with support from PRICE.



A.4.b. Ferdousi Biotech

Similarly, Ferdousi Biotech organized a field day for 290 farmers at Joldhaka, Nilphamari on February 2nd to show successful production of breeder and pre-breeder seed following strict control measures, proper nutrient and moisture regime, isolation, and haulm pulling at proper time. Deputy Commissioner of Nilphamari, local elites, potato experts, extension officials of DAE, local farmers and a PRICE representative attended the field day. The company expressed its appreciation to PRICE for providing technical support in the production process.



A.4.c. Unique Seed Company

PRICE helped the Unique Seed Company organize a field day in Sherpur (Bogra), where 200 local potato farmers were invited to observe potato field conditions, management practices, and sample potato seed harvesting. They shared their experiences and participated in a technical discussion session organized by PRICE. In addition, PRICE provided technical assistance and trained the company's workforce on potato harvesting and post-harvest handling techniques.

A. POTATO

A.5. Promoting Certified Seed Production through Contract Farming



Seed production through contract farming

PRICE supported PRIDE Agro-enterprise, Konika Seed Company, and Ferdouse Biotech Limited to produce certified potato seeds through contract farming. PRIDE Agro Enterprise is a newly formed company that started their certified seed production by organizing farmers in groups, organizing trainings, collecting foundation seeds from Tuber Crops Research Centre, Debiganj and providing technical support during the production season. Thirty seed potato farmers of PRIDE cultivated 36 acres of land; producing 303 MT of good quality certified seeds. PRIDE purchased 20.5 MT of grade -1 certified seeds at a premium price, and helped the farmers to get access to cold storage for the remainder of their production.

PRICE supported Konika Seed Company Limited to organize 4 batches of its contract farmers consisting of 30 potato farmers in each batch, in total 120 farmers, on "Improved Potato Seed Cultivation Technology through Contract Farming". The training was conducted in 2 locations at Bokundia and Loknathpur of Chuadanga commencing from November 7, 2010.

Potato seed experts conducted the training which was ended successfully on 16th November. Konika Seed Company supplied 80,640 kg disease free seed, and provided fertilizers and other chemicals to the contracted trained farmers. Technical supervision during the production season is being provided by PRICE and Konika seed.

112 acres of land were brought under the contract farming of which 32 acres were planted with diamond and 80 acre cardinal variety of certified seeds supplied by the Konika. Konika also provided financial support to the farmers its own source. The company procured 911 MT of best graded potatoes from their contract famers, who were trained followed by technical supervision through PRICE's support.

PRICE facilitated to provide hands on training to 200 seed contract farmers of to GUKED in Shibganj, Shahjahanpur, and Bogra during December, 2010 for farming in 106 acres of land to produce seed potato of diamond and cardinal, variety. GUKED provided support to its contract farmers for inputs procurement. Technical support was also provided to Ferdous Biotech to organize contract farming of seed involving 25 contract farmers in 13.33 acres in Joldhaka, Nilphamari area. The enterprise provided seed and other inputs, for production of certified seed of diamond, cardinal and granola.

PRICE also established linkages between the Seed Certification Agency and its partners.



Seed production through contract farming

A. POTATO

A.6. Organizing Field Schools for the Potato Farmers

Farmers' field schools are usually organized during the production season. However, PRICE has developed a unique field school system by identifying the critical growth period for potatoes and organizing field days accordingly. Through this approach, farmers were able to manage their training in coordination with the growing season and were able to address any major problems through learning by doing it in the field. This approach also lowers the operational cost of running schools throughout the season. Using this cost-effective approach, PRICE worked with its partners to organize potato field schools for farmers. During January and February of 2011, field schools for potato farmers were organized by PRIDE Agro Enterprise in Kamlapur, Belermath, Natunhat, Samoshpur, and Abdulpur of Jessore District.



PRIDE Agro Enterprise organized field schools for potato farmers in Kamlapur, Jessore

In the field schools, farmers inspected their fields with experts during critical growth periods to identify problems and determine the growth and crop management status. The experts gave the farmers guidance on identifying diseases and insects, and corresponding control measures; soil moisture level and need for irrigation; and, growth stages and after-care. They were also shown how to implement haulm pulling and field curing. The farmers appreciated the new knowledge they gained through training and requested to continue the training for a longer period of time.

A.7. Promoting Processing Type of Potato Production and Establishing Linkages with Industries

While the consumption of french fries and potato snacks is rapidly growing in Bangladesh, the potato varieties specific for this consumption have only been introduced recently in the country. To meet this growing demand, PRICE introduced processing type of potatoes – such as Asterix, Courage, and Lady Rosetta to the farmers associated with its partners - Gram Unnayan Kendra Enterprise Development (GUKED), Murail Cooperative Society, and Sajib Seeds. The enterprises were further linked with processing companies, such as Bombay Sweets and Co., Golden Harvest Agro Industries Ltd, and Quashem Foods.

Although thousands of farmers are associated with GUKED and Murail, only 146 farmers showed interest to try the new varieties for a total of 59 acres. As a result of PRICE's support, the farmers received an average yield of approximately 11 MT per acre whereas some farmers achieved up to 14.4 MT per acre of potato. Bombay Sweets procured 160 MT of potato from the farmers at a premium price. Although some farmers sold their potato to interested buyers for a premium price of BDT 1,000 for a 40 kg bag, most of them preferred to keep the potato in cold storage as seed instead. Overall, the farmers were pleased with the new variety, as it tastes good and has high market value.

PRICE supported M/S Sajib Seeds in the production of Lady Rosetta, another processing type of potato suitable for crisps. M/S Sajib Seeds signed a partnership agreement with Quashem Food Ltd., a crisp producing company, to supply processing types of potato. PRICE provided technical support in the proper curing, skin finish and, grading of size and quality of potato suitable for the machine. M/S Sajib seeds supplied 71.85 MT's of Lady Rosetta potato worth USD \$12,317 to Quashem Foods Ltd from Saidpur, Nilphamari.



A. POTATO

A.8. Increasing the Productivity of Table Potato, Mainly in the South

While potato is not widely cultivated in or around Khulna and the southern part of Jessore, there potential for expanding the potato area. This expansion, in turn, can contribute to the income and food security of the resource poor farmers. PRICE signed a MoU with Muktir Alo Agro Business, PRIDE Agro Enterprise, and Krishok Bandhob Karmosuchi, three new agro enterprises from the Jessore- Khulna region. PRICE helped these enterprises to organize smallholder groups for potato farming and conducted trainings for 570 potato contract farmers on modern cultivation methods for table potato.

A.8.a. Muktir Alo Agro Business

PRICE supported Muktir Alo Agro Business in conducting the training, "Improved Potato Cultivation Technology through Contract Farming," for 90 farmers during November. Technical supervision for the farmers was provided by the field technician to ensure they receive advice when required. The farmers planted potato (Cardinal and Diamant) in 12.45 acres of land with two table potato varieties, and got 124 MT of potato with an average production of 10MT. The enterprise assisted the table potato farmers with inputs.

A.8.b. PRIDE Agro Enterprise

PRICE also supported PRIDE Agro Enterprise in organizing a training, "Improved Technology on Potato Cultivation through Contract Farming" for 240 potato farmers of Jessore. The training was conducted in eight batches consisting of 30 farmers in each batch at Kamlapur, Balighat, Natunhat, and Samospur of Jessore. The enterprise organized the farmers for contract farming of table potato (Cardinal and Diamant varieties) on 160 acres of land and assisted with input supply and technical supervision. The total production was 1,720 MT with a per acre production of about 11 MT, compared to 4.5 MT in the previous year. Farmers consumed more than five percent of their production.

A.8.c. Krishok Bandhob Karmasuchi

Krishok Bandhob Karmasuchi, another new agro-enterprise of Jessore, organized a training of 300 potato farmers on modern cultivation technology on potato cultivation in the Jhikorgachha Upa-zilla (Jessore) during December 2010. PRICE facilitated the training to increase potato productivity in the area through improving the knowledge and skill of the potato farmers in farming potato as well as assisting them to obtain the required inputs. They have cultivated potatoes on 147 acres of land with a total production of 1,852 MT. Average production per acre was 12.64 MT, a significant increase compared to an average of 4 MT from the previous year.

A.8.d. Golden Seed Processing Farm

Golden Seed Processing Farm organized 60 con-



Farmer's training on modern cultivation method of table potato cultivation was organized by PRIDE Agro Enterprise in Jessore.

tract farmers at the Keshtopur village of Jibon nagar Upazilla of Chudanga to farm one processing type of potato variety - Asterix, and two table types - Granola and Diamant - on 30 acres of land. The enterprise supplied certified seeds to the farmers procuring from BADC. Total land under cultivation was about 124 acres with an average yield of 8.2 MT per acre. The poor drainage conditions in the field during the harvesting stage resulted in potato scab infections, which in turn hampered production. Despite this challenge, the yield per acre (4.8MT/acre) was at nearly double the yield of the previous year. PRICE provided hands-on training to the enterprise's contracted farmers, its staff members, and workforce on potato production technology.

A.8.e. Enterprises in the Bogra district

PRICE supported enterprises in the north, specifically in the Bogra district. One such enterprise, GUKED, worked with 1,096 potato farmers to continue organized farming of table potato, ultimately cultivating 737 acres of land. GUKED expanded its activities adding 1,776 potato farmers to cultivate Granola and Cardinal varieties of potato over 1,881 acres of land. GUKED provided inputs and finance for the farmers as well.

PRICE helped organize 59 day-long training sessions for 1,776 table potato farmers on production, harvesting and post-harvest handling of potato. PRICE also conducted short refresher management trainings for the 1,096 previously trained farmers in Bogra. About 27,384 MT of table potato were produced by the farmers during the season, nearly 28% more than what was produced the previous year.

PRICE also supported Murail Cooperative Association in Bogra to give hands-on training to their 230 farmers to cultivate potato on 138 acres of land. They produced a total of 1,243 MT of potato, resulting in a 20% increase compared to last year.

A. POTATO

A.9. Facilitating Training on Harvesting and Post-Harvest Handling of Potato



Post-harvest handling of potato

Although farmers in Bogra and many parts of the country have been engaged in potato farming for years, good quality potatoes have been rare because of poor harvesting and post-harvest handling. Improper harvesting and post-harvest handling contributes to quick deterioration of the stored potato, disease, and rotting, resulting in a 4-10% loss of farmers' harvested potatoes. This year PRICE made a focused effort to work with partner organizations in training farmers and the workforce on harvesting and post-harvest handling, which has improved the quality of harvested potato.

During this quarter, PRICE supported the Unique Seed Company, Technology for Rural Development, Ankur Seed and Himghar Ltd, Sajib Seeds, Konica Seed Company, GUKED, Murail Cooperative Association, PRIDE Agro-enterprise, and Ferdous Biotech Limited, to train 1,250 farmers and potato field workers, most of whom were women, on harvesting and post-harvest handling, maturity index, particularly haulm pulling, digging, curing in the field, and storing, sorting, grading, cleaning, and final packing for storage or marketing.

A.10. Promoting Export of Potato to Mainstream Market of Malaysia

While Bangladesh occasionally exports potatoes to Malaysia and Singapore, they lack the quality to be exported to chain super shops. Identifying the potential of the untapped Malaysian market, PRICE encouraged both farmers and exporters to learn about and be compliant with post-harvest handling requirements for exporting potatoes. Due to PRICE's efforts in establishing international market linkages and ensuring better quality and standard packaging, the export of potato resulted in high end market segments leveraged, contract farmers received better prices, revenue of the enterprises increased, and Bangladesh's foreign exchange earnings increased.



Potato packaging for export

A.10.a. TESCO—GUKED-Golden Harvest

Last year, PRICE learned of TESCO-Malaysia's interest in importing quality potatoes from Bangladesh. TESCO-Malaysia is the Malaysian subsidiary of the British retail giant, TESCO. However, while they were interested, the quality and traceability of Bangladeshi potato were of concern. To address this, PRICE and Golden Harvest brought a TESCO auditor and organized a field visit to a group of contract farmers in Chaok Volata village of Shibganj Upa-Zila, Bogra in January 2010. In addition to having discussions with the farmers, the auditor observed the production process, measures taken to produce disease-free quality potato, harvesting methods, and the grading, sorting and packaging process. After confirming the traceability and quality of the potato, TESCO accepted the product and approved Golden Harvest as their supplier.

PRICE provided technical assistance to the contract farmers of GUKED to grow high quality potatoes, and for sorting, grading and packaging, as well as helping Golden Harvest Agro Industries to understand and comply with the international standards for exporting potatoes to the foreign market. As a result of working with a group of 1,500 GUKED contract farmers and Golden Harvest, PRICE helped to successfully close the first deal for the export of quality potatoes to TESCO Malaysia. The shipments continued throughout April – May 2011. A total of 267.17 MTs of granola were exported to TESCO-Malaysia in refrigerated containers after proper grading, sorting, and packing in special 15 kg bags.

A. POTATO

A.10.b. Gateway China BHD- Power Dynamic Limited- Ferdous Biotech

Ferdous Biotech, another PRICE supported enterprise, also exported 107 MT of granola potato to a Malaysian exporter, Gateway China BHD, of which the initial 93 MT was exported in open containers and the rest of the consignment was sent in refrigerated containers due to increased temperatures. The enterprise also exported 67 MT of Granola potato to Power Dynamic Limited in Vietnam through Malaysia, a new destination for Bangladeshi potato.

PRICE supported Ferdous Biotech with proper grading, sorting, cleaning, and bagging into five and 10 kg nylon mesh bags. Ferdous Biotech exported table potato worth USD \$43,095.



Potato packaging for export

A.11. Supporting Training for Potato Cold Storage Staff

As potato tubers are sensitive to high temperatures, cold storage is used to cater the domestic market. However, in Bangladesh, cold storage is not a viable option given that it's not energy efficient, the potatoes are large in size, storage requires manual work, the facilities are not well ventilated, and filled potato filled sacks are usually haphazardly. Furthermore, many farmers store potatoes without proper curing, sorting, and grading. The staff members involved in the technical and managerial operations of the cold storage facility typically lack the knowledge and skill to handle it efficiently. This is further exacerbated by the country's inadequate electricity supply inflating the cost of potato storage. As a result, these factors lead to high post-harvest losses.

To address some of the issues, PRICE organized two one-day training courses for 60 participants consisting of farmers, workforce, and technical and managerial personnel of Sarder Rokeya Cold Storages at Gaidghat, Jessore. The training was conducted in the cold storage premises, with 30 participants in each batch. The training course, which was facilitated by the Deputy Director of BADC Cold Storage Jessore and the Field Officer of the Seed Certification Agency Jessore, highlighted the importance of field heat removal, pre-cooling, proper sorting, the proper use of the fan and blower, minimizing carbon dioxide accumulation by maintaining the regular inflow of air, revolving the gunny bags at regular intervals to allow proper cooling, proper placement of bags for maintaining quality of potato, and keeping seed potato in separate chambers.



B. EGGPLANT



Eggplant is one of the prized crops for small holders. Although this vegetable crop is considered to be a winter crop, it can also grow in the summer depending on the location and the farmer's cropping pattern. Farmers typically get harvests at least twice a week for a three month period that begins in March. However, recently many farmers have abandoned or will abandon eggplant cultivation due to the risks of high pest attack and increased cost of production.

To revitalize the eggplant sector, PRICE has been supporting thousands of small eggplant farmers to identify and solve their production related problems and to help in minimize the cost of production through adopting a mix of interventions. PRICE-supported farmers experienced good yields and earned better market prices due to the relative better quality of their produce. This was achieved through taking proper care during the production period, in particular better intercultural operation and pest management. The cost of production decreased significantly due to lessened use of pesticides and adopting an environmentally friendly integrated pest management (IPM) approach.

As a result, farmers who had abandoned eggplant cultivation and lost one of their cash crops came back to eggplant farming due to PRICE's successful interventions. PRICE helped thousands of small eggplant farmers in the Jessore and Bogra areas to identify and solve their production related problems, in particular seedling raising techniques, pest management, and harvesting. This support has helped minimize the cost of production for the farmers. PRICE supported partners also assisted farmers in marketing their produce.

PRICE supported several organizations – Muktir Alo Agro Enterprise, Krishok Bandhu Karmashuchi, PRIDE Agro Enterprise, Vaterchar Farmers Association, and EFADF Agro Enterprise - to establish market linkages and help eggplant farmers improve production, adopt safe and clean practices in pest management, and practice effective post-harvest handling techniques.

B. EGGPLANT

B.1. Training on Modern Farming Practices



Farmers' training on improved technology held in Jessore

Farmers have been unable to control fruit and shoot borer insect and other diseases, even after spraying three to four times in one week. As a result, eggplant farming has become unprofitable for many farmers and environmental hazards, including risks to local populations, have increased significantly.

During January – March, PRICE collaborated with PRIDE Agro Enterprise to organize a two-day comprehensive training on “Improved Technology for Eggplant Production” for 210 eggplant contract farmers in Jessore. The training was held in Hurgati Krishok Samity Club, of Monirampur, Jessore. In February and again in April, Muktir Alo Agro Business, a Jessore-based agro–enterprise, organized training for eight groups of 30 farmers each on “Improved Technology in Eggplant Cultivation through Contract Farming” at

the Gourighona Union Parishad Auditorium. Agricultural experts from Jessore and Khulna conducted the training sessions. Participating farmers were from the Hurgaati, Shamontokathi, Vorotvina, and Goirighona villages of Keshobpur Upazilla, Jessore.

PRICE also helped Krishok Bondhu Karmashuchi organize training for 150 eggplant farmers during April 2011. Farmers attended the two-day training course titled, “Improved Technology on Eggplant Cultivation” at the Mohinikathi Krishi Club and Bejjatala Krishi Club. The training was facilitated by senior agricultural experts of the districts and the Upazilla agriculture officer.

The trainings covered a wide range of topics including seedling raising techniques, land preparation, transplantation, fertilization, top dressing, irrigation, pest management – in particular biological control measures, and post-harvest handling.

B.2. Organizing Field Schools for Eggplant Farmers

PRICE made a breakthrough in teaching- learning processes by introducing vegetable crop-based field schools. These schools were held during critical growth stages on the farmers' fields with their participation under the guidance of experts. This process helps farmers identify problems independently and solve them with the help of experts. This process is not only cost-effective, but by being conducted directly in the field, the learning is embedded in the community.

During April-May, PRICE supported PRIDE Agro-Enterprise to organize four field schools during four critical growth periods of eggplant. In each period, farmers were assigned to assess crop conditions of the nearby eggplant plots of the village and identify the growth condition and stage, plant health, soil moisture level, insect- pest population status, fertility, drainage situation, and any visible abnormality.



PRIDE Agro-Enterprise, a PRICE partner arranged field schools at Jessore for eggplant farmers

B. EGGPLANT

B.2. Organizing Field Schools for Eggplant Farmers

They then determined solutions to the problems they identified with the expert's direction and acted accordingly to resolve them on the field. Three field schools were organized at Hurgati village and one at Delobari village. Eggplant farmers from both villages participated in the day-long field-based learning and practice sessions with great enthusiasm. The event was divided into four sessions and in each, 40- 45 farmers participated.

As a result of these sessions, farmers gained understanding of the crop growth periods, the need for irrigation, and were able to identify pests and diseases. They also learned about control measures, the maturity index of eggplant crops, and harvesting methods. As a result, a higher number of farmers are now practicing IPM with a focus on biological control agents (pheromone trap) and minimal use of pesticides.

B.3. Demonstration Plot to Showcase Best Practices and Organizing Field Days

In collaboration with Vaterchar Farmers Association, PRICE established ten demonstration plots at the Vaterchar, Darikandi, and Jangua villages with two high yielding varieties, BARI-1 and NAR-1. Each of the demonstration plots was established on the farmer's plot covering about one-third of an acre. A soil test was conducted before transplanting to determine its fertility. Upon testing, fertilizer doses were accordingly estimated by a PRICE consultant and lime was added to correct the soil's pH level. Farmers were trained on seed bed preparation and soil treatment. Only healthy seedlings were transplanted to the main demonstration field.

Five field days were organized in the same villages with the participation of nearby farmers and extension staff to show the effect of the use of healthy seedlings, proper soil treatment, liming, proper doses of fertilizer, and sex pheromones for insect control. Two field days were also organized in the Vaterchar village to utilize the demonstration plots when the plants were at the fruiting stage. The PRICE consultant demonstrated the right time to harvest, picking without injuring the plants, and sorting and organizing the plants for marketing.

B.4. Varietal Improvement of Existing Eggplant and Introduction of New Variety

Eggplant farmers strongly oppose the introduction of new varieties as they believe their own local varieties are better suited to their conditions and are in higher demand in the local market. However, as time passes by, the repeated use of seeds from the leftover or previous years' crops creates genetic erosion, resulting in susceptibility to pest and diseases as well as to low yields. Collaborating with PRICE partners, Agro-Enterprise and Krishok Bandhu Karmashuchi, PRICE undertook initiatives to improve the local eggplant varieties to minimize losses and produce higher yields.

B.4.a. PRIDE Agro-Enterprise

PRICE initiated a local eggplant variety improvement program in Jessore, jointly with its partner organization, PRIDE Agro- Enterprise. Once completed this will significantly, improve locally available eggplant varieties. The seeds of the improved varieties will then be distributed to the eggplant farmers, eventually resulting in higher yields and less pest problems. The enterprise processed 1.45 kg of eggplant seeds from the two best performing local varieties, Red Eye-ret and White Eye-ret for further selection and multiplication.



Eggplant farmers



B. EGGPLANT

B.4.b. Krishok Bandhu Karmashuchi

Krishok Bandhu Karmashuchi's farmers have been in eggplant cultivation for years, but recently for the past few years, they incurred significant losses due to fruit and shoot borer, root rot and other diseases. Spraying high doses of pesticides at close intervals had little or no effect on pest control. Moreover, cultivation of the same local variety year after year without proper crop rotation exacerbated the losses. In need of a solution, farmers agreed to change their existing cropping pattern and try the new pest-resistant eggplant variety recommended by PRICE.

Upon receiving the farmers' support, PRICE organized the supply of a high-yielding type of eggplant, known as "Kushtia Chega" in order to replace the old and poor yielder varieties. The seeds were then distributed on a trial basis among the farmers of Mohinikathi and Bijatala of Jhikorgacha, Jessore. The new variety gave high yields during the first and second harvest. However, the heavy rainfall experienced during the latter part of the season affected fruit setting which ultimately resulted in poor yields.

B.5. Collection of Wild Seeds for Eggplant Grafting

Root rot is one of the major diseases affecting eggplant and causing loss for the farmers. Grafting cultivated varieties of eggplant on root rot-resistant wild eggplant is a proven technology to address this, but farmers in Jhikorgacha, Jessore were not aware of it. PRICE trained farmers on grafting techniques and the importance of planting grafted plants.

One of the main challenges in introducing this technology was the lack of wild eggplant seeds. However, PRICE addressed this through collecting 50 grams of wild root rot-resistance eggplant seeds from PRIDE Agro-Enterprise and other various sources. During the next season, grafting of seedlings will be demonstrated to further expand this methodology.

B.6. Introducing New Technology for Higher Yield and Longer Crop Duration



Eggplant field visit in Hurgati village

After May, winter eggplants start dying, resulting in low yields. During June, the scanty eggplant supply in the market increases the price. Farmers usually remove the plants from the field and the land remains vacant for long periods of time – generally until it is time for the next rice crop. During this time, the farmers are jobless and do not have sources of income. To assist the farmers, PRICE worked out a technical solution to rejuvenate the eggplant and extend the crop cycle. This solution was implemented through activities with PRIDE Agro-enterprise.

PRICE introduced the farmers in Hurgati village to this new technology of rejuvenating existing plants following several steps of operation. At first the diseased and insect infested plants were removed from each of their fields. The remaining plants were trimmed by pruning older leaves, twigs, and stems. Some apical shots were

also pruned. A small dose of pesticide was applied as preventive measure. Soils were slightly raised at the base of each plant and fallen plants were straightened by putting support. Additionally, a small dose of mixed fertilizer was applied between the plant rows carefully so that it did not fall on the plants and roots were not injured. After the operation is complete a light tilling was done to make the soil loose and to better aerate it.

The rejuvenated plants gave new shoots and triggered profuse flowering. Farmers were impressed to see the new crops. Beginning mid-June, farmers started getting a second crop from the existing field. Previously, there was no return from the crops from June onwards, but after rejuvenation farmers began harvesting an average of 500 kg of eggplant on every alternate day from 0.33 hectares of land. The sale price was BDT.18- 19/ per kg compared to the average price of BDT 8-10 per kg during the main cropping season. The harvest continued for more than 25 days, creating extra income for the farmers at a time when normally they were receiving no income.

B. EGGPLANT

B.7. Promotion of IPM, Facilitating Technical Supervision and Market Linkages

Integrated pest management along with the adoption of better production technologies, use of compost in the soil, and access to good seeds and regular technical support during the production period is critical for successful eggplant production. PRICE, together with several enterprises, provided technical support to eggplant farmers and addressed their problems during the growing period. The farmers of PRIDE Agro Enterprise, Krishok Bandhu Karmasuchi, and Muktir Alo Agro Enterprises of Jessore who were trained on production technologies, pest management and harvesting techniques saw excellent results. The farmers were traditional eggplant growers but were abandoning the crop due to widespread attack of pest and diseases and increasing cultivation costs.

As a result of the trainings and technical support, eggplant farmers now use a mix of technology and practices. These include pheromone trap, utilizing the right type of pesticides in the right doses, using compost and regular vigilance to remove infected shoots, keeping the eggplant plots clean, irrigation depending on soil moisture content, maintaining better drainage, and harvesting at the right times. PRICE also helped the farmers market their product. As a result, farmers' cost of production decreased, and they are now better informed about the market prices and can receive better prices from the marketing agents given their increased access to better market information.



Eggplant farmer in Jessore

C. MANGO



Mango is considered to be the king of fruits by Bangladeshis and signifies the primary source of income for thousands of farm families in the northwest and southwest districts of Bangladesh, particularly Nwabganj and Meherpur districts. Mango production represents the livelihood of a large number of people who are involved in its production along the value chain – from harvesting to marketing. Mango is always in high demand in Bangladesh because of its delicious taste.

This year, PRICE supported thousands of mango farmers through five partner organizations: Kansat Mango Farmers Cooperative Society Limited and Bonolota Mango Producer Cooperative Society Ltd in the northwest region; Uttaran Agro Enterprise in Ankur; and, Chesta Agro Enterprise in the south of Bangladesh. Through these organizations, a total of 3,763 mango farmers received assistance in improving productivity. With PRICE support, farmers adopted modern technology, better pest management practices, proper harvest and post-harvest handling technologies, and reaped the benefits of the market linkages PRICE established.

Apart from providing training on orchard floor management and other production and pest management practices, there was an emphasis on post-harvest handling techniques as well. Improper harvesting, post-harvest handling, and packaging usually results in 20% in post-harvest losses which often increase to 30% due to rotting in retail sales outlets.

Hundreds of mango farmers were given demonstrations on post-harvest handling, particularly focusing on latex removal, cleaning, cold and hot water treatment, drying, grading, and packing in plastic crates for distant market (instead of traditional bamboo baskets). Another focus was on timely harvesting and stopping the use of carbide for ripening, given its health risks.

PRICE has supported Kansat Mango Farmers Cooperative Society Limited for the last two years to increase its productivity, adopt better post-harvest handling methods, and market the farmer's produce directly by opening outlets in Dhaka. Through PRICE's efforts, these outlets carried carbide-free mangoes and experienced nearly no post-harvest handling losses.

During this year, 480 farmers of ANKUR were provided training on production. Additionally, 500 farmers from Bonolota Mango Producer Cooperative Society Ltd. of Chapainwabganj and 720 farmers from Kansat Mango Farmers Cooperative Society Ltd. were given training on post-harvest handling. Subsequently, both of these PRICE partners marketed their produce directly to Dhaka outlets and retail points. This helped the organizations' members receive better prices for their carbide-free garden fresh mango. Furthermore, consumers had access to vitamin A rich and unadulterated mangoes. PRICE also supported Uttaran Agro enterprise to train 501 mango farmers from Talla, Satkhira, on mango orchard management.

C. MANGO

C.1. Supporting Southern Mango Farmers on Mango Orchard Management



Trainings on improved mango orchard management and post-harvest handling of mangoes

PRICE and ANKUR organized a training program for 480 mango farmers of Chuadanga on improved orchard management, including post-harvest handling. Farmers attended the training sessions in different locations and were trained on theoretical concepts followed by practical lessons. They were taken to a nearby mango orchard to observe demonstrations of different methods of orchard care.

During the fall 2010 training, 480 mango contract farmers of ANKUR learned modern production methods starting from planting material selection, planting time and techniques, fertilization and irrigation, pest and disease management, harvesting, post-harvest handling, and marketing. Both theoretical and practical sessions were integrated, so farmers could listen, see, and practice the techniques. PRICE identified local mango experts to conduct the training. The trainees were provided with training materials including daily lecture sheets which specified the salient points of the day's training. Training materials were prepared by the PRICE sector team in collaboration of the experts and scientists. ANKUR, in collaboration with PRICE, provided regular advice to the farmers on timely weeding, mulching, fertilization, and irrigation.

PRICE also supported the small holder mango farmers of Satkhira, a disaster-prone area in the south of Bangladesh. Although the area is not suitable for growing horticultural crops commercially due to salinity and disasters, the Talla and Sadar upazilas of the district were found to be suitable for growing mangos. During the past few years, several small-scale backyard mango orchards have emerged in these areas. Moreover, many homesteads have several mango trees, an important source of vitamin A for children and a cash crop for the small holders. However, these farmers and small holders did not have the knowledge and skill in mango production, and had difficulties in marketing their produce.

To address this, PRICE assisted a local enterprise, Uttaran Agro Enterprise, in supporting small holder mango farmers in the area to learn modern production technology of mango as well as proper post-harvest handling. Uttaran Agro Enterprise organized and completed trainings for 500 mango farmers on "Improved Mango Orchard Management and Contract Farming of Mango." Farmers benefitted greatly from the training as they gained new information on mango orchard management.

Interestingly, mango flowering starts slightly earlier in Satkhira compared to the northern areas due to the warmer climate. Despite the early flowering, the farmers would sell the mango prematurely to gain profits. By cultivating early varieties of mango such as Gopalbhog and Himsagar, traders and middlemen would usually encourage farmers to harvest the crop and sell the crops early by using carbide for ripening the fruits, in order to receive higher prices. PRICE advised the farmers against this method as selling premature fruit does not help the farmers. PRICE suggested selling the mature fruits after following better post-harvest handling practices. Farmers were provided technical advice and technical notes in Bangla which will help them in following the appropriate production and post-harvest technology.

C.2 Assisting Mango Farmers in Proper Harvesting Techniques



Training on Post harvest mango handling techniques

grading, and packing in plastic crates for distant market. Farmers were also given information about the varietal characteristics, and pests and diseases.

C.2.b. Kansat Mango Farmers Cooperative Society

PRICE and Kansat Mango Farmers Cooperative Society Limited (KMFCSL) organized training for 720 farmers on harvesting and post-harvest handling. The training was held before the mango harvest time so farmers could remember and apply the right harvesting and post-harvesting techniques that they learned. The day-long training program included practical demonstrations of mango harvesting, latex removal, cleaning and cold water treatment. Resource persons from the Mango Research Institute and Department of Agriculture Extension conducted the training.

C.2.c. Chesta Agro Enterprise

PRICE and Chesta Agro Enterprise, a newly formed agro enterprise of Kotchandpur, Jhenaidasha organized training for 120 mango farmers on “Quality Harvest and Post-Harvest Handling of Mango.” Each group of farmers at the three training courses learned about the maturity index, harvesting processes, latex removal, cleaning, cold and hot water treatment, drying, grading, and packing in plastic crates for distant market. Farmers were also given information about the varietal characteristics, and pests and diseases.

Harvesting mango and the subsequent processes are important interventions which are often overlooked by the farmers, wholesalers, and retailers. This led to the rampant use of carbide and other chemical agents harmful to humans and to high post-harvest losses, ranging from 20-30%. To help mitigate this, PRICE organized several trainings with cooperative groups and enterprises.

C.2.a. Bonolota Mango Producer Cooperative Society Ltd.

PRICE partnered with Bonolota Mango Producer Cooperative Society Ltd of Chapainwabganj to train 500 mango farmers on harvesting and post-harvest handling operations. Each group of farmers at the training courses learned about the maturity index, harvesting processes, latex removal, cleaning, cold and hot water treatment, drying,



Post-harvest mango handling techniques

C. MANGO

C.3. Organizing a Carbide-Free Mango Fair in Dhaka



Mr. Mark Visocky is inaugurating the fair

Carbides, an artificial ripening agent, are used in key industrial applications and using this chemical in mangoes can be a serious health risk, especially for children and women. In response, PRICE and Kansat Mango Farmers Multipurpose Cooperative Society Limited launched garden fresh, carbide-free mangos in Dhaka city at their new sales outlet at Niketan, Gulshan.

The sales operation was launched at the Carbide-Free Mango Fair inaugurated June 14, 2011 by Mr. Mark Visocky, the Deputy Director of USAID. He thanked the association for taking the initiative to bring garden fresh carbide-free mango to the consumers of the city, and also thanked PRICE for supporting mango farmers in improving post-harvest handling, discouraging the use of harmful chemicals, and creating linkages with high end markets.

Mr. Jules Lampell, PRICE's Chief of Party, explained the project's interventions in the horticulture sector, particularly supporting mango farmers of Chapainwabganj in increasing productivity and minimizing post-harvest losses. The Association Chairman thanked USAID and PRICE for supporting them during the past two years.

The purpose of the fair was to integrate trained mango growers with the high end consumer market and to increase consumer access to garden fresh, carbide-free mango. In addition, the fair increased consumers' awareness on the health hazards of this harmful ripening agent. It also supported the development of a traceable supply chain of quality mango. The fair continued through the mango season. The association is receiving competitive prices for their garden fresh mangos. Through this fair, the association sold 2,506,255 kgs of mango (Gopalbhog, Himsagar, Langra, Gutti, Fazli, Ashinna) and earned a revenue of BDT 134,527,500.00.



Mr. Jules Lampell , COP PRICE is delivering his speech in the inauguration of the fair.

C.4. Supporting Associations to Build the Capacity of Farmer Groups

Most of the mango farmers of Rajshahi and Chapainwabganj are not well organized, which is one of the major obstacles to provide services to them. As well, the farmers are unable to get good prices from their produces. PRICE supported the formation of two associations in the district involving thousands of farmers, but the associations will need to put in a lot of effort in order to be strong enough to provide services to all members and bring benefits to them. Although they are doing a good job, they need capacity building support. As a part of strengthening the associations, PRICE is assisting Kansat Mango Farmers Cooperative Society Limited and Bonolota Mango Producer Cooperative Society Limited to organize several small informal farmers groups comprising of 20-25 members. These group members will work together under the broader umbrella of the association and the association will have stronger linkages with its group members therefore being able to efficiently deliver services.

During the period, the PRICE supported the aforementioned organizations to create a group of 38 mango farmers and elect group leaders to strengthen and build their capacity. The groups members are now starting working collectively to solve their problems and technical assistance is being provided to them.



D. CROSS-CUTTING ACTIVITIES IN HORTICULTURE

D.1. Helping Produce of Safe Vegetables in the Eco Constrained South

D.1.a. Organix

Organix, a PRICE partner organization trained 114 male and 66 female contract farmers on safe winter vegetable production and contract farming approach. During the three days of training, farmers were given learning materials and practical and theoretical sessions were conducted on the use of better seeds, clean cultivation techniques, solarization, use of organic compost, mechanical and biological control method of pests control, vigilance and use of the different kinds of plant extracts for disease management, and harvesting and post-harvest handling. Farmers were also trained on bookkeeping, the contract farming approach, as well as marketing. PRICE helped the enterprise in maintaining various registers for training, inputs supply, stock, sales, etc. Farmers in four nearby locations were targeted and the training sessions were also conducted in these areas, namely Daulatpur, Teligati, Mirzapur, and Panchu.



Organix trained farmers

The trained farmers produced safe vegetables such as cauliflower, cabbage, tomatoes, and eggplant on their 75 acres of land under the supervision of technical experts. Farmers were provided with financial assistance and technical supervisory support during the growing seasons. The enterprise supplied 19,275 kg of compost as an alternative to chemical fertilizer, 290 litres of Mehogoni oil and Pheromone Trap to contract farmers for controlling pests. ORGANIX is marketing these embedded services through its contracted wholesale outlet. Through contract farming, the enterprise generated increased sales of BDT 22,552,167, generated casual employment for 1,848 men and 792 women, and invested BDT 1,514,800.

D.1.b. EFADF

EFADF, another PRICE partner in Khulna, is also promoting safe vegetable production and marketing through organizing and supporting resource poor, marginal farmers of Tilok (Khulna), mainly in dyke farming. EFADF worked with 500 farmers. During the winter season, they farmed 125 acres of land which grew country bean, cauliflower, tomato, and cabbage. In the summer, farmers primarily produced cucumber, sponge gourd, bottle gourd, and bitter gourd. The farmers mainly used two technologies, intercropping and relay cropping, to maximize the usage of dyke and achieve year round cultivation.



EFADF trained farmers

PRICE is now supporting 1,500 dyke farmers in integrated farming including rice, vegetables, and fish. The enterprise provided hands on training on safe vegetable production technology to the farmers through the technical supervisors, supplied 36,310 kg compost fertilizer to the farmers for production of vegetables and organized high quality seeds from the Lalteer and other seed companies linked through PRICE. Most of the farmers earned more from the vegetables than that of fish and rice in their land, due to the use of hybrid varieties of vegetable cultivation and adopting year round suitable cropping combination.

Farmers have started harvesting their produce and marketing it to the Sharankhola and Dhaka markets through

EFADF. PRICE and EFADF organized trainings on improved cultivation techniques to enhance the knowledge and skill of the farmers. During the training, crop production consultants and technical field supervisors provided hands-on technical information on crop cultivation through regular visits to the farmers' fields.

Moreover, through the joint efforts of PRICE and EFADF, farmers are now aware of the need to change their cropping patterns. As such, farmers are cultivating their crops early. Additionally, many EFADF's farmers completed their product marketing before the main supply season which has helped the farmers to get better prices. Consultant and field supervisors provided crop wise fertilizers doses and encouraged them to use compost, bio pesticides, and to follow IPM method to control pests. Soil samples also tested for determination of appropriate fertilizer doses as a result farmers can use balance fertilizer to their crops field. Farmers were also advised for not to use excessive chemical fertilizers. EFADF provided marketing information and marketing support to the farmers.

D. CROSS-CUTTING ACTIVITIES IN HORTICULTURE

A market information center has been constructed through the joint initiative of PRICE and EFADF. EFADF directly markets 60% of its farmers' total produce and has also arranged marketing opportunities for marketing the remaining 40% produce. EFADF provided input support (seed, compost and bio pesticides) to 62% of the farmers for crop cultivation. Through PRICE/EFADF interventions, farmers have increased their income by approximately 50% more than the baseline. Farmers now use quality inputs and receive updated technical information and markets information, leading to high quality products and competitive prices. Through the initiative, EFADF generated increased revenue of BDT 78,177,774, generated employment for 1,890 men and 1,260 women, and invested BDT 2,900,685.



EFADF beneficiary farmer's farming area

D.2. Promoting Compost for Sustainable Production

Intensive cropping in the same pieces of land and the decreasing availability of cow dung has deteriorated the overall soil health of Bangladesh. Moreover, historically Bangladesh soil has been deficient in soil organic matter content, where it stands at less than one percent. As a result of this shortage of organic matter content, Bangladesh's soil cannot support long-term cropping. PRICE worked with compost making companies to train its farmers on soil health and sustainable production methods to improve productivity.

D.2.a. Grameen Krishok Shahyak Sangstha Enterprise (GKSSE)

PRICE and a small compost making company, GKSSE, reached 1,470 farmers by providing training on the use of organic fertilizer and compost for sustainable vegetable production with higher returns. The trainings were held in Telehara Madrasha; Bogra Sadar; Fulbari, Sherpur; and Khamarkandi, Sherpur, Bogra. GKSSE also trained 140 sub-assistant agriculture officers of the Department of Agriculture. Farmers produced eggplant, country bean, cucumber, okra, and green chilis using organic fertilizer and compost and tricho extract as a plant disease protecting agent.



PRICE beneficiary farmer

This resulted in higher crop yields, improved soil health, and sustainable production methods. The productivity of the crops increased to 25-35% by adopting modern cultivation techniques, using a clean cultivation approach, and using organic fertilizers and natural disease protection agents. PRICE helped GKSSE organize additional hands-on trainings and yard meetings. GKSSE, with PRICE's support, marketed their products through dealers' networks and directly to the farmers. GKSSE produced 522.7 MT of vermin-compost and 9.645 liters of tricho-liquid, and generated total sales of BDT 13,193,100, and employed an additional 31 males, 26 females full time.

D.2.b. Riya Fertilizer

PRICE also supported Riya Fertilizer, another compost making company, in Sirajganj, to organize farmer trainings on the use and application of compost and other organic-based fertilizer for sustainable production. The training, held in Gazipur, Kishoregonj, and Sirajganj focused on soil health and cost-effective production technology. Three hundred small vegetable farmers participated in the training events. Participants learned the importance of the use of compost and organic produce, including Tricho liquid, which helps in pest protection and improves plant health. Additionally, Riya Fertilizer trained 1,000 farmers in Sirajganj on the use and application of Tricho and vermi-compost to produce vegetables and achieve higher yields while minimizing costs of production.

Trained farmers mainly produced cucumber, okra, and green chilies by using compost and tricho-extract as a plant disease-protecting agent. Farmers using the compost and tricho extract achieved higher crop yields by 20-25%, which contributed to the overall soil health through sustainable production. Five demonstration plots followed by field days were also established to demonstrate the effects of composts on plant growth, crop yields, and disease control to neighborhood farmers.

D. CROSS-CUTTING ACTIVITIES IN HORTICULTURE

Riya Fertilizer provided technical orientation courses to 125 sub-assistant agriculture officers of the Department of Agriculture Extension of Sirajganj District on the use of tricho compost on plant growth and disease control. These officers will be disseminating the technology among the farmers of the districts.

PRICE also assisted Riya Fertilizer to organize production of vermi compost, establish linkages with BARI for the development of production technology of tricho compost, and develop a marketing network.

Through these efforts, Riya Fertilizer increased its production from 5 MT to 519.8 MT of vermi-compost, and 1,836 litres of tricho-compost-1836 and earned increased sales of BDT 19,645,520. The enterprise created full time employment opportunity for 10 men and six women in its factory.

D.3. Establishing Demonstration Plots to Promote Compost



Demonstration plot by Riya Fertilizer at Sirajganj

Grameen Krishok Shahyak Sangstha Enterprise established 40 small results demonstration plots using organic fertilizer with eggplant and gourds in different locations of Bogra. Similarly, Riya Fertilizer also established 50 demonstration plots in different locations of Sirajganj to promote the use of compost and showcase the performance of compost in comparison to traditional farming. Each of the enterprises established the demonstrations in 0.10 acres of land with compost and sprayed Tricho-liquid as per the recommended doses and compared the plant growth and crop yield with the adjacent, non-treated crop plot. In all cases, the crop yield increased by 15-30% in comparison to crops without the compost. Neighboring farmers were invited to see the performance.

D.4. Developing and Strengthening Marketing Networks for Tricho-Vermi Compost

Before working with PRICE, Riya Fertilizer (Sirajganj) had no marketing network and their production capacity was insignificant. PRICE helped the company establish marketing networks in 10 new places: Bogra, Natore, Pabna, Josore, Barisal, Vola, Chuadanga, Gazipur, Kishoregonj, and Mymensingh. The company now has 13 dealers and 40 retailers.

Grameen Krishok Shahyak Sangstha Enterprise, another PRICE supported partner, has also reorganized and strengthened its marketing network. It has divided its area of operation into 14 territories to serve 126 retailers, covering 79 markets in Bogra. By strengthening the marketing network, both the companies were able to reach more small holders and contribute to sustainable crop production.

D.5. Promoting Good Quality Vegetable Seeds

PRICE supported M/s Padma Seeds to develop its managerial capacity particularly in terms of maintaining a farmers database, training register, inputs supply register, stock register, sales register, and a contract agreement between farmers and Padma Seeds. The enterprise collected different types of vegetable seeds from their trained contract farmers. During the period M/s Padma Seeds also supplied certified seed to the trained contracted farmers for growing quality seeds.

PRICE also assisted the Lalteer Seed Company to organize a seed dealer's workshop at Cox's Bazar, in November 2010, attended by 31 seed dealers. A technical session was conducted on the importance of good quality seed, business ethics, etc. Seed dealers have stated that the PRICE supported training helped

D. CROSS-CUTTING ACTIVITIES IN HORTICULTURE



Seed dealer's workshop at Cox's Bazar

to increase their technical knowledge on crop production and seed. Furthermore, they are now regularly organizing farmer meetings to create awareness among farmers on the use of good quality seeds. Each dealer on average provides service to about 50-100 farmers. The dealers requested regular organized training for them and support to establish demonstration plots and field days. Through the dealers' network of Lalteer, PRICE has reached out to nearly 30,000 farmers with new varieties and with embedded new technical information.

M/s Padma Seeds was able to sell 38,780 kg of vegetable seeds generating BDT 8,316,170 in revenue and created 300 (male – 150 and female – 150) casual employment opportunities in the enterprise. Their increased investment for the period was BDT 853,400.

D.6. Supporting Processing Factory under the USAID Farmer to Farmer Program

PRICE supported Golden Harvest Agro Industries Limited, a frozen and snacks food producing company to develop potato-based food products. PRICE also helped to minimize waste in the production of french fries. In June, PRICE invited a volunteer through the USAID-funded Farmer to Farmer program to support the company and help build capacity. Mr. Clifford Wener, an experienced US food expert, demonstrated frozen food plant management and standard cleaning and sanitizing practices; improved productivity practices; assisted with recipe formulation for new internationally accepted products; demonstrated food handling for safety practices; and discussed maintenance, repair and use of production machinery. Ten direct trainees and 200 indirect trainees were given hands-on training on different aspects of the production process and HACCP. Mr. Wener developed a pilot recipe structure and the first phase recipes for a variety of new products, incorporating existing preferences. He also conducted factory floor training and demonstrations. He developed several new food products such as potato nuggets/tots (from French fry scraps), vegetable pizza, onion rings with tempura, onion rings with bread crumb, vegetable tempura, chicken strips, chicken wings, meatballs, chicken tempura, apple pie etc. Golden Harvest reported that they have benefited greatly from the support and have requested additional support.

D.6. Linking Banks with Agro-Enterprises

PRICE has been supporting thousands of small horticulture farmers, many of whom own less than 0.5 acres of land. For the last two years, PRICE's support included improving their skills and knowledge in increasing productivity, better post-harvest handling, and other constraints faced by the farmers including access to inputs and finance through several agro-enterprise and associations. However, access to formal sources of finance is still difficult for the small agro-enterprises and small holder horticultural farmers. This segment is often termed as the "missing middle" as it is not served by banks or microfinance institutions.

Recognizing this gap, PRICE organized and conducted an access to finance workshop to help approximately 4,000 horticulture farmers in the southwestern region. This workshop involved 13 agro-enterprises partners of PRICE and 11 banks that offer various SME products. The workshop, held in Jessore, aimed to establish linkages between PRICE's horticulture-based SMEs and financing institutions operating in the region. Participating enterprises were EFADF agro enterprise, ORGANIX, Muktir Alo, Uttaran, Krishok Bondhu Karmashuchi, PRIDE Agro, Ankur, Konika Seed, Biotech Agro Complex, Proshikkhito Jubo Kalyan Sangstha, DIPTI, Adarsha Foundation, and Bhorer Alo Samabay Samitee.

D. CROSS-CUTTING ACTIVITIES IN HORTICULTURE



Linkage building meetings with bank representative

Representatives from National Bank, BASIC Bank, Bangladesh Krishi Bank, Standard Chartered Bank, Janata Bank, Islami Bank, NCC Bank, The City Bank, Prime Bank, Eastern Bank, and Dutch-Bangla Bank were present in the workshop and presented on the different products they offer that cater to the needs of the agro-industry. Further, they shared their experiences in dealing with SME borrowers. Enterprises and financial institutions exchanged their views and explored possible ways to expedite specialized financing. SMEs, in turn, urged the banks to ease access to finance restrictions which they consider to be essential for accelerating the growth of the horticulture sector.

During the second part of the workshop, one-to-one interaction between potential lenders and borrowers was successful. Participating SMEs interacted with their chosen banks and explained their needs, while the banks were very responsive to their needs and concerns. The session generated huge interest and continued for more than two hours. The PRICE horticulture team leader facilitated the one-to-one interaction and explained the role and commitment of PRICE and its partner organizations, the kind of support provided and regular monitoring systems, etc. These interactions created strong interest and helped to build trust and relationships between the participating SMEs and the banks. In fact, National Bank and the Prime Bank of Jessore have established formal contact with the SMEs engaged in seed and table potato production in the Jessore and Chuadanga area. Similarly, Standard Chartered Bank of Khulna has invited ORGANIX to come to the bank with their specific proposal. Krishok Bandhu Karmashuchi, another enterprise of Jessore has established a formal linkages with Bangladesh Krishi Bank. All the banks, with the exception of Dutch Bangla, invited PRICE representatives to their office for further discussion.

PRICE horticulture partners and participating banks appreciated PRICE's initiative in organizing such an event. Through this effort, EFADF Agro Enterprise obtained access to Basic Bank and received credit amounting to BDT 2,700,000. ORGANIX secured credit from another local bank, Janata Bank, amounting to BDT 400,000.



E. GENDER INTEGRATION IN HORTICULTURE

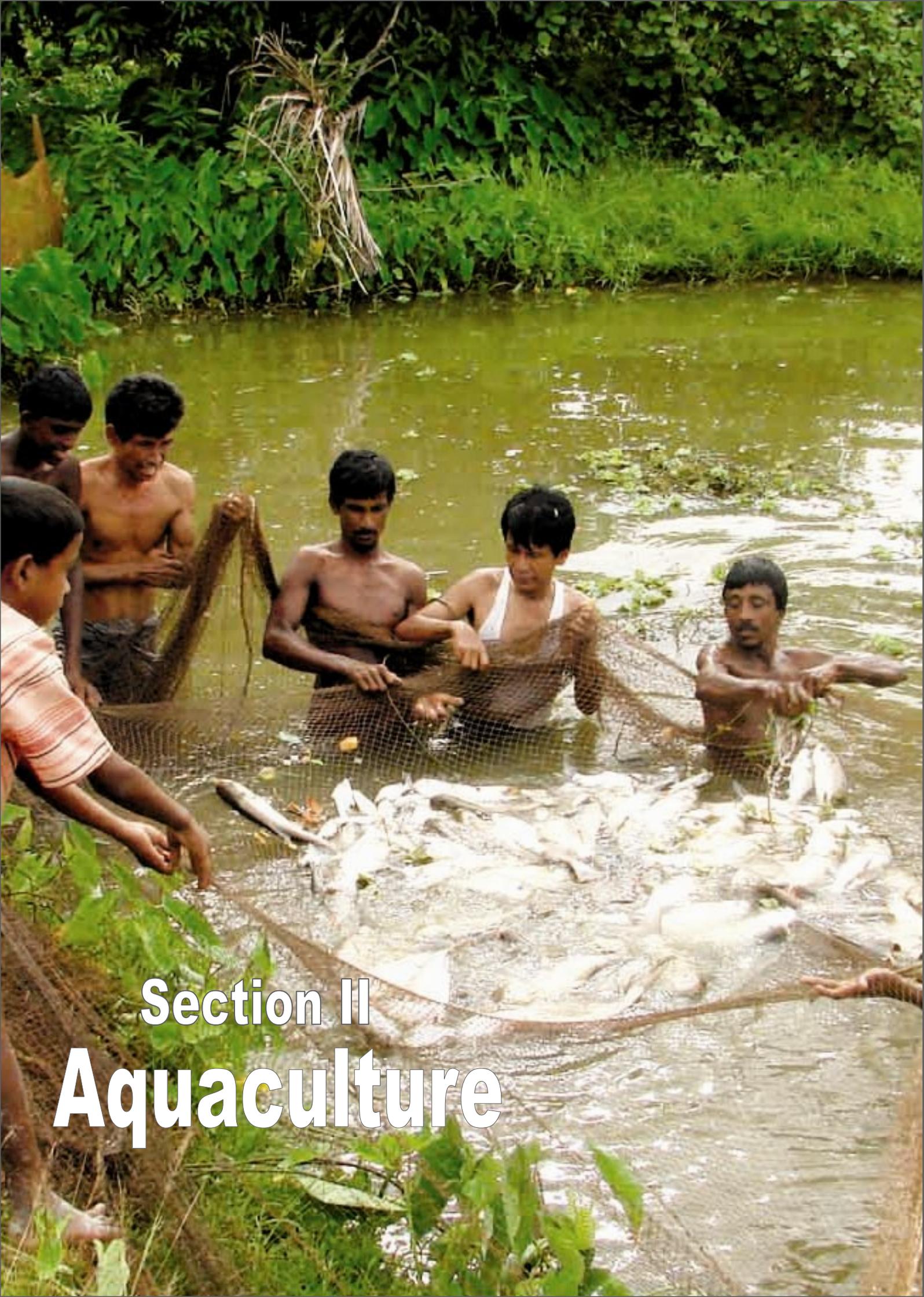


Women play an important role in homestead horticulture production systems, post-harvest handling of crops, and food security of the family. However, their role in commercial horticulture production is limited - except post-harvest handling of potato and seeds. Women's involvement in homestead vegetables is about 50%, compared to 11 to 20% for cereal. Recognizing the critical role of women in the horticulture sector in terms of economy, food, and nutritional security of the family, PRICE has designed its interventions to effectively reach the greatest number of women possible.

In the southern rural areas, particularly in Khulna, PRICE organized the most marginalized women farmers, who were among the poorest of the poor, into vegetable production groups. Through these groups, 164 women were trained on safe vegetable cultivation techniques, specifically in dyke farming and homesteads. In the potato sector, PRICE's efforts to increase production resulted in more employment opportunities for women, particularly workforce development in potato sorting, grading, and packing. PRICE trained 760 women workforce members in the potato post-harvest handling, which would contribute to the potato industry and also future job opportunities for these workforces. By working in the potato post-harvest handling operation, female workers usually get additional rejected potato seed for free which can be used for table potato. This, in turn, helps ensure food security of their family. Women can also work flexible schedules during the day so they can attend their family chores. In vegetable seed production, women are more involved with seed treatment, cutting, seed separation, winnowing, cleaning, and packing. In the south, about 44,000 labor days for women were created during the last year and 562 women received training on improved production technology and crop management. These efforts strengthened women and eventually helped the farmers raise productivity.

PRICE also supported GKSSE, a women-led organic fertilizer enterprise, Ferdous Biotech, and Technology for Rural Development, two tissues-cultured based potato seed Production Company during the year.

GKSSE employs nine women, who are now able to support themselves and their children's education with their income. While women entrepreneurs are rarely found in the agricultural sector, PRICE has clearly shown what women can achieve with a little support.



Section II
Aquaculture

OVERVIEW

The aquaculture sector has become a major supplier of much needed animal protein to an ever growing population. Aquaculture is important for addressing malnutrition and food security and alleviating poverty in rural Bangladesh. The role of open water fisheries in recent years is gradually being replaced by fish farming in Bangladesh. Farmed shrimp is greatly important in a hard currency starved country such as Bangladesh as an export commodity. Fish is also one of the main protein sources consumed domestically. Both fish and shrimp have great potential for growth as current production levels per unit area are still low. In the domestic market, fish currently has no limit as to the market size due to a huge unmet demand - anything produced has an automatic market. There are many farmed species and the market is expanding both for low cost and high value species. Although Bangladesh farmed shrimp is well liked and gains a high export price due to its large size of individual shrimp, it is only a small fraction of the international market due to its low per unit area biomass production.

Rain fed and seasonal aquaculture using seasonal seeds was a limiting factor for year round fish farming in the country. The over-wintering (OW) process of seasonal seeds led to cost-effective resource management and made live seeds for farmers available at any time of the year. The OW process effectively decreased the grow-out period of fish by almost half and facilitated two to three cropping patterns for fast growing species.



Over-wintered fish seed transforms seasonal farming to perennial farming

The area under fish and shrimp farming in Bangladesh is approximately one million hectares, where one fifth of the area is used for shrimp farming and the rest is used for fish. Shrimp and prawn farming is popular in coastal belts, where salt and brackish water shrimp is farmed in flats inside huge polders encircled by earth embankments and freshwater prawn is farmed in coastal areas with mild salinity or seasonal fresh water. Fish farming is conducted mainly in fresh water bodies, such as ponds, lakes, and other closed water bodies.

The country's seed supply of fish farming comes from more than 1,000 hatcheries. These fish hatcheries are comprised of general hatcheries where induced breeding is done with the help of hormone injections and specialized hatcheries that convert natural breed bisexual seeds to mono-sex fries and fingerlings, especially for tilapia, with the help of male hormone. Roughly 60 large shrimp hatcheries produce post larvae (PL) for farming, which successfully met the demand of farmers, while roughly 90 prawn hatcheries were unable to meet the demand and farmers. Fish seed is fraught with danger of inbreeding problems, and shrimp seed is vulnerable to virus infections. Most of the farmed water bodies are under extensive traditional aquaculture where farmers typically use supplemental feedings and consequently generate very low yields.

To address these salient challenges in the aquaculture sector, PRICE has focused on increasing productivity and improving overall production by promoting good aquaculture practices that include the use of good quality seeds, higher stocking densities, and quality grade feeds, and improving management practices and yields without increasing disease and mortality rates. Approximately 30,000 fish and shrimp farmers have been trained on improved farming technology, and 17,000 of these shrimp farmers were also trained on improved management of their farms during the past year. PRICE also facilitated project beneficiaries' access to better inputs, including seed and feed, as well as market linkages between farmers, depots, wholesalers, and processing plants. Through September 2011, PRICE activities in aquaculture have led to more than \$34 million in additional sales, 6,556 new jobs, and \$1.2 million in new investments.

A. FISH



PRICE collaborated with a total of 45 fish partners throughout the country, with special emphasis in the Jessore, Mymensingh, Bogra, and Cox's Bazar regions. The project facilitated trainings, counseling, and hands-on lessons to farming associations and helped strengthen linkages with different supply chain and value chain actors. The beneficiary farmers were linked to quality seed-producing hatcheries, nurseries and feed millers through input sellers, nurseries to hatcheries, and hatcheries to good brood sources. The trainings focused on improved farming, use of quality grade inputs, group collection of inputs and group marketing.

PRICE PARTNER BREAKDOWN

Fish farming associations	18
Farming groups within NGOs	9
Hatchery and farming groups	12
Community-based farming and management groups	2
Feed millers	2
Seed traders association	1
Input seller company	1
Processing factor	1
Association for dry fish	1

In addition to the regions mentioned above, PRICE assistance has reached the districts of Khulna, Narial, Sherpur, Jamalpur, Gazipur, Borguna, Barisal, Bhola, Rajbari, Shariatpur, Gopalganj, Bogra, Pabna, Kusthia, Gaibandha, Natore, Rajshahi, Lakshmipur, Chandpur, Comilla, Feni, Chittagong, Sylhet, Moulvibazar, Bandarban and Brahmanbaria. Towards the end of the reporting period, as USAID directed its focus on the south-western parts of the country, PRICE

Achievements in Fish during Oct'10-Sep'11

<i>Sales increased</i>	\$68.6 million
<i>New jobs</i>	3,859
<i>Investment increased</i>	\$1.64 million
<i>Farmers trained in technology</i>	16,410
<i>Farmers trained in management</i>	22,570
<i>Training for workforce development</i>	3,310

planned new initiatives in this area. For example, PRICE linked farmers to quality seed-producing hatcheries and nurseries, and trained farmers on farm management for different fish species, from pond preparation to harvest and marketing. PRICE provided technical assistance to more than 14,000 farmers to date, including 4,600 women.

A. FISH

A.1. Better Brood Management for Quality Seed Production

Quality grade brood ensures healthy and good fish seeds for farmers. However, fish hatcheries throughout the country use questionable male and female brood fish for induced breeding purposes. PRICE partnered with almost a dozen fish hatcheries and encourages in-house brood banking to ensure quality broods are raised and utilized by the hatcheries. PRICE invited a hatchery specialist through USAID's "Farmer to Farmer Program," implemented by Winrock International, to four hatcheries in Jessore. The specialist provided hands-on training on how get rid of parasites with easy bathing and also counseled hatchery owners/managers on formulating brood feeds and brood pond management.

A.2. Access to Inbred-Free Improved Spawns to Nursing and Farming Groups

Genetic corruption while mixing semen and ova is common in Bangladesh hatcheries leading to five to 10 percent inferior growth of fish in successive generations. PRICE-affiliated nursing and farming groups were linked to hatcheries producing relatively better spawns based on a study conducted in 2010. PRICE also supported the capacity building of twelve carp and mono-sex tilapia hatcheries and farm out-growers on the importance of producing and using inbred free spawns, brood management, and responsible hatchery operations. PRICE worked with the hatcheries to help farmers improve farming technology through the use of good quality seeds for farming. A total of 3,000 hatchery allied nursery operators and farmers and 250 workforces were trained.

A.3. Commercial Production of New Fish Species by Partners

PRICE partners throughout the country do not farm identical species, as local and exotic carps dominate the yield. However, commercial farmers in Mymensingh and Bogra institutionalized semi-intensive farming of pangas and mono-sex tilapia. Moreover, some farmers in Mymensingh succeeded in high density farming of stinging catfish and climbing perch. PRICE encouraged farmers in other areas to adopt high density farming techniques and farmers associated with partners in others areas such as Jessore, Narial, Naogaon, Chandpur, Lakshmipur, Patuakhali and Tangail are now farming pangas and mono-sex tilapia. In addition, some farmers in Jessore and Narial have introduced stinging catfish and climbing perch farming.

A.4. Promoting Sustainable and Better Farming Practices

From October 2010 to September 2011, PRICE supported the training of approximately 11,000 fish-farmers (2,800 women) on improved, crop-



Poisonous stinging catfish is now a Lovely Farmed Species

rotational, seasonal, household, and integrated farming technologies. PRICE conducted diverse farming training sessions for the farmers, mainly covering improved, high-density, integrated, and semi-intensive culture systems.

Good fish farm management (GFFM) and good aquaculture practice (GAP) are vital to increasing yield. PRICE incorporated GFFM and GAP

in all training sessions conducted with all partners on improved/better practices and farming without endangering eco-systems. Topics included reduction of water pollution; responsible waste management; judicious feed usage; efforts to increase natural productivity; soil, water, and health management; and prevention of disease.

Fishtek, an input seller group, trained 1,000 male lead farmers and sales agents on providing embedded services.

Local stinging catfish (Shing) has a poisonous spine that used to deter housewives and farmers. This air-breathing species has long been considered a delicacy and favored by physicians to make soup for the sick. Stinging catfish, to date, is the most expensive fresh water farmed fish in the country, and some farmers associated with PRICE partners are currently farming the species successfully.

A. FISH

A.4.a. Training Programs for Women and Minorities

Society for Social Services, an all-women group, arranged 22 training programs on productivity for 1,160 female participants in Lakshmipur, Chandpur, Tangail and Comilla districts. Rakhaing Development Foundation (RDF) arranged 20 training programs for 850 trainees and almost half of the participants were an ethnic minority. Sustainable Development for Rural and Urban Areas (SSURDA) in Bogra arranged 20 training programs for 1,000 farmers.

Other noteworthy training programs on improved better farming include:

- Jeno Saba Kendra (1,000 farmers – 620 female)
- Unnayan Sangha (500 farmers – 341 female)
- DEESHA (500 women farmers)
- Polli Bodu Kalan Sangstha (350 farmers, 145 female)

A.5. Management-based Community Farming

A large number of seasonal and perennial closed and semi-closed water bodies in the country remain underutilized and their potential remains untapped. PRICE continued assisting two community-based initiatives in Sherpur and Jamalpur to create livelihood options through fish farming. The groups were encouraged to procure additional water bodies and bring those under fish farming. With project assistance, Bamunji Beel Motsojibi Samity (BBMS) and Nokla Motsojibi Samity (NMS) trained 150 and 200 farmers on beel management, nursing, judicious harvesting, post-harvest handling, and cool chain management. The two community-based groups have started harvesting their fish - fish raised in beels fetch prices similar to wild fish in the markets as no supplemental feeds are used in beels.

A.6. Farmers' Backward and Forward Linkages Strengthened

The project continued to link partner hatcheries in Jessore-Bogra region and feed millers in Mymensingh and Satkhira to fish farmer associations to provide quality inputs, such as spawn, fries and fingerlings, and feeds at a relatively lower cost. Bulk buying by associations reduced the distribution and transportation cost and collective buying facilitated soft credits. Some farming associations like PFPFA, TMBS and RDF purchased spawns and collectively nursed them to the fry/fingerling stage for use in cultivation. As a result, their production costs decreased, since the farmers previously bought fry and fingerlings from the market at a higher cost. The associations also group purchased fertilizers and feeds.

To follow up on management trainings, farmers in Bogra and Mymensingh regions initiated group harvesting and marketing when farm units are small, and synchronized harvesting when farms are large and yield is high. After the small farmer groups pooled their harvests together and collectively purchased ice, they transported their goods to the wholesalers. The large commercial farmers, especially those who farm pangas, mono-sex tilapia, and climbing perch, coordinated among themselves to fix harvest dates and amount for a particular market.



A. FISH

A.7. Improving Embedded Services by Fish Seed Traders

PRICE arranged training programs for fish seed traders association (DMBBS) in Mymensingh on responsible transportation and embedded services and provided each member with a manual written in Bengali on the basics of aquaculture, focusing mainly on acclimatization of transported fries and fingerlings, natural productivity enhancements in farms, and initial feeding and transplantation of nursed seeds to different ponds. This information has enhanced the capacity of the DMBBS members to serve thousands of fish farmers with quality fish seed and diversified varieties.

A8. Popularization of Over-Wintered Seeds to Promote Perennial Farming

In Bangladesh, aquaculture was initially dependent upon rain water and the availability of natural seeds and has progressed into a more seasonal, economic activity. Some farmers developed over-wintering (OW) seeds and PRICE has promoted the technique among thousands of farmers since the beginning of the project. This peaked during this reporting period where roughly 16,410 farmers were trained on improved and better farming and were briefed on methods and importance of using OW seeds for perennial farming. Most of the PRICE-affiliated farmers now practice year-round farming, transforming a seasonal business into a year round economic activity in rural areas.

A.9. Live Marketing of Air Breathing and Hardy Species

Many farmers in Mymensingh associated with Muktagacha and Tarakanda farming associations are now conducting semi-intensive farming of climbing perch and stinging catfish. In addition, farmers of PRICE partner TFFS and BFFS (also located in Mymensingh) and farmers in KMCSS, MMCSS and PMCS in Bogra conducted semi-intensive pangas farming, a hardy farmed species that can survive many hours in little water without aerations. These farmers were encouraged to trade live fish to wholesalers so that live or very fresh fish could be sent to consumer kitchens. By September 2011, 30-40 truck loads of live fish were shipped from Mymensingh regions daily to Dhaka, Chittagong and elsewhere. Similarly, 15-20 trucks also ferry live fish from Bogra to northern districts and elsewhere. One truck can typically ferry roughly 1200-1300 kg of live fish.



Live Fish Marketing is a Thriving Business in the Mymensingh and Bogra Areas

Freshness of fish is the primary concern of household consumers. In the city, fresh fish is seldom available. Live fish fetch relatively high prices in the city market when available. Organized fish farmers, including partners of PRICE, took the opportunity to supply live fish to main city markets including Dhaka and Chittagong. They usually ferry live pangas, climbing perch and stinging catfish to whole sale markets by make-shift containers in trucks.

A. FISH

A.10. Participation in Campaign to make Aquaculture a Social Movement

PRICE actively participated in Bangladesh's national fish week -July 20-26, 2011. PRICE, with the Ministry of Fisheries and Livestock, printed 50,000 colored posters that were distributed to 64 districts, 483 Upazilas, and 507 Thanas throughout the country. The message conveyed through the poster is to popularize safe and responsible aquaculture for self employment, income, nutrition, and family happiness.

A.11. Linking of Organized Farming Groups to Processors

PRICE linked organized farming groups located in Mymensingh region to processing plants so that farmed fish could be exported. Attempts to enter into the frozen pangas fillet markets have not yet been successful due to the high prices of raw materials in local markets. However, farmed climbing perch and stinging catfish exports have made inroads to ethnic markets abroad. Factory workers in a PRICE partner processing plant received assistance on building the capacity of their laboratory staff on chemical, biological, and organoleptic tests for export of fish.

A.12. Increasing Large and Medium Farmers' Access to Institutional Finance

Though institutional credits are difficult to access in the fish sector due to lease-based and small water holdings farming and multi-ownership of land, in recent years, commercial aquaculture has developed in some areas in the country. PRICE organized four access to finance workshops in Bogra, Jessore, Mymensingh and Cox's Bazar, four thrust zones for aquaculture under the project. All PRICE partners region-wide participated in the workshops. Representatives from 10-15 public and private banks participated in each event and narrated banking rules and easy ways to get institutional credit.

A.13. Increasing Small Farmers' Access to Micro-credit

Institutional credit is difficult for fish farmers due to the reasons listed above. Micro, small, and household-based farmers conduct fish farming mainly for household consumption and sell the excess. These small farmers often lack resources suitable for collateral to pursue to bank loans, and the weekly repayment model of micro-credit loans is not suitable for fish farmers as fish do not grow quickly enough to be sold within couple of weeks. To overcome farmers' cash flow problem, PRICE suggested a new harvest-based repayment schedule to partner micro-finance institutions. The proposed model was accepted by some local NGOs and as a result, nearly 800 micro and small-scale farmers obtained loans ranging from BDT 3,000 to 15,000 (approximately \$44 - \$220), with farmers' group/associations acting as guarantor of the loan.

A.14. Increased Outreach of Better Farming through In-country Study Trips

Farmers were encouraged to visit better-performing aquaculture businesses in country. Lower-performing value chain actor groups were sent to relatively higher performing partners through these visits. As a result, the transmission of information, knowledge, and skills among partners was significantly accelerated.



A. FISH

A.15. Increased Participation of Women in Aquaculture

Fisheries as a whole are considered a masculine profession and women's participation in aquaculture/ fisheries is only 3% at the national level. PRICE's target was to increase women involvement among its beneficiary value chain members to 25% and to work with partners who encourage women's participation. Two of PRICE's NGO partners, SSS and DESSA, work with only women. Five other partners trained women farmers at a level of 50% or above: RDF, JSK, US, GMSS and PBKS. Of the 2,000 members of the Nazirertek Fish-Dryer's Multipurpose Cooperative's (NFMC) workforce that were trained, all were women.

A.17. Shifting Attention to the Southwest Region

PRICE has been working in four major areas, including Khulna-Jessore, in the southwest and the largest thrust areas where both fish and shrimp value chain actors exist. In 2011, the project increased activity in the area and seven more MoUs were signed to train an additional 8,000 farmers by June 2012.

Fish seeds in the country are fraught with the danger of inbreeding problems that reduce growth performance and feed efficiency ratio. It is difficult to identify which hatcheries produce quality grade fish seeds. PRICE conducted a study and identified hatcheries that produce proven quality grade seeds and linked those hatcheries to the organized farming groups of PRICE.

A.18. Introduction of Proven Commercial Farming in SW Region



Popularization of pangas and tilapia farming in SW

PRICE has registered high yields of Mekong River Catfish (pangas) and mono-sex tilapia farming in northern Bangladesh, especially in the Mymensingh and Bogra regions. A market study on these two species revealed that the SW region of Bangladesh could not institutionalize commercial farming of pangas and mono-sex tilapia. Since pangas and tilapia are two easy species to farm with supplemental feeds, are affordable for the poor, and are also an important source of animal protein, animal lipid, and mineral based food security, PRICE worked to popularize these two important farmed species in SW regions. PRICE has done this through working with existing partners at the regions and educating partner beneficiaries by training, counseling, distributions of manuals, leaflets, demo-farming, embedded services and in-country study trips, which will continue for the next 16 months of the project.

High density farming of pangas and tilapia has succeeded in the Bogra and Mymensingh regions in recent years, which has created a steady supply of fresh and inexpensive fish to city markets for poor and lower middle class consumers. Southwest parts of the country have not yet farmed these species under high density farming methods. PRICE has taken initiatives to transfer the know-how learned in Mymensingh and Bogra to the SW region by some organized farming groups.

A.19. Promoting Hygienic and Safe Dry Fish Manufacturing and Packaging

In partnership with the NFMC in Cox's Bazar, PRICE assisted hygienically safe dry fish manufacturing, packaging, and marketing. Trainings were conducted for 400 yard owners (all male) and more than 2,000 workers (all female) on hygienic dry fish production, personal hygiene, and packaging. The products produced at the NFMC generally go to the domestic market, however, linkages to some exporters has opened the door for exports to markets abroad. Total exports of products by the NFMC are still small, but there are indicators that expansion of dry fish exports will occur in the future.

A. FISH

A.20. Market Study on Trends

Roughly 24 species of freshwater fish are farmed in Bangladesh, of which almost half are local. Traditionally, both local and imported carp dominated the markets. However, expanded urbanization and increased low income groups in cities have created demand for relatively low-priced animal protein sources. Therefore, a market study was conducted to determine the fish farming and market trends involving two fast growing and high density farmed species, pangas and tilapia. The main objectives of the study were to determine the current status and trends in the supply and demand of these species; assess the impact of farming of the two species, the production and supply chain, and required input manufacturing and supplies; examine the potential of export and value-added product development; examine projected future trends; and, assess the implications of the findings of the aquaculture and fisheries sector in the country. The most significant findings of the study are as follows:

- There are no hatcheries that exclusively produce pangas seed in the country. In contrast, a total of 191 operational mono-sex tilapia hatcheries produced 1,430 million fry/fingerlings in 2010. Due to different production mechanisms (converting would be bisexual babies to all males) mono-sex hatcheries produce only tilapia seeds.
- In 2010, 56 feed mills produced around 568,000 tons of feed, of which 62,000 tons were floating and the rest were sinking pellets. Commercial production of aquaculture feed has increased three-fold in only five years. Over 95% of commercial pellet feeds were consumed by farmed fish and less than 5% by farmed shrimp/prawn.
- Pangas is the most-cost effective fish and is mostly consumed by both rural and urban poor. Tilapia is also a relatively cheaper fish consumed by poor and middle class both in rural and urban areas.
- It is projected that the production of pangas and tilapia in the country between 2015 and 2016 will be approximately 379,965 and 93,263 tons, respectively from estimated current production levels of 253,310 tons of pangas and 62,175 tons of tilapia.

A.21. Popularization of Improved Dried Pellet Feeds for Fish

PRICE promotes the use of dried pellet as supplemental feed for vertical production of fast growing commercial species. Use of supplemental feeds for fish is a relatively new development in Bangladesh aquaculture; less than 18% of the cultured fish produced in the country are fed on dry commercial pellets (fish production by farming in Bangladesh is 1.8 million tons and only 0.3 million ton is fed on dry commercial pellet). Dry pellet ensures less water pollution and high productivity of fish/shrimp, and reduces the size of horizontal expansion of farming to vertical production efficiencies. PRICE is addressing this issue by promoting improved feed and its use among fish farmers. During the reporting period, the project initiated work with a feed mill in Mymensingh, SMS Feeds Limited, which specializes in fish feed formulation and marketing. More than 35% of PRICE beneficiary farmers are currently using pellet feeds at a rate much higher than the national average.



B. SHRIMP



Though there are many shrimp species in Bangladesh, two species are farmed commercially: the freshwater giant prawn known as *golda*, and the brackish water black tiger shrimp known as *bagda*. PRICE mainly deals with *bagda*, which is farmed mainly in southwestern coastal districts and yield around 75% of the total shrimp exports (about \$540 million in value during 2010-2011). Producing relatively larger-sized shrimp with low density and poor productivity is one of the main characteristics of the Bangladesh shrimp, but larger sized shrimp fetch higher export prices. Because the world market is already flooded with small shrimp, this has created a new opportunity for Bangladeshi larger-sized shrimps, produced by low density farming and low survival rates. Increasing stocking density, employing better management, and preventing disease outbreaks that cause high mortality are critical to increase yields and export earnings. In order to evade export constraints, the shrimp industry also needs to avoid malpractice, alleged adulteration, contamination, implement traceability, abide by environmental and human rights regulations, and observe compliance with Bangladeshi labor law.

The project is trying to mitigate sector constraints by making the following possible:

- Higher yield of healthy and disease-free larger-sized shrimp.
- Popularizing virus negative screened post-larvae (PL) of shrimp for better production and ultimate ban of virus-positive PL.
- Observance of international codes of conduct (COC) throughout the value and supply chain.
- Increasing awareness against adulteration and mal-practice.

Achievements in Shrimp during Oct'10-Sep'11

<i>Sales increased</i>	\$26.18 million
<i>New jobs</i>	9,899
<i>Investment increased</i>	\$1.85 million
<i>Farmers trained in technology</i>	13,291
<i>Farmers trained in management</i>	266
<i>Training for workforce development</i>	747

B. SHRIMP



US Ambassador to Bangladesh visits integrated farm

PRICE is encouraging improved farming methods such as crop-rotation, farming integration, linkage to disease-free and screened PL, awareness of malpractice and adulteration, not using banned substances, and traceable production, among others. To ensure a supply of disease-free (virus negative) and traceable PL, the project works with some selected hatcheries and on over-wintering shrimp seeds to ensure a year-round supply. PRICE also works with the processing plants on compliance to labor laws, bio-security measures, HACCP, Standard Operating Procedures (SOP), SSOP, value-added product development, and capacity build-up of their managerial and processing staff. The project also assists exporters to explore new export markets other than the United States, Western Europe, and the Far East.

On January 26, 2011, the then U.S. Ambassador to Bangladesh, Mr. James F. Moriarty, and Mission Director Ms. Denise Rollins visited a PRICE-supported shrimp based integrated farm at Moshni, Kochua, Bagerhat under the GHERS initiative, implemented by the World Fish Center (WFC). During the visit Ambassador Moriarty was able to observe multifarious cropping on the same land under farming integration, which supports rural based food security and improves farm yields and farmers' income. After the visit, Ambassador Moriarty commended the USAID-PRICE intervention which covers the entire shrimp and fish value chain, from farm to processing plant, supplies local and export market demands, and supports food security.

The project helped the shrimp value chain to achieve build skills in bio-security measures such as HACCP and SSOP, and compliance with Bangladesh Labor Law by training supply chain workers and staffs on labor rights and responsibilities. The number of processing plants receiving PRICE assistance for training increased from two in 2010 to six in 2011. And, as part of its collaboration with the shrimp industry to expand export market, PRICE concluded an MoU with five processing plants to explore new markets in the Middle East. Furthermore, as the shrimp industry faced bad publicity in the foreign media regarding alleged malpractice and adulteration in exportable shrimp, PRICE collaborated with the industry to initiate an awareness program against alleged bad practices. In FY2011, shrimp subsector partners increased their sales by about \$12.6 million, invested more than \$830,000, and created around 2,800 jobs.



New shrimp partners joining PRICE

In 2011, four shrimp-based farming and business associations created partnerships with PRICE by signing MoUs. Most of the newly signed MoUs are located in southwestern parts of the country. Under these MoUs, farming integration and popularization of commercial fanned species will gain importance. It is expected that by increasing farm yields and farmers' income, investments will be encouraged. The new partners in 2011 are Bangladesh Frozen Foods Exporters Association (BFFEA), Islamic Fishing Ltd (IFL), S & M Shrimp Culture Ltd (SMSC) and Yunus Fishing Ltd (YFL).

B. SHRIMP

B.1. GHERS Initiative (Greater Harvest and Economic Return from Shrimp)

Many of the shrimp interventions are undertaken by the GHERS initiative, implemented by PRICE's sub-contractor World Fish Center. Its goals are to increase shrimp farm production, improve the quality of the produce, and ensure disease-free farmed shrimp.

By September 2011, thirty three depot owners in three districts of greater Khulna (Bagerhat, Satkhira, and Khulna) jointly facilitated farmers under contract farming systems, and an additional 10,000 integrated shrimp farmers were trained on three diverse improved farm management and production techniques to reach a cumulative figure of 22,000 farmers under GHERS.

GHERS provided hands-on and farm-level training to three distinct modes of improved farming to different groups of farmers, distinguished by their investment capacity, their willingness to adopt innovative practices, and their tolerance to risk. The three separate technologies are: Closed System Pond Technology (CST), which is the most capital intensive and allows for the greatest density of farming; the Modified Traditional Technology (MTT), which introduces some new practices and requires a small investment, and Traditional Best Management Practices (TBMP), which emphasizes proper practices which do not require additional investments (see text box). Of the 22,580 farmers trained through GHERS, 11,415 engage in TBMP, 11,066 in MTT, and only 89 in CST.

The farmers were trained and counseled by the extension specialists and the extension facilitators. During the past year, three trainings of trainers (TOT) were provided on improved technology to 57 old and new extension facilitators on CST, MTT, and TBMP shrimp culture techniques and on improved quality feed in shrimp farming. Through three extension specialists and 57 new and old extension facilitators under GHERS, PRICE trained some 22,580 trainees, including 722 female participants. The participants learned how to increase productivity in their respective ponds by using the corresponding improved farming techniques.

In **Semi-Intensive Farming (SIF)** shrimp is farmed for a short period of time under high density, artificial aeration and receives supplemental feeding at satiation point daily in farming areas strictly isolated from the outside environment by strong dykes. Culture water is treated with bleaching and the farming complex is surrounded with a fine synthetic mesh to keep crabs and other intruders out and so that no virus source can enter the farming zone with mono-species stocking. Screened, virus-negative PL is stocked at a rate of 10-15/m² in the first crop and 5-10/m² in the 2nd. A SIF under Bangladesh condition produces 4,000-5,000 kg/ha/year.

Closed System Pond Technology (CST), a CST farm is a replica of the SIF farm - small in size and practices relatively lower stocking density at a rate of 8-10/m². A CST farm may produce two crops annually for a total of 2,500-3,000 kg of shrimp/ha.

In **Modified Traditional Technology (MTT)**, pond water is also treated with bleaching, but screened PLs are stocked at a rate of only 2-3/m². No water intake or paddle wheels are used, and homemade feed, instead of commercial feed, is usually employed. MTT produces only one yearly crop, with a yield of 350-400 kg/ha. Pre-nursed, plankton-feeding carps and some *golda* are stocked together with bagda during the wet season, thus increasing overall yield and crop diversity.

Traditional Best Management Practices (TBMP) is used with farmers who can't afford or are not interested in relatively higher density farming. These farmers do not bleach the culture water and stock at a rate of only one PL/m², but do fertilize the water to enhance natural productivity, remove aquatic plants, and screen incoming water to prevent predators. TBMP farmers achieve yields of 250-275 kg/ha/year, still approximately 20% more than traditional farming.



B. SHRIMP

B.2. Screening for Virus-Negative Post Larvae



Screening for virus-negative PL creates confidence of buyers

Semi-intensive farming of black tiger shrimp (*bagda*) started collapsing in 1986 and specifically in Bangladesh in 1997 due to an outbreak of a virus later identified as White Spot Syndrome Virus (WSSV). One of the most important objectives under GHERS is to produce and popularize virus-negative PL of *bagda* that may ensure disease-free, healthy shrimp crops. PRICE-WFC supported Pranti Polymerase Chain Reaction (PCR) Laboratory, a private testing laboratory, in Cox's Bazaar to test shrimp seed production cycles so that virus-negative strains could be identified and traced. WSSV negative testing involved three stages and is required on broods, *nauplii*, and post-larvae to confirm that the lot is WSSV virus-negative. Post-larvae are the last stage of shrimp seeds, after hatching from the eggs. Initial larva is called *nauplii*, the next stage is *zoa*, and the last stage of larva is *mysis*.

During FY2011, Pranti PCR Laboratory, in partnership with seven hatcheries in Cox's Bazaar and Khulna, tested 1,044 samples and certified 174 million PL as virus-negative of which roughly 69 million post larvae were used by GHERS farmers. Additionally, Pranti PCR Laboratory supplied screened PL to Gazi Fish Ltd, which owns a hatchery in Khulna, but no PCR laboratory. Gazi tests mother shrimp and *nauplii* in Pranti, then airlifts the shrimp back to its hatchery in Khulna, uses the shrimp in their two farms, and sells the excess to other farmers.

During 2011, the testing lab in Cox's Bazar tested 1,044 samples from 7 hatcheries and certified 174 million PL and supplied 69 million to PRICE-GHERS and 105 million were sold to non-GHERS farmers. This is the first time non-GHERS farmer's demand for tested PL crossed the demand of project farmers.

B.3. Facilitating Semi-intensive Farming

Semi-intensive *bagda* shrimp culture is produced by two farms under Saudi-Bangladesh Industrial & Agricultural Investment Company, Ltd (SABINCO). GHERS assists a number of small-scale, high density farming such as CST. Two large farms in Khulna that practice high density shrimp farming and produce more than one crop per year are Gazi Fish Ltd, (GFL) and S&M Shrimp Culture Ltd (SMSC). PRICE is partnering with these farms and is providing technical assistance to develop the capacity of their farming and farm management staff as well as the GFL operated hatchery.

Both the GFL and SMSC use tested and screened PL for their farms and the GFL produces screened PL for itself and for the SMSC. The GFL also sells additional screened PL to farmers in the Khulna region. During the reporting period, PRICE trained more than 100 workers at GFLC and 40 at SMC on judicious pond preparation, feeding, sampling, harvesting, and post-harvest treatments including cool chain management. During 2011, the GFL produced approximately 24.8 million screened PL, of which 7.39 million are used at GFL and SMSC and the rest are marketed to local farmers.



Semi-intensive bagda farming reaches sustainable level

Semi-intensive bagda farming in the country collapsed in 1997 due to an outbreak of a deadly virus invasion. PRICE partner GFL and SMSC institutionalized a closed semi-intensive farming system for the last couple of years, and have been harvesting healthy and disease free shrimps in successive crops. PRICE has translated this success into an opportunity to educate GHERS farmers through in-country exposure visits to GFL and SMSC.

B. SHRIMP

B.4. Training to *Bagda* Farming Association Members

Most of the *bagda* farming areas (75% or more) are located in three districts in greater Khulna. The rest of the *bagda* farming areas are located in Cox's Bazar. Efforts to popularize screened PL are focused on greater Khulna, and PRICE signed two MOUs with two farming associations in Cox's Bazar to train roughly 1,500 farmers in 2011 and additional 1000 in 2012. Two newly signed *bagda* farming associations in Teknaf, Cox's Bazar who organized improved farming trainings for 1,500 shrimp farmers in 2011 also procured tested PLs for their farming members from hatcheries aligned with Pranti laboratory.

B.5. Use of Quality Grade Feed

Aquaculture feed manufactured and traded in the country is usually poor in quality due to farmers purchasing low-priced feed. PRICE, through its training programs and counseling, educates shrimp farmers to use feeds with high feed conversion rates (FCR) to be more cost-effective and create less pollution. Poor-quality feed on the other hand, affects productivity, increases pollution, and is a likely source of the antibiotic contaminations. PRICE is addressing this issue by promoting improved feed and its use among shrimp farmers. During the reporting period the project worked with two feed mills in the Khulna areas—North Khulna Feed Mill and Satkhira Feed Mill—and one feed mill in Mymensingh, SMC feeds Ltd.

B.6. Women's Involvement in Shrimp Farming

Shrimp farming, especially *bagda*, has long been dominated by men in Bangladesh, partly due to its remoteness and difficult terrain in a saline zone. However, women's participation in household aquaculture in fish farming has been initiated through NGOs, and PRICE has achieved considerable success involving women in household fish farming to ensure food security and family based nutrition. However, PRICE is actively encouraging participation of women in *bagda*-based integrated farming in the greater Khulna and greater Jessore districts. Women participation's in *bagda* farming in the PRICE working areas was elicited primarily by targeting single mother households or widows.

B.7. Supporting Group Procurement and Sales

Shrimp farmers often sell their products individually to buyers, but the emergence of wholesale selling in open markets in the southwest has facilitated outgrowing and has eased traceability. PRICE educated farmers on the benefits of group sales, and facilitated these through contract growing efforts and GHERS. To buy inputs from the market, the project taught farmers to use group procurement methods, which helped them purchase high-quality inputs at lower prices. The benefits of group procurement of inputs and group marketing were shared with trainees while conducting management trainings to shrimp farmers in the Cox's Bazar region. Farmers were also linked to the source of good quality inputs, like screened PL and hatchery PL, for traceable production.

B.8. Improving Access to Finance

Both *bagda* and *golda* farmers in Bangladesh traditionally obtain credit from set buyers (depots) in the form of a promise to barter goods. Since processing capacity in the country is higher than the shrimp biomass produced, suppliers partially finance poor farmers with seeds, feed, lime, fertilizer, and occasionally "soft loans" on the condition that farmers pay them back in shrimp. Applying this tradition of informal value chain financing, PRICE convinced depot owners to finance the cost of farmers' inputs in shrimp production (feed, seed and fertilizer) through the contract growing systems. However, some shrimp farmers, as a result of increased farming, are in need of more cash than value chain finance.

Institutional credit is difficult to access in shrimp farming where lease-based farming or multi-ownership of lands based farming is common. In recent years, however, CST type and relatively high density commercial shrimp farming has invited more investments. PRICE organized two access to finance workshops in Jessore and Cox's Bazar, which were attended by all PRICE shrimp partners in the region. Representatives from 10-15 public and private banks participated in each event and narrated banking rules and easy ways to obtain institutional credits.

B. SHRIMP

B.9. Export Promotion and Linkage to Foreign Buyers



New market in Middle East

Frozen Fish & Shrimp Processors and Exporters Group (FSPEG), an informal group of five PRICE partner enterprises from the Jessore-Khulna region that processes and exports fishery products, attended the 2011 Gulf Food exhibition in Dubai, UAE on a cost-sharing basis (PRICE paid 29% of the total cost). The aim was to diversify export markets beyond Western Europe and North America and to shift the focus towards the Middle East, where seafood popularity is increasing.

Participation in the event greatly helped these five enterprises showcase their products, meet with international buyers, discuss preliminary agreements with diverse buyers, and obtain access to markets in the Middle East. PRICE is confident that

this type of support to partners will contribute to their capacity to produce frozen and value-added fish products based on the demand of the buyers in new areas. Before facilitating the participation to the fair, PRICE assisted the FSPEG members in food safety, bio-security measures in processing plants, diversification of value-added products and getting better access to markets. As a lead enterprise, the FSPEG is expected to expand their export businesses on the basis of the support they got from PRICE.

Participation in the Gulf FoodFair 2011 opened the doorway to Middle Eastern markets for Bangladesh frozen foods, especially frozen shrimp to general markets, and fish/frozen fish and dry fish to ethnic markets.

B.10. Initiative for Value-added Product Development

Frozen food exports from Bangladesh are basically confined to block or IQF (individual quick freezing) without any significant value-added products like ready-to-cook or ready-to-eat products. Understandably, the value/price received by Bangladesh exporters is far below the premium price received by other shrimp and prawn exporting countries. To assist partner processing plants to develop their capacity for value-added product development, a consultant from the United States, arranged by USAID's "Farmer to Farmer" program provided support to two of PRICE's processing plant partners; Organic Shrimps Export Ltd (OSEL) and Rupali Sea Foods Ltd. (RHFL), both located in Khulna. The consultant stayed with the processing plants for three weeks and worked closely with top and mid-level management and technicians. The consultant provided the following feedback on the status and potential of the value-added products from processing plants in Bangladesh focusing on OSEL and RHFL:

- *Assess current OSEL and RHFL processing frozen items and explore the possibility to utilize existing machineries and produce shrimp, prawn and fish value-added products.* The current machineries are sufficient for the current line of valued-added products but will not work for the value added product snack items that the host and the consultant discussed. The consultant recommended processing small and large fish and adding certain value that can be processed with the existing machines.
- *Examine the current practice of processing block frozen stuffs and recommend further improvement, as needed.* The factories' processing procedures are fine and there are no customer complaints. However, the processing flow as designed will not achieve more than a 75% efficiency rate. The building configuration and poor integration of various machines are the bottlenecks. The factories lack efficient systems to process orders. The consultant discussed the problems with the management and has made suggestions for improvement.
- *Evaluate the available raw materials, analyze cost-benefit and identify potential new products:* With factory running at 20-21% of the capacity, there is no question of considering new VAP. The host was not sure what new VAP to make and have not done any preliminary studies. The consultant has trained them how to proceed.

B. SHRIMP

- *Provide hands-on training to the host staff producing new products:* Seven new VAPs were created from recipes provided by the consultant and were evaluated by a ten-member testing panel. The consultant noted that the hosts are not currently prepared to start making VAPs, but when the host is ready for a new VAP, the recipes will need to be redesigned to meet commercial sale standards, and to be compatible with the processing machines.
- *Recommend and provide information for marketing new products:* The consultant conducted a training on how to plan for the introduction of VAP. The planning process includes a market feasibility study and he has given them the study tools.
- *Assess hygiene and food safety issues and make recommendations for further improvement:* The host factories are very well-maintained and clean, but have inadequate record keeping. The consultant has suggested closer supervision and introduction of a computer system. He also redesigned the quality assurance verification system which would replace two existing forms and improve efficiency.

B.11. GAP Training on Responsible Shrimp Farming

PRICE together with Business Promotion Council (BPC), a public-private partnership, facilitated a TOT program on the good aquaculture practices at Cox' Bazar. The program was conducted by the DOF, the Bangladesh Shrimp and Fish Foundation (BSFF) and the Bangladesh Frozen Food Exporter Association (BFFEA). The program's goal was to develop a team of core trainers who will be able to train other related stakeholders on the good aquaculture practices in coming days. A team of professionals from the US Food and Drug Administration and the Joint Institute of Food Safety and Nutrition of the University of Maryland trained 45 trainees from different organizations (universities, DOF and other value chain actors) in Bangladesh.

B.12. Compliance for Bio-security & Food Safety Measures in Processing Plants

PRICE partnered with six processing plants, two in Jessore and four in Khulna, in shrimp sub-sector to provide technical assistance on workforce development training covering bio-security measures required in processing operations, personal hygiene, HACCP, SOP, SSOP, good manufacturing practices, and value-added product development. In addition, the management training programs incorporated general office as well as factory personnel in all six processing plants. In October-December 2010 PRICE helped train 150 office and higher factory staff members on management, and 505 factory workers and technicians on workforce development. These trainings also fostered an awareness of their rights and obligations under Bangladesh Labor

B.13. Awareness Creation against Malpractice and Adulteration

During recent years, the shrimp exporters have faced various hurdles in exporting their products to traditional markets (such as the EU and USA). The buyers are concerned with the safety of food items and are imposing different types of compliance requirements on social and environmental issues such as labor, traceability, man-grove destruction, and quality. PRICE is working to improve the quality, food safety, and labor compliance issues of the Bangladesh Frozen Food Industries through interventions like training, counseling, and workshops.

BFFEA recently planned to improve the quality of raw materials of their product to make it free from contaminants and adulterations. The root cause of the deterioration of raw materials is producers' ignorance coupled with some supply chain actors that engage in adulteration. To improve farmers' and other supply chain actors' awareness of malpractice and adulteration, BFFEA, in collaboration with PRICE and DoF, will organize awareness campaign programs in 14 areas of Satkhira, Khulna, and Bagerhat districts.

There is indication that shrimp and fish exports from Bangladesh will increase significantly during this fiscal year. Though the export of frozen foods from Bangladesh is reportedly increasing, buyers' rejection is still a concern for the processors. Other value chain actors such as hatcheries, farmers, depots, and agents are not impacted when a consignment is rejected by the importers, only the exporter faces a loss. In recent years (2008 and 2009) many consignments were rejected by importing countries due to lack of ability to meet importing countries' standards and zero tolerance with respect to certain antibiotic and health hazard agents. In the last few months there have been reports on Channel 4 of UK and Aljazeera of Middle East regarding adulteration and malpractice in the Bangladesh shrimp industry. To create awareness against adulteration and malpractice, PRICE and BFFEA have initiated a massive program at the grass roots level by signing an MoU for activities that will begin in the next quarter.

C. GENDER INTEGRATION IN AQUACULTURE



The poor presence of women in fish and shrimp farming sector long had been a handicap for popularizing fish farming as a social movement in weak rural markets. PRICE planned to work with young adults and women as much as possible to ensure their participation in aquaculture. From PRICE's initial activities in the aquaculture sector, PRICE has taken the initiative to incorporate women into activities so that at the household level, women can conduct small-scale aquaculture for self-employment, opportunistic employment, and income generation. Including women in these efforts has helped resource-poor farming families to increase their fish-based consumption and limit chronic malnutrition in rural Bangladesh.

In the fish sector, PRICE generally works with organized farming groups and those associations are usually dominated by males. In the country, only NGOs usually work with women and housewives in rural areas and they have organized women groups. PRICE, in collaboration with local NGOs, cooperatives, and associations, has utilized women's leadership to organize women's groups to improve farming and to provide general management training to effectively run household-based fish farms. Training to more than 70 groups of women was provided, allowing them to more effectively sustain their aquaculture businesses.

Besides farming groups, PRICE was also able to initiate partnerships and facilitate workforce development skills training to organizations that employ a large number of women in their workforce. For example, through Nazirertek Fish-Dryer's Association, PRICE helps train thousands of women in Cox's Bazar engaged in fish drying. Similar workforce development skills training programs are occurring in several processing plants, reaching hundreds of women.

To increase their skills and to make them competitive in the aquaculture business, PRICE has worked and will continue to work with thousands of micro, small, and medium women aquaculture entrepreneurs and workers. Since many women lack collateral to access to institutional credit, PRICE assisted women entrepreneurs by linking them with micro-credit and micro-finance sources for soft loans.

Through these activities, female beneficiaries are nearly 19 percent of the total 27,000 farmers that PRICE is currently working in the aquaculture sector. This is more than six times the national average of three percent.



Section III
Leather Products

OVERVIEW



Despite the current global recession, Bangladesh's resilient economy is experiencing further expansion and new investments. This growth is attributed to the efforts of the private sector, certain advantages Bangladesh has enjoyed as a Least Developed Country (LDC), the gradual increase in the prices of Chinese products, and some government policies.

Bangladesh's overall exports have grown significantly in the last fiscal year July 2010-June 2011 – approximately 41% when compared with the previous year. In particular, overseas sales of leather products (fourth largest export) earned over USD \$550 million, approximately 40% more than the previous year (USD \$401.6 million). The sector achieved growth in each of its three subsectors: tannery, leather goods, and footwear.

In FY 2010-2011, the percentile increment in value for leather, footwear, and leather goods was 32%, 36%, and 91% respectively with respect to last year results. The export value of leather was USD \$226.1 million in 2009-2010 and USD \$297.8 million in 2010-2011; whereas the footwear was USD \$146.4 million in 2009-2010 and USD \$199.3 million in 2010-2011. On the other hand, other leather goods were USD \$29.07 million in 2009-2010 and USD \$55.42 million in 2010-2011. These numbers reveal that the demand for value added products is still increasing.



A. WORKFORCE DEVELOPMENT

The aim of the program was to address the prevailing shortage of skilled workers in the footwear/goods industry which was a hindrance to the growth of Bangladesh leather sector/enterprises, particularly in export.

A.1. Apex Adelchi; Ongoing

The extended phase of the workforce development training program under the tri partite agreement between Leather Goods & Footwear Manufacturers & Exporters Association of Bangladesh, Leather-goods & Footwear Manufacturers and Exporters Association of Bangladesh (LFMEAB), Apex Adelchi Footwear Ltd (AAFL), and PRICE is underway.

Beginning in January 2010, the first phase targeted 800 new workers to be trained through "On the Job Training" (OJT). The training focused on shoe manufacturing operations such as cutting/manipulating of leather, prefabricating and sewing, and lasting and finishing. In addition, trainees were given demonstrations on industry safety, discipline and the basics of shoe engineering. The cutting department workers are trained on cutting direction, pairing, machine pressure etc.; sewing workers are trained on skiving, splitting, folding, edge finishing, thread, needle, machine adjustment etc.; and lasting workers are trained on toe and heel lasting, machine adjustment, and finishing chemicals etc. AAFL's premises were used for the training while LFMEAB was the coordinator. PRICE developed the training module for this program, and provides staff support. The lead trainer of the program is a short-term expert provided by PRICE.

Given the program's positive impact on the sector's development, AAFL requested PRICE to extend the cooperation through LFMEAB. PRICE signed the extension of cooperation in February 2011 to train an additional 1,200 new workers under similar terms and conditions. These efforts have already produced some excellent results. In this financial year, 1,193 workers, of which nearly 70% are women, were trained and 845 obtained full time jobs in the industry.

A.2. FB Footwear Ltd. (FFL); Ended Successfully

This program began in July 2010 to train 1,000 new workers and develop their skills for increased job opportunities in the footwear sector. As a result of the strong response from the job seeking population and FFL's extensive work with PRICE, the program achieved its target within seven months (February 2011). This OJT program focused on the following areas: cutting direction, pairing, machine pressure, skiving, splitting, folding, edge finishing, thread, needle, machine adjustment, toe and heel lasting, machine adjustment, finishing chemicals, packing etc. By receiving this comprehensive training, trainees received knowledge and skills critical to working on the formal factory floors.

The program has trained 638 (M 240, F 398) workers during this past year, among which 436 have received full time jobs in FFL. This program further developed the skills of the workers and resulted in more and better quality products which help to expand exports in leather. The trained workers are performing at levels higher than those who were not trained. PRICE coordinated the program and assisted four supervisors in conducting the program using the PRICE developed training module.

A.3. PRICE-LFMEAB-PICARD; First of its Kind in Goods Sub-sector

Leather goods make up the smallest segment of the leather sector. Despite the segment's tremendous growth and potential, it has a small number of players. PICARD alone controls more than 90% of this sub-sector's exports. In contrast with the footwear sector where there were aggressive efforts in terms of skill development, the leather goods subsector was inert in that respect. PRICE worked with PICARD to further their understanding of the positive impact that using specific training modules and curriculum can have on management and skill of the staff. Because of their increased understanding of the importance of skilled workers for leather goods, PICARD, in collaboration with LFMEAB, worked with PRICE to join the development activities within this sub-sector.

Since its inception in November 2010, the program has been designed differently as it includes an orientation program as well. The orientation provides a summary of PRICE, training patterns, the sector, and its future prospects as well as a factory visit. It is catered for the new trainees to help them understand the program's objective and their future prospects.

A. WORKFORCE DEVELOPMENT

This orientation provided direction for the trainees career development in the sub-sector, helping to motivate them further. Additionally, the training was customized for the demands in the leather goods industry in terms of manual operations, including manual stitching, perforating, cementing, trimming, finishing in addition to other regular activities i.e. machine cutting, skiving, splitting, folding, sewing etc.

The aim of this 12 month long OJT program was to train 600 new workers in developing their skills, generating employment opportunities, and increasing production and sales in the sector. Each batch (30-50 new workers) was trained for 2 months under the supervision of four highly experienced staff members in association with three PRICE trainers. As this sub-sector lacks qualified trainers, the PRICE-supported trainers played a critical role in this initiative's success. Through September 2011, a total of 536 (M 260, F 276) workers have been trained of which 374 are employed with full time jobs.

A.4. Bay Footwear Ltd. (BFL); Ended Successfully

Beginning in November 2010, this tripartite skill development program between PRICE, LFMEAB, and BFL targeted 200 footwear sector workers. Each trainee received formal on the job training (OJT) for two months under the supervision of a PRICE STA. The main focus of the training is on shoe manufacturing operations such as cutting/manipulating of leather, prefabricating and sewing, and lasting and finishing. In addition trainees, saw demonstrated on industry safety, discipline, and basics of shoe engineering. The cutting department workers were trained on cutting direction, pairing, machine pressure etc.; sewing workers were trained on skiving, splitting, folding, edge finishing, thread, needle, machine adjustment etc.; and, lasting workers were trained on toe and heel lasting, machine adjustment, finishing chemicals, etc. The program has successfully placed all of its 200 (M 71, F 129) trained workers at the Bay Company.

A.5. PRICE-Bengal Shoe Industries Ltd. (BSIL)-LFMEAB; Ongoing

PRICE, Bengal Shoe Industries Ltd. (BSIL), and LFMEAB collaborated in December 2010 to implement a tripartite skill development program for 1,200 new workers in order to create jobs opportunities for them in the footwear sector. Each trainee is currently receiving a formal two-month OJT on cutting and sewing-prefabricating. Every month, there is a new batch of 100 to 120 trainees.

In order to prevent co-occupancy of the machines/tools of the training center, BSIL and LFMEAB invested approximately USD \$40,000 in setting up a separate training section for the trainees and running two shifts. PRICE engaged one lead and two assistant trainers to run this training program, based in Lakshmipur, Noakhali. This program is expected to play an important economic role in that area through creating new job opportunities for the successful trainees, who in turn will contribute to the sector's export earnings.



Women's participation in PRICE-Bengal workforce development training program

This year, a total of 539 (M 71, F 468) workers, of which approximately 87% are women, were trained and 433 received full time jobs at BSIL. The employment of the skilled local young adults at the shoe factory is a milestone in the locality as jobs and trade outside the agriculture sector suffered from the shut down of Noakhali Jute Mill in 1993. In 2008, Bengal Group bought the factory (Noakhali Textile Mill), which was not making any profits failing factory and transformed it into a footwear manufacturing facility.

A. WORKFORCE DEVELOPMENT

A.6. Apex Leather Craft & Footwear Ltd (ALFAL); Achieved its Target

PRICE facilitated another private sector initiative under the tripartite agreement with LFMEAB and ALFAL in November 2010 to develop the skills of 200 new workers and create job opportunities for them in the sector, particularly in leather goods. The two month long OJT program focused on cutting direction, pairing, machine pressure, skiving, splitting, folding, edge finishing, thread, needle, machine adjustment, finishing chemicals, and packing etc. The classes gave adequate knowledge to the trainees to work on the formal factory floor.

The program was supervised by the PRICE STC based on the modules compiled and developed by PRICE using the ALFAL resources such as their machines. Upon completion of the project, all of the workers who were trained were retained by ALFAL.

A.7. Workers and Floor Supervisor Training at the Center of Excellence for Leather (COEL); Ongoing

After its official launching in June 2011, PRICE has been working with COEL and ILO in developing the skills of 1,000 new workers and 50 floor level supervisors for the sector. The training encompasses cutting skills (e.g. cutting direction, pairing, machine pressure etc.), sewing skills (e.g. skiving, splitting, folding, edge finishing, thread, needle, machine adjustment etc.), and finishing (e.g. toe and heel lasting, machine adjustment, finishing chemicals, packing etc.). A mix of theoretical and practical training is designed for the supervisors.

The program's goal goes beyond training and job generation, as it also helps make COEL operational as a one point resources center and a service provider to develop, support, and strengthen workforce development in the leather sector.



COEL inauguration class

Upon successful completion of the apprenticeship program, the workers will receive certificates. The one year apprenticeship training includes three months of both on and off the job training at the floor level, closely monitored by COEL. The remaining nine months will be workplace learning at factory premises using competency-based log books. PRICE has already facilitated the signing of MoUs between COEL and interested companies (five to date) from LFMEAB members.

In addition to workers, 50 new floor level supervisors are undergoing training to gain a deeper understanding of the production process, including trouble shooting in production, daily production planning, inventory management, manpower handling, and coordination with maintenance department, etc. This will help the workers ensure that not only the quantity but also the quality production becomes a regular practice anywhere they work in the sector now and in the future. Candidates have been selected through a comprehensive selection process using written and oral tests. This six month long program is divided into two tiers, theoretical and practical sessions (each about 50 percent), keeping the objective to apply the theoretical knowledge into the practical sessions. All the theoretical and basic practical sessions are conducted at COEL center. In order to enrich the overall skill level of the new staff through knowledge sharing, this program will also invite some experienced supervisors (approximately 10) from the respective enterprises to mix with the newcomers.

PRICE used three trainers who are primarily utilizing the PRICE module in developing the skills of both groups.



B. ASSISTANCE TO SME DEVELOPMENT

SMEs have limited access to information regarding technology, market, better business practices, etc. The smaller the enterprise is, the greater its limitations. Most small enterprises run inefficiently, as they are unaware of best practices. In addition, they have a traditional mindset which often makes it difficult to achieve growth.

B.1. PRICE Assistance in Developing Workers' Skills Helped Leather Technologist Small Entrepreneurs (LTSE) Expand Their Business

PRICE supported a skill development training program for the newly recruited workers of four member enterprises of LTSE, an informal group of 13 enterprises that PRICE helped form in 2009. PRICE assisted LTSE members link with lead firms and get better access to finance. Three members are enlisted with one leading organization, Aarong, as subcontractors and have received loan from two banks. Four LTSE members (including those three) have expanded their businesses due to the support they received from PRICE, getting new orders from lead enterprises and renting new factory premises to keep up with production. Due to this success, they have asked PRICE for further assistance in developing the skills of 50 new workers that they will hire as they are expanding.

This training program started in August 2010. Of the 50 new workers, 40 have successfully completed the training and are now contributing to the expansion of those four small enterprises. PRICE used one of its trainers to train these workers using the modules developed by PRICE.

B.2. PRICE Helped SMEs Learn Efficient and Cost Effective Production Techniques

Around 2,500 SMEs are working in the leather products sector. However, most of them are operating inefficiently with a low level of competitiveness, productivity, and quality. Thus, PRICE initiated a pilot process upgrade exercise in collaboration with seven small enterprises in mid 2010. The pilot aimed to show small enterprises how they can increase their competitiveness in the market through reducing inefficiencies in production processes.

Five out of these seven enterprises benefitted tremendously from implementing PRICE experts' recommendations in terms of reducing consumption of raw materials such as adhesive and leather, increasing productivity in cutting and prefabricating operations, edge coloring of cut components, and pressing folded components.



Open discussion in buyer seller meeting

After the successful completion of the pilot, PRICE organized a seminar, "Experience Sharing Seminar on Better Production Technique in SMEs of Leather Products Sector," in March 2011 in which more than 50 SMEs participated. The purpose of the seminar was to disseminate information to various stakeholders, particularly the SMEs of the sector. The seminar was held at the Bengal Café and was chaired by Mr. Minhaz Ahmed Chowdhury, the production manager at Bata Shoe Company. Special guests included Mr. Golam Mustafa who is the general manager at PICARD Bangladesh Ltd. The seminar was inaugurated by the PRICE project Chief of Party Mr. Jules Lampell.

The seminar also targeted establishing new and strengthening existing business linkages between SMEs and lead enterprises as well as SMEs. The seminar was divided into two sessions. The first part consisted of the technical session where a video documentary and a power point presentation on the outcomes of the pilot project interventions were shared. The later session was an open discussion where the participant SMEs shared their experiences and raised some critical pressing issues and questions for industry experts. This lively discussion gave SMEs the opportunity to directly talk to industry experts and get practical solutions to issues that are hindering their productivity. Moreover, this networking initiative prompted Bata Shoe Company to invite the attending shoe-making SMEs to a buyer-seller meeting, in order to assess their capacity as potential sub-contracting partners.

B. ASSISTANCE TO SME DEVELOPMENT



Practice of working of leather products sector before receiving training

After receiving training their practice has been changed



B. ASSISTANCE TO SME DEVELOPMENT

B.3. PRICE Supported SMEs Participate in the Dhaka International Trade Fair; a Market Linkage Opportunity for Small Enterprises



DITF 2011 participation , market linkage, SMEs

PRICE supported 10 SMEs (footwear and goods producers) to participate in the Dhaka International Trade Fair, DITF (January 1 -31, 2011). This fair is one of the largest national events organized by the Export Promotion Bureau and supported by the Business Promotion Council and Ministry of Commerce to promote small enterprises, particularly those that are new. Its aim is to help SMEs gain exposure to potential markets and develop new business linkages by showcasing their products. PRICE also helped the SMEs publish a product catalogue for potential clients to place bulk orders.

One of the constraints Bangladesh's leather sector SMEs face is the lack of exposure to buyers and limited access to markets. In addition, due to limited information from buyers, manufacturers often find themselves producing goods that are not trendy or appealing to the public, resulting in limited demand for their products.

PRICE and the participating 10 SMEs rented a pavilion called "Leather Cave" at the fair on a cost sharing basis. A wide range of leather products, including footwear, were displayed by each SME for the entire month. PRICE supported these SMEs in developing products for this fair, displaying merchandise effectively for the potential buyers, and publishing a product catalogue for potential clients for future references. Most importantly, PRICE arranged five buyer-sellers meets, where important corporate businesses were invited to visit the Cave and explore future business opportunities with the participating SMEs.

As a result of the fair, SMEs received a total of BDT 3,500,000 in revenue from spot retail sales. Five SMEs received business orders of more than BDT 2,000,000 during the month. Most importantly, the fair provided the SMEs with the opportunity for new business linkages with potential clients. Businesses such as pharmaceutical companies, electronic media, and fashion houses have expressed a strong interest in purchasing the SMEs' products. These new linkages will benefit the SMEs in the long term.

B.4. PRICE Increasing the Competitiveness of Aarong's Small Suppliers

PRICE, in collaboration with Aarong, has supported approximately 20 of its small suppliers since August of 2010 by strengthening their competencies in productivity and quality.

PRICE organized a "Techno Motivational Training" for the 20 SME owners as well as an exposure visit to a local big industry to learn about better practices. This program was broken out by six sessions which focused on the following:

- Session 1: Basics of Leather (leather identification, leather manipulation – how to avoid defects/ follow fiber direction to reduce loss, leather storing)
- Session 2: Materials Savings/Efficiency (reduce rework/rejection i.e. right work at origin, develop the habit of PRODEFECOST exercise)
- Session 3: Production Planning (basic steps in putting the work order into production, market information on availability of RM/alternative for reducing inconsistency between approved samples and mass production, delivery time)
- Session 4: Quality Awareness and Workforce Retention (my understanding of quality, GIP, packing and transportation, impact of poor quality product in the whole value/supply chain)
- Session 5: General Management (develop communication skills, inventory management, basic documentation)
- Session 6: Factory Visit to see the better business practices.

B. ASSISTANCE TO SME DEVELOPMENT

Based on the experiences from this training in 2010, PRICE and Aarong facilitated another in depth training for 20 SMEs, of which six were new, in August of 2011. This ongoing training targets the following areas:

- **Basic Materials Management:** Properties of leather that influence quality, factors in procuring appropriate leathers, storing, post mortem solution, and handling specific problems such as fungus, fading, etc.
- **Accessories/Sundries Management:** Characteristics of accessory items including metallic/plastic, factors in procuring appropriate sundries, storing, and trouble shooting.
- **Stitching and Prefabricating:** Prerequisites of good quality stitching include training in needle, thread, thread length, machine setting i.e. adjustment of thread and bobbin pressure, skiving, edge finishing, role of adhesive in quality, etc.

The first five day training was held in August and the second one was held in September in 2011 for 42 workers and owners belonging to 20 of Aarong's small suppliers. The main focus of the second training program was on "Management of Accessories and Sundries Materials for Footwear and Goods Manufacturing." It covers the principles of procuring good materials, storing techniques, inventory management, trouble shooting, etc. of accessories such as zipper, metallic/plastic buckles, chain, rivets, decorative items, Velcro, thread, etc. PRICE brought two industry experts to conduct this program. The third one is scheduled to be held in October 2011.



SME development, Assistance to SMEs, Aarong suppliers' development

B.5. PRICE Facilitates Initiatives for Better Access to Finance for SMEs

PRICE facilitated a linkage building workshop, which was held on June 14, 2011 at the SME Foundation office, in order to assist 11 Aarong sub-contractors in getting better access to finance from banks. On behalf of the small producers, Aarong's authorities had requested for PRICE's assistance in securing bank loans in order to expand their businesses and invest in machinery and working capital.

In collaboration with the SME Foundation, PRICE invited several commercial banks such as Eastern Bank Ltd, to link banks to SMEs in the leather sector. Eastern Bank responded positively as they have some experience in SME development in other sectors. As a part of the assistance, PRICE helped the small producers in collecting and organizing information and the required documentation for banks. Furthermore, PRICE helped them in preparing their business profiles, so that the banks can get a deeper understanding of their businesses.



Access to Finance meeting for Aarong producers

During the workshop, the sub-contractors presented their business portfolio along with their plans for expansion. A representative from the Eastern Bank analyzed their portfolios and discussed various financing options with them. The bank representatives provided invaluable advice for the producers such as the importance of completing their trade licenses promptly before they are able to move forward with the loan process. As a result, 27 enterprises obtained their trade licenses in order to receive bank loans. Given the success of the workshop, an additional five Aarong sub contractors joined the group.

B. ASSISTANCE TO SME DEVELOPMENT

PRICE organized a meeting between the Aarong authorities and the Eastern Bank as a part of the bank's requirements to provide loans. The progress is significant and it is expected that the small producers will get loans from EBL soon – at least 32 small producers had applied for loans thus far. In addition to access to finance, PRICE has been supporting 20 sub-contractors of Aarong to improve the efficiency of their production.

In another similar initiative, PRICE facilitated linkage building between the representatives of Bangladesh Paduka Prostutkarok Samity (Shoe Producers Association) and the SME Foundation's partner financial institutions (PFIs) at the Paduka Samity office in Bokshi Bazar, Dhaka in April 2011.

B.6. Buyer-Seller Meet



LFMEAB president and other members are visiting the mini fair

On July 27, 2011 USAID – PRICE and LFMEAB jointly organized a “Buyer-Seller Meet” between SMEs of leather products, specifically small leather goods (SLG) and footwear, and the members of the LFMEAB. The meeting was held at the Novo Convention Center in Tejgaon (Dhaka).

The event was designed to showcase the SLG and footwear produced by SMEs in a mini-fair with the objective of developing and enhancing business relationship/linkages between SME producers and the members of LFMEAB. During the fair, 23 SMEs displayed their products for nine potential buyers from larger businesses. Representatives from the SME Foundation, CARE, EPB and LSBPC attended the event.

SMEs in leather sector are vulnerable and obtaining access to market and wider stakeholders is difficult. Interestingly, many of the large enterprises are increasing their dependency on SMEs for outsourcing. However, there is still a gap in linkages between these two parties. PRICE believes that building new and more connections that are facilitated by reliable partners, such as PRICE, can bring increased business, new employment, etc, to the sector. This event produced following results:

- Direct connection was established between SMEs and lead firms to expand the sub-contracting businesses.
- SMEs gained exposure to larger audiences.
- Lead firms gained access to a group of potential suppliers in one go.
- SMEs learned the pattern of demand and the needs of buyers for future business.

PRICE assisted the participating SMEs to develop their products for the fair. In addition, PRICE developed an electronic product guide and SME enterprise profiles for the buyers for future references. A few SMEs got business orders equivalent to nearly USD \$6,000 at the fair itself or through meetings set up at the fair. PRICE will monitor the development of further business from this event.

PRICE has been working with LFMEAB and SMEs to bridge the gap between them and has been helping SMEs grow. Both these activities will ultimately help both parties. Through understanding the importance of SMEs in the sector, LFMEAB has agreed to work with PRICE in future projects to extend active support to SME industries in terms of capacity building, enterprise development, job creation, poverty reduction, building organizational platforms, and voicing their concerns to the government.



Open discussion in the “Buyer-Seller Meet” held on 27 July, 2011

B. ASSISTANCE TO SME DEVELOPMENT

B.7. Increasing SME Visibility in the Market

PRICE supported a group of SLG and footwear producers to get a corner showcase at "SME Product Display & Information Center" at the premise of SME Foundation. SME Foundation inaugurated this center on September 24, 2011 with the objective of giving SMEs opportunities to display their products to wider audiences on a long-term basis.

Of the seven leather sector enterprises that are displaying their products at the center, six of them are PRICE beneficiaries. They will initially keep their products for three months which can be extended later. By capitalizing on PRICE's network and its relationship with the SME Foundation, these companies have lent some of their prime spaces to the leather producers. PRICE also helped the leather producers in understanding the need of products, color, etc. for an effective display. Additionally, PRICE-supported product brochures are also kept at the center.



Leather Products sector's SME display center at SME Foundation.



C. QUALITY IMPROVEMENT OF BASIC RAW MATERIALS

Every year, the Bangladesh leather sector procures 200-220 million square feet of local raw skins and hides. Out of this, about 40% is collected just during the month of the Islamic holiday, Eid-ul-Azha. However, due to the lack of knowledge on flaying and skin preservation techniques among the people involved in sacrificing cattle and collecting hides/skins during Eid, Bangladesh loses significant commercial value (approximately 20%) of leather and leather products.

C.1. Flaying Campaign

PRICE has been supporting the sector through improving the quality of basic raw materials i.e. leather at origin for the last two years. Through these initiatives, PRICE has successfully achieved its objective of creating awareness among stakeholders, particularly among associations that work utilize the raw leather. As a result, two associations, i.e. Bangladesh Finished Leather, Leather Goods and Footwear Exporters' Association (BFLLEA) and Bangladesh Tanners Association (BTA), led the awareness campaign this year. PRICE, in collaboration with Leather Sector Business Promotion Council (LSBPC), Ministry of Commerce, and the government of Bangladesh, supported the associations in conducting a flaying campaign in November, 2010.

This awareness flaying campaign instilled a sense of social responsibility among the concerned stakeholders for taking better care of skins and hides as well as saving valuable resources, i.e. leather, during Eid-ul-Azha. During the campaign, 75,000 copies of posters on the do's and don'ts during flaying were circulated across the country in 64 districts through Deputy Commissioners' offices. Through this effort, information was disseminated to concerned stakeholders through religious leaders. The imams were trained on flaying (the basics of Anthrax was also incorporated) in Dhaka (Islamic Foundation, Agargaon), Chittagong (Imam Training Academy (ITA), and Hazi Camp Pahartoli, Chittagong). The program was covered through electronic media.

PRICE supported a wide number of activities in this effort including developing the posters and conducting orientation for imams in collaboration with the Leaders of Influence (LOI) program in Dhaka and Chittagong. The workshop trained 200 imams (100 each) from different areas in the proper flaying of hides/skins and has helped them understand its economic implications for Bangladesh. These religious leaders are expected to continue leveraging their position in their communities to share information and spread awareness on the economic impact of proper flaying and preservations to the believers at the mosques, particularly during Qurbani.



Imam orientation program for Flaying Campaign held in Chittagong

D. OTHER

D.1. One Point Service Center for the Leather Sector, COEL Launched



COEL launching ceremony held at COEL Center.

PRICE, in collaboration with ILO, facilitated the launch of the unprecedented private-sector led service provider, the COEL, on June 7, 2011 in Gazipur. The lack of skilled manpower hinders the leather sector from reaching its full potential. It is estimated that the sector requires over 50,000 skilled and semi-skilled workers to propel it forward. However, due to the gaps between industry labor requirements and the training provided by the existing Technical and Vocational Education and Training (TVET) system, the sector has found it difficult to find the right human resources with key skills.

The PRICE-led OJT has created a regular supply of semi-skilled workers to the sector through its various workforce development initiatives in cooperation with LFMEAB and its members, particularly for footwear and goods subsectors. This OJT is very useful for the sector and many enterprises can now take the challenges of more export business.

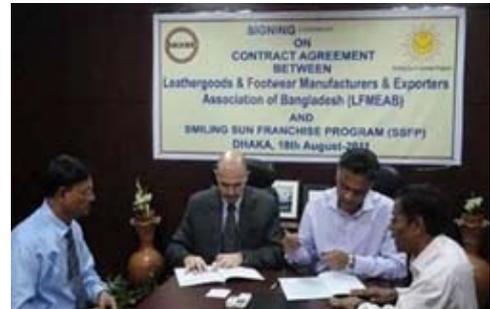
As a result of the success of these OJT initiatives, the industry representatives that formed the Industry Skill Council (ISC) under the supervision of ILO decided to establish a sector specific skill center called COEL for long-term sustainability. COEL is expected to grow into a more comprehensive industry training organization, gradually taking ownership (from the association and PRICE for fulfilling the tasks of the ISCs as outlined above), and building its capacity and roles to remain sustainable.

D.2. PRICE Partner LFMEAB to Provide Health Service for Leather Workers through USAID Funded Smiling Sun Franchise Program (SSFP)

PRICE partner LFMEAB signed an agreement with SSFP on August 18, 2011 to provide health services for its workers at various leather-goods manufacturing units through the Smiling Sun clinics. LFMEAB is an important association that groups companies in the leather sector. PRICE played a vital role in bridging these two parties. PRICE believed that one way to add value as an economic development project is by helping to create conditions for integral development among its beneficiaries [and crafted this message well and clear so the leadership of LFMEAB saw an opportunity for them and their employees in working with SSFP.

The two-fold objective of this initiative was to ensure workers of the member enterprises of LFMEAB have access to health care services and support SSFP in strengthening their service outreach to the workers of the footwear and leather goods companies.

According to the agreement, LFMEAB will purchase consolidated health service packages from SSFP for the workers and floor management staff at different factories. It is expected that this initiative will help create an atmosphere in the factories where workers will be more productive and motivated.



MoU signing ceremony between SSFP and LFMEAB

D.3. PRICE Increasing Awareness on Compliance

In collaboration the LFMEAB and LSBPC, PRICE facilitated a seminar to raise awareness on compliance issues, particularly on product standardization and environment compliance. The seminar, held in January 2011, portrayed the potential risks of non-compliance and urged industry players to be proactive on compliance. PRICE supported the initiative with two experts who assisted the organizers in preparing presentations. In addition, PRICE played an instrumental role in having SMEs present on how they are preparing to face the upcoming challenges. PRICE guided three SMEs from the Leather Technologists Small Entrepreneurs (LTSE) group in preparing presentation to describe what they have learned on issues of quality and social compliance through the PRICE-supported Process Upgrade pilot. SMEs also had an opportunity to expose themselves to the bigger audience of the sector in this country. The Secretary, Ministry of Commerce was the chief guest of the program. Approximately 75 participants from about 35 organizations attended.

D. OTHER

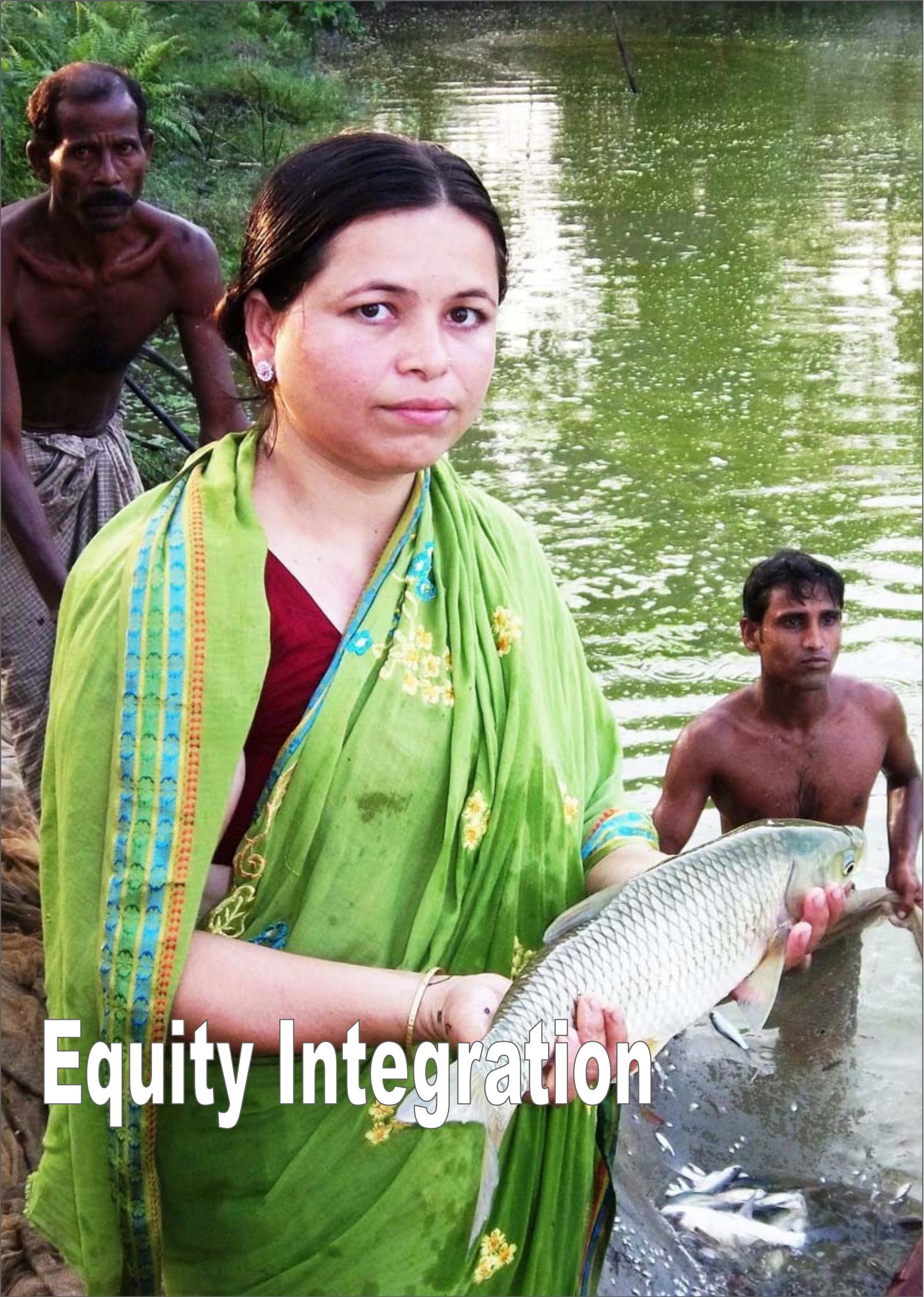
D.4. PRICE Assisted the Export Promotion Bureau (EPB) in Raising Awareness on “Bangladesh Leather Sector: Prospect & Future Challenges”

PRICE assisted EPB to conduct a special seminar on "Bangladesh Leather Sector: Prospects & Future Challenges" on July 21, 2011 through preparing and presenting a paper. The PRICE team highlighted the following major issues: potential of the country as a whole; leather sector performance in export; existing strengths, weaknesses, untapped opportunities, and threats of the sector; general and some specific problems and reasons; contributions of sector players in export business (value added products vs. finished/crust leathers); and contributions of leather sector particularly value-added (footwear and goods) products in Bangladeshi socio economy in terms of foreign earning, employment generation.

PRICE also made efforts to motivate the industry owners and new investors on focusing more in value-added products for economic growth. Additionally, PRICE shared their work experiences in the sector regarding SME development, skill development, etc. with the audience.

As a result of PRICE's widespread appreciation, EPB invited the PRICE team to a national seminar they organized to present. About 45 people attended the seminar which included industry owners, policy makers, development partners, academics, and government officials.





Equity Integration

EQUITY INTEGRATION



USAID evaluation team met with a female group under the GHERs initiative in Satkhira.

PRICE has been working to improve the skills of women in all three sectors. Focusing on value chain setbacks, PRICE has worked to alleviate hindrances to the female workforce in Bangladesh. In this effort, PRICE attempts to create a more competitive business environment working with firms to build awareness of issues surrounding women's participation in its selected sectors.

Throughout the fish and shrimp value chain, including shrimp processing plants, women's participation is traditionally low, on average at three percent. PRICE planned to increase women's participation from three percent at the national level to 20% among PRICE partners. Towards the goal to achieve 20% women among 60,000 aquaculture beneficiaries in the project, PRICE worked with partners JSK, a woman dominated farmer group and NGO, and Polli-Bodu Kallan Sanghtha (PBKS), an association organized and operated by housewives. Through these organizations, PRICE trained hundreds of additional housewives during 2011 on homestead aquaculture focusing on increased household income, self-employment, opportunistic employment, income generation, family nutrition, food security, and 's empowerment. Including women socially and economically through integrated farming efforts has helped resource-poor farming families to increase their fish-based consumption and limit chronic malnutrition in rural Bangladesh.

PRICE tries to work with young adults and women as much as possible to ensure their participation in aquaculture. During this year, a total of 40,134 participants were trained in improved technology, management, and workforce development, of which 9,990 were female participants. This year, PRICE's aquaculture sector created 13,758 field jobs, out of which 3,377 were for women. This period, PRICE facilitated a two-day in-country study trip for a beneficiary farming group of 20 partners in Jessore, Satkhira, Mymensing, Bogra, Rangpur, Gaibandha, and Cox's Bazar region. A total of 210 members, including seven female members, participated in the in-country exposure trip.



Sokhina involved in PRIDE Agro field

A four-member team from USAID and PRICE including Ms. Sarah Lane and Kristin O'Planick (USAID) and Dr. Abul Hossain and Mr. Abdul Mannan (PRICE) visited GHERS activities in different areas under Debhata Upazilla of Satkhira in March. They visited one CST (closed system technology) and one MTT (modified traditional technology) farm under GHERS and talked to 20 women farmers. All women farmers expressed interest in taking the training and joined the group to be trained. The training was on improved culture method - MTT and CST. The training resulted in their increased involvement in aquaculture activities.



Leather workforce

Women also play a greater role in horticulture production by collecting and keeping seeds for the next crop, participating in harvesting, sorting, grading, and cleaning alongside their male counterparts, and preparing to send the products to the market. The involvement of women in vegetable production is about 48 percent, compared to only 11-20 percent in cereal production. In recent years, women have taken an increased role in the commercial production of horticulture products and a greater portion of their produce is going to the market.

This year, the horticulture sector trained 1,322 women in collaboration with PRIDE Agro Enterprise, Golden Seed Processing Farm, Aunkur Seed and Himagar, Technology for Rural Development (TFRD), Rural Development Academy (RDA), Ferdous Biotech, Sajeeb Seeds, Unique Seeds, Chesta Agro, and Krishok Bandhup Karmochuchi. The trainings were on Workers Training on Potato and Eggplant Production Management and Post Harvest Handling and aimed at increasing the knowledge of women workers. As a result more women will be involved in the potato and eggplant production management and post-harvest handling activities. Yard meetings on the use of organic fertilizer were organized for the women participants to ensure quality vegetable cultivation and to adopt contract farming system. This year, a total of 3,453 horticulture field jobs were created, out of which 2,551 were for women.

EQUITY INTEGRATION

The leather industry is the fourth biggest export revenue earner in Bangladesh and plays a significant role in the national economy. This labor intensive industry employs more than 700,000 direct and indirect people, but unfortunately the presence of women, particularly at entrepreneurial and managerial level, is very limited due to a lack of required capacity and skills. The only exception is in the sewing and prefabrication departments of the footwear and goods subsectors, where an estimated 40% of the workers are women. Moreover, the incidence of dropout and discontinuation among women workers existing in the leather industry is high.

Considering these constraints, PRICE has been supporting women through its various programs, such as, workforce skill development (technical and managerial), and SME development to increase and sustain the participation of women workers/managers/ supervisors in the leather sector. In the workforce skill development programs, PRICE works to provide more opportunities for adult women workers. So far, PRICE has trained 3,383 workers of which 2,322 are women. The ultimate objective of PRICE is to increase job opportunities for women workers and eventually assist them in graduating to the next level as supervisors and floor managers. Thus PRICE has already facilitated job creation for a total of 2,524 workers out of which 1,804 are women. These women are now receiving tk. 2,700 -3,500 as salary in addition to other benefits and are now proudly contributing to their household income. PRICE also trained women entrepreneurs in both technical and managerial skill development. Developing business linkages with lead firms, getting access to finance, up grading process/operations, exposure visits, and participating at lead auditor course abroad are some examples of the assistance PRICE has been providing to women entrepreneurs and workers in the leather sector. These workers are improving their standard of living by generating consistent incomes and ensuring equal pay for equal work for both men and women.

Gender and Development Fair 2011

PRICE participated in the USAID organized Gender and Development Fair, in Dhaka in March. PRICE, along with 95 other development and government organizations participated in the two-fair, disseminating information among the visitors by:

Distributing approximately 300 folders, includes sector based empowerment of women through economic growth information, objectives, achievements and progress of the project

Running a video documentary

Sharing success stories about women



On the spot consultation with the visitors about PRICE initiatives in empowerment of women through economic growth in PRICE targeted subsectors like aquaculture, horticulture and leather products

The leather products sector demonstrated leather goods production techniques with the help of one female worker and one female entrepreneur who received the PRICE training. People from different disciplines, such as producers women entrepreneurs, government officials, media people, international and national development organizations and stakeholders, and Dr. Shirin Sharmin Choudhury, Honorable State Minister, Ministry of Women and Children Affairs visited PRICE's stall. All visitors

showed their enthusiasm and satisfaction regarding PRICE's activities and appreciated PRICE's efforts and some asked for its assistance for their respective sector.

Potential organizations and individuals who expressed interest in working with PRICE will be contacted and invited for sector based detailed discussion in future. Necessary steps can be taken for the implementation of USAID program because of the interest that experienced among the visitors.

Annex A

PRICE PERFORMANCE: FY 2011 AND ACCUMULATED

Indicator & Sector	Unit	Life of Project Target	FY 2011 Performance			Cumulative Performance		
			Target	Achievement	% of achievement	Cumulative planned	Cumulative achieved**	% of Achievement of LoP Target
Total Value of Sales Increased	USD	200,000,000	61,550,700	129,192,657	210%	116,550,700	181,217,296	91%
Domestic		116,994,616	33,930,070	89,960,712	265%	55,930,070	125,058,877	107%
Export		83,005,383	27,620,630	39,231,945	142%	60,620,630	56,158,418	68%
Aquaculture		105,000,000	30,000,000	94,791,429	316%	67,125,000	133,260,853	127%
Horticulture		40,000,000	11,500,000	12,772,253	111%	19,750,000	19,283,935	48%
Leather/Leather products		55,000,000	20,050,700	21,628,975	108%	29,675,700	28,672,508	52%
Number of Full-time equivalent Jobs Created*	Number	40,000	12,500	19,736	158%	27,500	30,979	77%
Aquaculture		26,000	8,000	13,758	172%	17,750	21,044	81%
Horticulture		10,500	3,250	3,453	106%	7,000	6,170	59%
Leather/Leather products		3,500	1,250	2,524	202%	2,750	3,766	108%
Male		34,383	10,548	13,652	129%	21,048	23,426	68%
Female		5,617	1,953	6,084	312%	6,453	7,553	134%
Total Value of Investment Increased	USD	4,000,000	1,300,000	3,993,362	307%	2,900,000	6,387,076	160%
Aquaculture		2,100,000	500,000	3,497,954	700%	1,300,000	4,961,567	236%
Horticulture		1,000,000	400,000	175,785	44%	720,000	669,302	67%
Leather/Leather products		900,000	400,000	319,623	80%	880,000	756,208	84%
Number of persons participated in WF-dev program	Number	15,000	7,000	8,643	123%	13,500	12,504	83%
Aquaculture		4,000	2,000	4,057	203%	3,757	5,199	130%
Horticulture		2,500	1,200	1,270	106%	2,430	1,366	55%
Leather/Leather products		8,500	3,800	3,316	87%	7,314	5,939	70%
Male		8,042	4,200	3,327	79%	8,660	4,686	58%
Female		6,959	2,800	5,316	190%	4,840	7,819	112%
No. of workers and managers trained on Bangla-	Number	1,064	0	0	0	340	364	34%
Aquaculture		1,064	0	0	0	340	364	34%
Horticulture		0	0	0	0	0	0	0
Leather/Leather products		0	0	0	0	0	0	0
Male		732	245	0	0%	483	242	33%
Female		332	105	0	0%	207	122	37%

PRICE PERFORMANCE: FY 2011 AND ACCUMULATED

Number of Firms and farmers receiving USG assistance to improve management Practices	Number	31,300	14,700	27,029	184%	18,450	34,127	109%
Aquaculture		26,047	12,500	22,836	183%	15,875	28,171	108%
Horticulture		5,053	2,170	4,126	190%	2,451	5,842	116%
Leather/Leather products		200	30	67	223%	124	114	57%
Male		24,519	11,760	20,328	173%	14,385	25,485	104%
Female		6,781	2,940	6,701	228%	4,065	8,642	127%
Number of Firms and farmers receiving USG assistance to access formal loan or micro-credit	Number	7,025	2,300	4,216	183%	2,800	6,584	94%
Aquaculture		4,110	1,595	1,513	95%	2,003	2,840	69%
Horticulture		2,900	700	2,700	386%	783	3,737	129%
Leather/Leather products		15	5	3	60%	13	7	47%
Male		3,502	1,150	3,248	282%	1,500	4,421	126%
Female		3,525	1,150	968	84%	1,300	2,163	61%
Number of firms and farmers receiving USG assistance to invest in improved technologies	Number	72,300	26,300	36,999	141%	33,550	68,994	95%
Aquaculture		58,600	21,700	29,701	137%	27,138	56,361	96%
Horticulture		13,512	4,470	7,231	162%	6,192	12,539	93%
Leather/Leather products		188	130	67	52%	221	94	50%
Male		60,880	22,355	29,990	134%	27,580	56,611	93%
Female		11,420	3,945	7,009	178%	5,970	12,383	108%

*Jobs are calculated using job model to estimate the across the value chain results of job creation.

AQUACULTURE PERFORMANCE : FY 2011

During the reporting period (US fiscal year October'10-September'11) the sales revenue of aquaculture sector increased by \$94.79 million. In this increased sales, Nizarertek Fish-dryers Multipurpose Cooperative Somity, Trisal Fish Farmers' Business Somity-1, Tarakanda Satata Motso Beboshahi Somity, Kahaloo Matshya Pona Utpadankari Somoby Somity in Fish and Gazi Fish Culture, GHERS initiative along with Organic Shrimp Export Ltd in Shrimp sub sector contributed the most.

In fish subsector, Nizarertek Fish-dryers Multipurpose Cooperative Somity contributed the highest amount - \$ 23.2 million, followed by Trisal Fish Farmers' Business Somity-1 -\$5 million, Tarakanda Satata Motso Beboshahi Somity -\$3.7 million and Kahaloo Matshya Pona Utpadankari Somoby Somity - \$3.3 million.

Among the Shrimp subsector partners, GHERS initiative generated an additional sale of \$11.9 million, besides it Gazi Fish contributed \$ 1.6 million, Organic Shrimp Export Ltd \$ 8.7 million, Jahanabad and Jalabad Frozen Foods each generated \$1 million to augment the sales revenue in this reporting period.

An estimated 13, 758 (3,859 in fish & 9,899 in shrimp) full time equivalent jobs (of which 10,381 male & 3,378 female) have been created through the activities of PRICE assisted partner in aquaculture sector. Kahaloo Matshaya Chasi Samoby Somity, Satkhira Feed, Nizarertek Fish-dryers Multipurpose Cooperative Somity, GHERS initiatives, Jalabad Frozen Sea Foods Ltd helped the most to create this new jobs in this year.

In investment, Bhaluka Motso Chasi Somoby Somity, Golden Harvest Sea Food & Fish Processing Lts, Tarakanda Satata Motso Beboshahi Somity, Nizarertek Fish-dryers Multipurpose Cooperative Somity, GHERS initiatives led the way to draw a total of \$1.82 million in the reporting period.

PRICE Achievements in Aquaculture during Oct'10-Sep'11

<i>Sales increased</i>	\$94.79 million
<i>New jobs</i>	13,758
<i>Investment increased</i>	\$3.49 million
<i>Farmers trained in technology</i>	29,701
<i>Farmers trained in management</i>	22,836
<i>Training for workforce development</i>	4,057

PARTNER-WISE RESULTS IN FISH

Region	Partner	Sales Increased			No. Total Jobs Created*			Investment Increased
		Domestic	Export	Total	Male	Female	Total	USD
		USD	USD	USD				
Mymensingh-Jamalpur	Digherkanda Matsopona Beboshahi-Kallan Bohumukhi Somabaya Somity (DMBBS)	3,350,239	0	3,350,239	95	1	96	16,486
	Phulpur Fish and Prawn Farmers' Association (PFPPA)	238,398	0	238,398	55	0	55	24,902
	Trisal Fish Farmers' Business Somity (TFFS)-1	5,053,148	0	5,053,148	-174	1	-173	16,305
	Trisal Fish Farmers' Business Somity (TFFS)-2	3,007,489	0	3,007,489	219	0	219	19,133
	Nokla Motsojibi Somity	279,099	0	279,099	135	27	162	29,583
	Bamunji Beel Motsojibi Somity	128,324	0	128,324	52	9	62	40,833
	Muktaghacha Fish Farming and Business Association	1,811,936	0	1,811,936	194	0	194	28,739
	Unnayn Sangha	186,048	0	186,048	28	0	28	13,933
	Tarakanda Satata Motso Beboshahi Somity	3,709,197	0	3,709,197	125	0	125	99,571
Bhaluka Motso Chasi Somoboy Somity	2,913,597	0	2,913,597	-1,072	-91	-1,162	323,600	
Bogra-Rajshahi	Trinamool Manobik Unnayan Shongstha (TMUS)-1	713,393	0	713,393	178	0	178	16,655
	Trinamool Manobik Unnayan Shongstha (TMUS)-2	349,119	0	349,119	-681	7	-675	53,546
	Chitralatha Aqua Park Ltd	22,041	0	22,041	18	0	18	998
	Kahaloo Matshya Chashi Samoby Samity-1	2,852,336	0	2,852,336	720	1	722	68,913
	Kahaloo Matshya Chashi Samoby Samity-2	993,066	0	993,066	-4	0	-4	25,085
	Pachpir Bazar Matsya Chashi Samoby Samity-1	464,762	0	464,762	124	0	124	1,544
	Pachpir Bazar Matsya Chashi Samoby Samity-2	60,267	0	60,267	16	0	16	1,190
	Murail Matsya Chashi Samoby Samity-1	667,608	0	667,608	168	0	168	4,888
	Murail Matsya Chashi Samoby Samity- 2	178,845	0	178,845	-25	0	-25	5,422
	Society for Sustainable Development for the Rural & Urban Area (SSURDA)	1,419,866	0	1,419,866	-373	0	-372	67,297
	Talora Ancholik Matsa Chasi Somobay Somity	486,452	0	486,452	-120	-11	-131	11,762
	Sherpur Matsa Chasi Somoboya Somity	1,814,979	0	1,814,979	164	-3	161	71,396
	Kahaloo Matshya Pona Utpadankari Somoby Somity	3,346,604	0	3,346,604	346	-11	335	82,323
	Adamdighi Khudra Motso Beboshahi Somity	251,069	0	251,069	36	-2	35	8,281
	North Bengal Thaitech Tilapia Hatchery	17,792	0	17,792	-1	0	-1	4,619
	Agriculture Advisory Society (AAS)-(Aqua)	1,836,102	0	1,836,102	-354	0	-354	24,049
	Palli Bandhu Kallan Sangstha	21,342	0	21,342	6	0	6	431
	Chitralatha Aqua Park Ltd- Farmers	163,272	0	163,272	9	-1	8	10,313
	North Bengal Thaitech Tilapia Hatchery- Farmers	178,411	0	178,411	-73	0	-73	9,807
	Barishal	Rakhaing Development Foundation (RDF)- 1	98,990	0	98,990	-13	0	-13
Rakhaing Development Foundation (RDF)- 2		-289,916	0	-289,916	-267	0	-266	30,975
Barisal Aquaculture Development Society		458,021	0	458,021	-358	0	-358	25,749
Comilla-Noakhali	Society For Social Services (SSS)-1	523,471	0	523,471	-189	0	-188	566
	Society For Social Services (SSS)-2	1,191,064	0	1,191,064	-133	-8	-141	0
	Janaseba Kendra (JSK)- 1	51,931	0	51,931	-3	0	-3	0
	Janaseba Kendra (JSK)- 2	9,078	0	9,078	4	0	4	0
	Janaseba Kendra (JSK)- 3	1,961	0	1,961	3	0	3	96
	Bangladesh Cage Culture Owners Association (BCOA)	0	0	0	0	0	0	0

PARTNER-WISE RESULTS IN FISH

Cox's Bazar	Naziretek Fish-dryers Multipurpose Cooperative Somity	23,292,029	0	23,292,029	1,374	2,137	3,511	102,092
	Allahwalla Hatchery & Farming Complex	181,917	0	181,917	51	0	51	46,014
	Samridhi Bohumukhi Matsya Unnayan Gobe-sana Kendra	22,975	0	22,975	5	0	5	1,185
	Niribili Telapia Hatchery	-68,645	0	-68,645	16	5	21	1,389
	Niribili Telapia Hatchery- Farmers	-22,040	0	-22,040	-7	0	-7	2,816
	Allahwalla Hatchery & Farming Complex - Farmers	50,333	0	50,333	11	0	11	9,956
	Samridhi Bohumukhi Matsya Unnayan Gobe-sana Kendra -Farmers	-47,288	0	-47,288	-4	0	-3	14,882
	Islamia Fishing	0	0	0	0	0	0	0
Jessore-Khulna	Mulia Matshyajibi Samittee	121,126	0	121,126	12	7	19	15,695
	Goldhamari Motshojibi Samabay Somity	165,093	0	165,093	46	3	48	12,568
	South Bay (Pvt) Ltd	-5,704	0	-5,704	6	0	6	0
	Nowapara Fisheries Complex	-59,178	0	-59,178	8	1	9	0
	Ma Fatema Fish Hatchery	52,583	0	52,583	29	0	29	0
	Pori Matshya Hatchery	68,357	0	68,357	3	0	3	2,750
	Rupali Fish Hatchery	19,313	0	19,313	11	0	11	0
	Shuvra Matshya Hatchery	85,069	0	85,069	-11	0	-11	2,361
	Deesha Samaj Kolyan Sangstha	43,202	0	43,202	15	0	15	146
	Din Bijoy Enterprise-(Fish)	3,913	0	3,913	0	0	0	0
	Vairob Fish Agency-(Fish)	36,014	0	36,014	0	0	0	0
	Razu Enterprise-(Fish)	79,041	0	79,041	0	0	0	0
	Modina Matshya Prokolpo-(Fish)	3,768	0	3,768	0	0	0	0
	Mondal Fish- (Fish)	25,433	0	25,433	0	0	0	0
	Satata Fish- (Fish)	95,290	0	95,290	0	0	0	0
	Satkhira Feed Industries Ltd.-(Fish)	1,553,102	0	1,553,102	37	541	578	0
	South Bay (Pvt) Ltd-Farmers	-184,957	0	-184,957	-122	4	-118	7,892
	Nowapara Fisheries Complex-Farmers	906,954	0	906,954	161	4	164	63,303
	Ma Fatema Fish Hatchery-Farmers	651,233	0	651,233	304	-2	303	37,516
	Pori Matshya Hatchery-Farmers	387,452	0	387,452	245	-1	244	8,737
Rupali Fish Hatchery-Farmers	748,121	0	748,121	87	0	87	9,642	
Shuvra Matshya Hatchery-Farmers	263,285	0	263,285	83	-1	82	14,452	
Dhaka	Golden Harvest Sea Food & Fish Processing	0	1,119,365	1,119,365	6	11	16	125,694
	Fishtech (BD) Limited	455,791	0	455,791	6	1	7	14,221
Total Fish		67,482,982	1,119,365	68,602,347	1,225	2,634	3,859	1,645,024

* Direct job information is complemented using a statistical model to estimate associated job creation across the value chain.

Source of data: Partner interviews for enterprises. In the case of farmer groups, statistical sample surveys for annual performance.

PARTNER-WISE RESULTS IN SHRIMP: FY 2011

Region	Partner	Sales Increased			No. Total Jobs Created*			Investment In-
		Domestic	Export	Total	Male	Female	Total	creased
		USD	USD	USD				USD
Jessore-Khulna	Gazi Fish Culture Ltd	949,522	714,897	1,664,419	50	57	107	24,081
	Din Bijoy Enterprise-(Shrimp)	17,029	51,078	68,107	3	2	5	0
	North Khulna Poultry and Fish Feed	0	0	0	0	0	0	0
	Aqua Star Hatchery & Agro-Complex	0	0	0	0	0	0	0
	Vairob Fish Agency-(Shrimp)	186,718	54,303	241,021	7	6	13	640
	Razu Enterprise-(Shrimp)	50,183	82,030	132,213	4	1	5	0
	Mofa Fish Pvt Ltd.	0	0	0	0	0	0	0
	Modina Matshya Prokolpo-(Shrimp)	14,865	1,846	16,711	2	2	4	0
	Mondal Fish- (Shrimp)	39,552	47,057	86,609	2	4	5	814
	Satata Fish- (Shrimp)	90,869	134,565	225,434	6	5	11	0
	Satkhira Feed Industries Ltd.-(Shrimp)	682,162	0	682,162	-26	0	-26	0
	S M Shrimp Culture	0	0	0	0	0	0	0
	GHERS-1 by The WorldFish Center	8,785,261	8,681,278	17,466,540	3,705	178	3,883	1,062,783
	GHERS-2 -2010 by The WorldFish Center	-1,824,348	-5,140,275	-6,964,623	746	96	842	323,390
	GHERS-2 2011 by The WorldFish Center	1,787,094	-386,350	1,400,744	4,571	352	4,923	439,835
	BSFF	0	0	0	0	0	0	0
	Rupali Sea Foods Ltd	0	225,945	225,945	1	32	33	0
	Organic Shrimp Export Ltd	0	8,749,104	8,749,104	-50	-34	-83	0
	Jahanabad Frozen Foods Ltd	0	1,013,710	1,013,710	72	33	105	0
	Jalalabad Frozen Sea Foods Ltd	0	1,413,694	1,413,694	86	25	111	0
Mofa Fish Processing Pvt Ltd	0	0	0	0	0	0	0	
M.U. sea Foods Ltd	0	-272,707	-272,707	-36	-14	-50	0	
Cox's Bazar	Yunus Fishing Limited	40,000	0	40,000	11	0	11	1,389
	Total Shrimp	10,818,908	15,370,175	26,189,082	9,155	744	9,899	1,852,931

* Direct job information is complemented using a statistical model to estimate associated job creation across the value chain.

Source of data: Partner interviews for enterprises. GHERS information is reported by the World Fish Center.

HORTICULTURE PERFORMANCE: FY 2011

Through October'10 – September'11 PRICE assisted Horticulture partners increased their sales by \$12.77 million. GUKED, Seed Potato Growers Cooperative Society, Kansat Mango Farmer Multi purpose Co-operative Society Ltd, EFADF Agro Business, Golden Harvest Agro Industries and Lalteer Seed Ltd contributed highest in increasing the sales. A total of 3,453 full time equivalent jobs (out of which 2,551 male and 902 were female) were created by the partner. GUKED, Kansat Mango Farmer Multi purpose Co-operative Society Ltd, ANKUR-farmer, EFADF Agro Business, Agricultural Advisory Society and Pride Agro Enterprise- Potato farmers generated most of the jobs in horticulture sector.. Investment was increased \$175 thousand during this year.

Results in Horticulture during Oct'10-Sep'11

<i>Sales increased</i>	\$12.77 million
<i>New jobs</i>	3,453
<i>Investment increased</i>	\$175 thousand
<i>Farmers trained in technology</i>	7,231
<i>Farmers trained in management</i>	4,126
<i>Training for workforce development</i>	1,270

PARTNER-WISE RESULTS IN HORTICULTURE: FY 2011

Region	Partner	Sales Increased			No. Total Jobs Created*			Investment Increased
		Domestic	Export	Total	Male	Female	Total	USD
		USD	USD	USD				
Bogra-Rajshahi	Gram Unnayan Karma Enterprise Development (GUKED)-1	1,062,928	39,881	1,102,809	462	176	638	1,229
	Gram Unnayan Karma Enterprise Development (GUKED)-2	352,318	0	352,318	624	295	919	0
	Gram Unnayan Karma Enterprise Development (GUKED)-1 Farmers	75,188	0	75,188	-204	42	-162	2,222
	Murail Rural Development Multipurpose Cooperative Society Ltd	99,783	0	99,783	-19	-15	-33	0
	Seed Potato Growers' Cooperative Society Ltd.	1,242,149	0	1,242,149	-85	46	-39	2,837
	Rural Development Academy (RDA)	30,535	0	30,535	18	14	32	2,616
	Ankur Seed and Himagar	2,778	0	2,778	24	27	51	13,889
	Ferdous Biotech Ltd	20,833	474,045	494,878	-3	16	13	11,111
	Bombay Sweets & Co Ltd	26,221	0	26,221	45	25	69	0
	Sajeeb Seeds	23,421	0	23,421	17	12	29	0
	Unique Seeds	1,417	0	1,417	8	7	15	722
	Technology For Rural Development (TFRD)	8,750	0	8,750	0	2	1	13,889
	Agricultural Advisory Society (AAS)-(Horti)	204,228	0	204,228	154	-13	142	2,379
	Al Fida Cooperative	0	0	0	0	0	0	0
	Grameen Krishak Sohayak Sangstha Enterprise (GKSSE)	173,857	0	173,857	58	29	87	39,101
	Grameen Krishak Sohayak Sangstha Enterprise (GKSSE)- Farmers	443,147	0	443,147	110	17	127	568
	Riya Fertilizer	55,823	0	55,823	21	3	24	1,869
	Blue Moon International	0	0	0	0	0	0	0
	Kansat Mango Farmer Multipurpose Co-operative Society Limited	1,150,265	0	1,150,265	266	0	266	20,353
	Kansat Mango Farmer Multipurpose Co-operative Society Limited- Mango Stands in Dhaka	87,445	0	87,445	9	0	9	0
Bonolota Mango Producer Cooperative Society Ltd	545,591	0	545,591	40	0	40	0	
Bonolota Mango Producer Cooperative Society Ltd- Mango Stands in Dhaka	26,607	0	26,607	2	0	2	435	

PARTNER-WISE RESULTS IN HORTICULTURE: FY 2011

Jessore-Khulna	Konika Seed Company Ltd	233,474	0	233,474	51	30	82	13,229
	Muktir Alo Agro Business-(Potato)	3,245	0	3,245	1	0	1	0
	Pride Agro Enterprise-(Potato)	278,674	0	278,674	54	25	80	1,024
	Krishak Bandhu Karmashuchi-(Potato)	50,833	0	50,833	11	5	16	1,736
	Golden Seed Processing Farm	48,611	0	48,611	34	15	49	5,186
	Pride Agro Enterprise- Potato Farmers	126,179	0	126,179	155	28	183	32,979
	Krishak Bandhu Karmashuchi - Potato Farmers	50,448	0	50,448	100	50	150	2,468
	Golden Seed Processing Farm – Farmers	5,220	0	5,220	3	5	8	11
	Muktir Alo Agro Business-Potato Farmer	13,082	0	13,082	13	3	16	0
	Muktir Alo Agro Business-Eggplant Farmer	-25,764	0	-25,764	32	11	43	548
	Chesta Agro Enterprise -Farmer	311,013	0	311,013	115	2	117	2,576
	Muktir Alo Agro Business-(Eggplant)	46,097	0	46,097	4	0	4	0
	Pride Agro Enterprise-(Eggplant)	215,914	0	215,914	13	7	20	512
	Krishak Bandhu Karmashuchi-(Eggplant)	23,014	0	23,014	0	0	0	0
	Krishak Bandhu Karmashuchi-(Eggplant)-Farmer	-22,375	0	-22,375	20	2	22	158
	Uttaran Agro Enterprise	0	0	0	4	0	5	0
	Chesta Agro Enterprise	0	0	0	7	0	7	0
	ANKUR	0	0	0	7	0	7	275
	ANKUR -Farmers	453,147	0	453,147	185	-4	181	1,839
	Uttaran Agro Enterprise -Farmers	31,443	0	31,443	3	1	4	24
	Padma Seeds	100,278	0	100,278	3	1	4	0
	Organix	316,532	0	316,532	12	5	18	0
	EFADF Agro Business	1,091,758	0	1,091,758	114	14	128	0
Action In Development (AID) Agro Mart	0	0	0	0	0	0	0	
Dhaka	Surovi Agro Industries Ltd.	0	0	0	0	0	0	0
	Golden Harvest Agro Industries Limited	1,511,212	592,355	2,103,567	60	20	80	0
	Bhaterchar Krishak Unnyan Bahumukhi Samabai Samity	0	0	0	0	0	0	0
	Syngenta Bangladesh Limited	0	0	0	0	0	0	0
	Lalteer Seed Limited	1,066,486	104,167	1,170,652	1	-1	-1	0
Total Horticulture		11,561,805	1,210,448	12,772,253	2,551	902	3,453	175,785

* Direct job information is complemented using a statistical model to estimate associated job creation across the value chain.

Source of data: Partner interviews for enterprises. In the case of farmer groups, statistical sample surveys for annual performance.

LEATHER PRODUCTS PERFORMANCE: FY 2011

PRICE Leather partners increased their sales by \$21.62 million; of it almost 100% of Leather Products sector partners' increased sales have come from exports. FB Footwear Ltd contributed the highest in sales with \$7.6 million increase and other two major partners Apex Adelchi Footwear Ltd and Landmark increased their sales by \$5.2 & 4.4 million respectively. 2,524 new jobs (720 male & 1,804 were female) were created and USD 319 thousand of investment was made by the partners in the sector.

Achievements in Leather Products during Oct'10-Sep'11

Sales increased	\$21.62 million
New jobs	2,524
Investment increased	\$319 thousand
Training for workforce development	3,316

PARTNER-WISE RESULTS IN LEATHER PRODUCTS: FY 2011

Region	Partner	Sales Increased			No. Total Jobs Created			Investment Increased
		Domestic	Export	Total	Male	Female	Total	USD
		USD	USD	USD				
	LFMEAB - Apex Adelchi Footwear Ltd.	-	5,299,950	5,299,950	238	607	845	-
	LFMEAB - Bay Footwear Ltd.	-	1,350,000	1,350,000	71	129	200	14,406
	LFMEAB - Jennys Shoes Ltd	-	754,875	754,875	-	-	-	-
	LFMEAB - Landmark Footwear Ltd	-	4,406,250	4,406,250	-	-	-	-
	LFMEAB - Apex Leather Craft Fashion & Accessories	4,097	570,000	574,097	16	184	200	-
	LFMEAB - PICARD	-	1,397,000	1,397,000	169	205	374	-
	LFMEAB - Bengal Shoe Industries	-	143,820	143,820	46	387	433	140,000
	LFMEAB - FB Footwear Ltd	-	7,610,063	7,610,063	170	266	436	-
	Leather Technologist SME Entrepreneur (LTSE)	86,970	-	86,970	-	-	-	165,217
	Bangladesh Association for Social Advancement (BASA)	-	-	-	-	-	-	-
	Bangladesh Leather Service Center (BLSC)	-	-	-	-	-	-	-
	Raian Shoe	-	-	-	-	-	-	-
	Deya Leather	-	-	-	-	-	-	-
	Flaying Campaign	-	-	-	-	-	-	-
	Other SMEs	-	-	-	-	-	-	-
	Aarong - 20 Supplier SMEs	-	-	-	-	-	-	-
	COEL	-	-	-	10	26	36	-
Dhaka	Kaluhati Cluster	5,950	-	5,950	-	-	-	-
Jessore-Khulna	Rishilpi	-	-	-	-	-	-	-
Total Leather Products		97,017	21,531,958	21,628,975	720	1,804	2,524	319,623

Source of data: Partner interviews

Annex B



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PRICE
POVERTY REDUCTION BY INCREASING
THE COMPETITIVENESS OF ENTERPRISES

New Leanings Start Changing Life of a South Western Farmer

PRICE supported ‘Contract Farming System and Improved Vegetable Farming Technology’ training helps small farmers in South Western area of Bangladesh



Photo: PRICE / Bushra Rahman

“I thank PRICE for helping me to learn new techniques. Now I know how to grow safe vegetables with minimum investment and get maximum output”
-Fakir Nurul Amin

Fakir Nurul Amin, a vegetable farmer living in Teligati village, Digholia, Khulna, has been growing seasonal vegetables in his small yard for the past 40 years. Before 2010, Fakir would invest approximately 20,000 taka every year. Despite his toil and investments, he would barely recover his costs and generate a meager profit due to his low productivity. As a result, meager profits compelled him to take supplemental loans to support his family. Over the years, as he took one loan after another, his family mired in debt.

Fortunately, his life took a turn when an agricultural officer at Organix, a PRICE partner in the Khulna area, suggested that he attend a training that can improve his productivity to produce more with fewer inputs. In October 2010, Organix trained Fakir Nurul Amin on contract farming systems and improved vegetable farming technology. During the training, Fakir learned how to make compost fertilizer to grow organic vegetables, make vegetable beds, identify good seeds, and use improved technology to accelerate productivity.

By applying the techniques he had learned during the training, he was able to invest less and get better returns on his inputs. For example, he switched from using chemical fertilizers to compost fertilizer and a paste killing trap rather than the conventional chemical pesticides he formerly used. He also ensured that he used good seeds. By improving productivity, he has reduced his investment to 6000 taka and saves approximately 26,000 taka per year after all his expenses. Additionally, the quality of his vegetables is better and safer as well.

Fakir’s poor financial status has significantly improved through receiving this valuable insight. He has now repaid a substantial portion of his loans relieving his family of the burden of debt. Moreover, with the additional income and better crops, he can now provide more nutritious meals to his family and relatives. “I thank PRICE for helping me learn new techniques. Now I know how to grow safe vegetables with minimum investment and get maximum output,” said a smiling Fakir Nurul Amin.



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PRICE
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Putul Roy: Improving the Family Farm to Increase Income

Training on improved farming techniques create women professionals in shrimp and prawn culture.



Photo: PRICE/USAID

PRICE supported the shrimp and prawn farmers of Bagerhat; training them on improved culture method - Modified Traditional Technology (MTT); helping them combat viral disease outbreak in shrimp and prawn; ensuring their production increased; and, empowering women in the farming business.

Putul Roy, of Durgapur village, Chilmari, Bagerhat district, is a proud partner in her husband's prawn and shrimp farm. Putul's husband, a school teacher in a Government primary school, had a very limited income to provide for his family of five. Shrimp farming had been a family business for Putul's husband since 1998, but due to his other profession, her husband did not concentrate in the business. In addition, due to lack of proper knowledge in shrimp farming, Putul's husband was facing huge loss in his business.

Putul always had a desire to participate in the family business and help her husband with the prawn and shrimp farm. After several bad harvests due to virus disease outbreaks, low production rates, high stocking density, and traditional culture method, Putul finally expressed her desire to get involved in the business. Her husband encouraged her efforts. Putul became a member of *Padma Mothsya Unnayan Samity* in Durgapur village. At that time PRICE, in collaboration with Renaissance enterprise (depot) of Bagerhat, invited shrimp farmers to attend a meeting through their extension facilitator. In the meeting, *GHERS* activities were discussed and the shrimp farmers were promised training and technical support during the upcoming culture period.

Putul expressed interest in taking the training and joined the group to be trained. The training on improved culture method - Modified Traditional Technology (MTT) taught her about pond preparation, the harmful effect of black soil (peri mati), rotten leaves, weeds, algae, temperature, ph, harmful gases and weeds, natural feed observation methods, methods and benefits of using bleaching powder and lime in shrimp *ghers*, methods and benefits of using molasses, yeast powder and fertilizer for natural feed production, and effect of irregular feeding. Because Putul utilized what she learned in the training, in 2010 she and her husband had a good production and income compared to previous years.

In 2009, before the training, they invested Tk. 49,800 and their income was Tk. 45,650. In 2010, after Putul received the training, their Tk. 43,000 and as of September their income was Tk. 55,000 which is expected increase to Tk. 67,000 by December 2010. In 2009 they produced 103 kgs of shrimp and prawn. Since the training, as of September 2010 they produced 104 kgs of shrimp and prawn and expect that amount to increase to about 214kgs by the end of the year. "The harvesting methods that we had been using for years were not enough to combat the outbreak of viral diseases of the shrimp and prawn. The result was bad harvest in the past years. The knowledge I got from the training on the improved farming method taught me new and effective ways of farming. From a housewife I have turned into a professional shrimp and prawn farmer. I am happy and feel confident as now I can help my husband in his business and contribute to my family income", says Putul with a smile of satisfaction in her face.



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Smrity Rany: From Housewife to Footwear Professional in Two Months

PRICE workforce development training creates opportunity for women workers in the leather sector.



Photo: PRICE/ USAID

“PRICE has given me the skill and confidence to grow as a woman professional. I feel proud when visitors praise me, seeing that I am a professional cutter and using the machine with equal skills alongside with the male operators.” – Smrity Rani, Village Khilgati, Jessore district

Smrity Rany is a worker in the Landmark footwear industry. She was trained for two months on cutting in the factory and afterwards obtained a regular factory job. She lives in Khilgati village, Jessore with her five-member family.

Smrity Rany was a housewife. Her husband, Chanchal Biswas, did not make enough income in his job as an office assistant for one of the local NGOs, for them to manage the family expenses. They struggled trying to pay for their daughter’s schooling and were often in conflict with one another. To resolve this and make a contribution to the family, Smrity got a job in the garments factory and worked there for some time. But, in garments factory she had to work from dawn to dusk and received low pay, so the problems remained the same.

Smrity learned about a PRICE support skills-training from one of the women working in the factory. She was selected by Landmark Footwear Ltd (LFL) for the training, where she learned how to operate the cutting machine, and about tools, leather, and direction of its fiber. She became interested in leather and its properties. Due to her progress and performance, she was offered a job in the factory immediately upon conclusion of her training. Now she earns Tk. 2500 a month. Smrity happily says, “Getting a job is my greatest achievement because now I can live a better life. I get respect in my family as well as in community. I even save some money and can look after my children’s health and education.”

PRICE recognizes that the leather sector in Bangladesh lacks sufficient skilled workers, particularly in the growing footwear and goods industry. PRICE is committed to work jointly with The Leather Goods & Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB) to address this critical sector constraint by leveraging its members’ resources to facilitate workers skill development initiatives to continue supplying new skilled workers to the sector. Landmark Footwear Ltd (LFL), as a member of LFMEAB, hired 15 skilled workers trained by USAID-PRICE project at TTC, Tangail. Satisfied with the skills of TTC graduates, LFL proposed the association to take a new joint initiative with PRICE for developing 500 new workers for the sector, particularly in footwear, which would benefit the entire industry. LFL agreed to provide a major portion of resources, such as machinery/tools, expertise, training materials and space for this initiative.



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PRICE
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THE COMPETITIVENESS OF ENTERPRISES

Professional Training Boosts Smritikona as a Shrimp Producer

PRICE promotes improved farming trainings through its GHERS initiative to increase productivity in aquaculture sector.



P

“I learned that it is not the quantity of the PLs but the quality and proper gher based farming management that I learned from PRICE facilitated training increases the production of my farm” – Smritikona, shrimp producer, Madhhapara village, Bagerhat district.

Smritikona, a mother of two and the ex-ward commissioner of Madhhapara village Bagerhat district, involved herself in *gher*-based farming business (brackish or fresh, shallow water body inside an enclosure for shrimp and prawn culture with or without incorporation of fish). After receiving Modified Traditional Technology (MTT) to improve productivity as part of PRICE's *GHERS* initiative, Smritikona's shrimp and prawn production increased by 20 to 3 percent. Using her profits, she brought a piece of land for her future security and saving for her daughter's higher education. She is Chairperson of “*Lokaloy Bahumukhi Samabay Shamity*,” a cooperative with a savings of Tk. 1,100,000.

“Last year I had less production due to inadequate knowledge on proper farming and incurred huge loss. I got a return of Tk. 21,000 from an investment of Tk. 43,000 in my *gher*. After receiving the training on improved farming, I made a profit of Tk. 79,875 on an investment of Tk. 54,025” says Smritikona. She plans to transmit the knowledge and skills gained through training to other farming areas she owns for further increased productivity and profit. To her, “good planning, better inputs, and farming management are the key to business profit.”

With the commitment to increasing productivity, PRICE's *GHERS* initiative, in coordination with World Fish Center (WFC) was developed to execute the shrimp (prawn and fish comes as companion crops) component in aquaculture. The purpose of the initiative was to provide technical assistance for increasing yields of approximately 2,000 *bagda* (shrimp) farms during 2009; *golda* (prawn) and fish are incorporated as crop-rotational and overlapping crops in seasonally diverse *gher* ecosystem. This initiative is expected to expand by more than ten-fold by the end of 2011. *GHERS* is modeled under outgrowing scheme, where depots act as contractors in the Khulna and Bagerhat regions.

Facilitated by PRICE, WFC trains depot staff who work as extension facilitators and trains cluster-based farmers on various production technologies including MTT. Among the three production techniques introduced by WFC, MTT appears most viable and popular among the participating farmers as a low cost method. The trained extension facilitator provides the training to the poor *gher* farmers in the community through group formation. Group sessions, organized based on farming cycles, discuss general problems with aquaculture and integrated shrimp farming. Through these trainings farmers learn about preparation of nursery, grow-out, and its decontamination process, application of fertilizer, and preparation of the *gher*. They also learn about stocking screened shrimp PL in a responsible way, results in increased production. The depots also supply the farmers with good quality PLs and other inputs, the price of which they repay after the harvest. The outgrowing scheme with depot ensures buy-in back that enables farmers to sell their product at fair price. All these trainings and activities enhance lives and increase production of natural foods.



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