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ANNUAL PROGRESS REPORT

COLD CHAIN BANGLADESH ALLIANCE (CCBA) PROJECT

ANNUAL REPORT JULY 2013 – SEPTEMBER 2014

October 30, 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by Winrock International under Cooperative Agreement No. AID-388-A-13-00004.

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Acronyms

BARI	Bangladesh Agricultural Research Institute
BCSA	Bangladesh Cold Storage Association
BFFEA	Bangladesh Frozen Food Exporters Association
CCBA	Cold Chain Bangladesh Alliance
COP	Chief of Party
CSA	Commodity Systems Assessment
DAE	Department of Agriculture Extension
DCOP	Deputy Chief of Party
F2F	Farmer-to-Farmer
FtF	Feed the Future
GDA	Global Development Alliance
GDP	Gross Domestic Product
GoB	Government of Bangladesh
HACCP	Hazard Analysis Critical Control Point
HVC	High-Value Crop
HYV	High-Yielding Variety
LSP	Local Service Provider
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
MPC	Marketing and Planning Committee
NGO	Non-Governmental Organization
PHL	Post-Harvest Loss
TNA	Training Needs Assessment
YLB	Yard Long Bean
WFLO	World Food Logistics Organization

EXECUTIVE SUMMARY

This report covers Cold Chain Bangladesh Alliance (CCBA) year 1 activities implemented between July 2013 and September 2014.

Cold Chain Bangladesh Alliance (CCBA) project is part of the Global Development Alliance (GDA), USAID's model for public-private partnerships. USAID/Bangladesh and Winrock International are partnered with Golden Harvest, a local food processing and transportation company, to implement this project. CCBA's overall goal is to increase the availability, access, and use of domestically produced and nutritious foods in an effort to sustainably reduce poverty and hunger. The project is implemented in collaboration with World Food Logistics Organization/Global Cold Chain Alliance (WFLO/GCCA).

CCBA is comprised of four components with specific objectives. The components are as follows:

> Component 1: Increased capacity of small and marginal farmers to grow high-value agricultural products
>
> Component 2: Improved agricultural market efficiency and planning
>
> Component 3: Increased private sector investment and capacity in cold chain management
>
> Component 4: Increased compliance with international food safety standards

The political situation in Bangladesh began to deteriorate in October 2013, significantly restricting staff movement. As a result, it was difficult for staff to undertake field visits, conduct studies, and organize trainings. Furthermore, farmers in the project areas could not access required inputs in a timely fashion or access markets during peak harvest periods. Despite the political turmoil, staff executed an MOU with GDA partner Golden Harvest and established a system for tracking and reporting Golden Harvest's leverage. CCBA completed recruitment of key staff positions. The CCBA office was relocated to its new premises and staff completed procurement of all required furniture and equipment. A field office was established in Jessore and the Field Coordinator position was filled. Staff orientation training was conducted for all new staffs.

Field activities were initiated in earnest in October 2013, beginning with a survey and identification of key production areas within the Feed the Future (FtF) zone that are agro-ecologically suitable for year round production of high-value crops. The project also attempted to address post-harvest losses, which are very high in Bangladesh, by using an efficient cold chain management system consisting of a coordinated and series of uninterrupted, temperature-controlled links in a logistics chain, where several actors play specific roles. Technical knowledge and management capacity are crucial factors in making the system cost-effective and safe. During October, in coordination with WFLO, CCBA fielded three international consultants along with one local expert to conduct a cold chain management and operations Training Needs Assessment (TNA) to evaluate Golden Harvest's current operational knowledge and the existing knowledge of international cold chain management techniques and standards amongst major stakeholders.

A detailed sub-sector analysis and value chain mapping exercise was also launched. CCBA conducted a range of activities including focus group discussions agro-ecological mapping, assessments of farmers' interest and capacities, and evaluations of infrastructure. Based on the criteria, CCBA selected seven production areas in three upazilas of Jessore and five production areas in Gazipur from Gazipur Sadar, Sreepur, and Kaligonj Upazila.

During year 1, CCBA organized producer groups, each of the groups consisting of 30 high-value crop and broiler chicken producers both in Jessore and Gazipur. In Jessore, 157 male producer groups and 73 female producer groups were organized. In Gazipur, CCBA formed 74 producer groups (45 male, 29 female). The purpose of these producer groups is to facilitate technology transfer, access to inputs, and capacity building. Ten high-value crops (HVCs) have been selected. Farmers training with an introduction of new crop varieties and technologies were initiated.

During the year, CCBA consolidated its work in two of its project areas (Jessore and Gazipur) and explored possibilities of working in a new area (Comilla and Sylhet) where Golden Harvest has decided to establish its hubs and successfully established a supply chain between poultry suppliers, which includes farmers, and poultry traders of Gazipur and adjacent areas.

CCBA organized 69 farmers training events involving 1,992 farmers (658 female, 1,334 male) in Gazipur on HVC production, post-harvest technology, broiler production, management, treatment, and marketing. The project trained 3,352 farmers (including 183 women) in Jessore on HVC production, post-harvest handling, and marketing. CCBA organized two training events on cold chain supply management for the cold chain stakeholders between April and June 2014. The first training was organized for Golden Harvest Agro Industries Ltd. (three representatives attended); the second training was organized for the members of Bangladesh Cold Storage Association (BCSA). Twenty-seven participants attended the second training representing BCSA, ACI logistics, and super shops. The course generated interest among the participants. To develop a critical mass of resource persons with technical knowledge of post-harvest management, CCBA organized a Training of Trainers (TOT) on "Post-Harvest Handling of High-Value Crops" in February 2014 in Jessore for 35 representatives from Department of Agriculture Extension (DAE), Bangladesh Agricultural Research Institute (BARI), local NGOs, and CCBA.

The project established 71 demonstrations plots in the FtF area (Jessore) and 10 in Gazipur to showcase new crop varieties and different technologies. This activity started in winter of 2013 in Jessore with the establishment of 20 demonstrations to showcase the effect of vermi-compost and tricho-vit on plant growth along with options for biological pest and disease control for certain crops. The combination of multiple biological and safe production technologies helped reduce the use of pesticides by 10%.

As a part of its strategy to create linkages between producer groups and input and output markets, CCBA formed "clusters" of 150-300 farmers to achieve the economies of scale needed to drive private sector involvement. Collection centers were also established adjacent to the production clusters. CCBA established four collection centers in Jessore during the reporting period, which CCBA expects to link with Golden Harvest when ready. Collection centers serve as a point to aggregate product produced by

producer group members. In Jessore, a total 30 clusters were formed in seven production areas involving about 7,000 farmers while in Gazipur, 10 clusters were formed in five production areas involving 2,460 farmers. Though most of the farmers feeding into these collection centers are those trained by CCBA, there are additional farmers not trained by CCBA also linked to these collection centers.

The first collection center was established at a central point in Hurgati village, Vhojgati Union of Monirampur Upazila to facilitate aggregation and post-harvest handling of eggplant and other high-value crops produced by more than 180 eggplant farmers in one cluster. A Marketing and Planning Committee (MPC) was also formed to manage the collection center. Farmers, through the MPC, were linked with wholesale markets. CCBA provided weighing scales, plastic crates, secateurs for proper harvesting, grading, sorting, cleaning, weighing, and packing for the farmers linked with the collection centers.

CCBA has provided a range of support to Golden Harvest including training on cold chain management and technical assistance in establishing supply chains. Golden Harvest has restructured its processing plants at Gazipur and established several cold stores at four locations of the country. The company has procured 6,950 freezers thus far with capacities of 235 liters, 285 liters, and 450 liters to supply its product sellers at outlets as well as 30 refrigerated vans for produce transportation and 19 cold storages in different locations including its main processing center at Gazipur, investing USD 9,030,667 in year 1. CCBA has organized poultry and vegetable farmers to supply broiler chickens and fresh vegetables. According to Golden Harvest's recruitment records, 573 full time jobs have been created through the cold chain initiative.

I. Key Achievements (Qualitative Impact)

A. Selection of Project Areas

CCBA aims to assist farmers to produce high-value crops in high potential agro-ecological zones and reduce post-harvest losses through the introduction of cold chain to increase income and food security, and ensure that consumers can access high-quality nutritious vegetables and other agricultural products. In order to achieve the target, CCBA finalized the selection of seven production areas in Jessore and five production areas in Gazipur. Initially, 12 potential areas in three upazilas of Jessore district and seven areas in three upazilas of Gazipur were selected based on a review of secondary data, interviews with key informants, and preliminary field visits. This was followed by focus group discussions involving producers, input sellers, and market players; physical mapping of the areas; and an evaluation of agro-ecological conditions favorable for HVC production, farmers' willingness to adopt new technologies, number of farmers willing to produce a marketable surplus, existing infrastructure (roads and markets), proximity to existing or planned collection centers and markets, Government of Bangladesh (GoB) priorities, etc. Based on these criteria, production areas were selected from three upazilas in Jessore (Jessore Sadar, Monirampur, and Chowgacha) and three in Gazipur (Gazipur Sadar, Kapasia, and Kaliganj). See Table 1 below for additional details on selected project areas.

Table I. Selected project areas of CCBA at Gazipur and Jessore

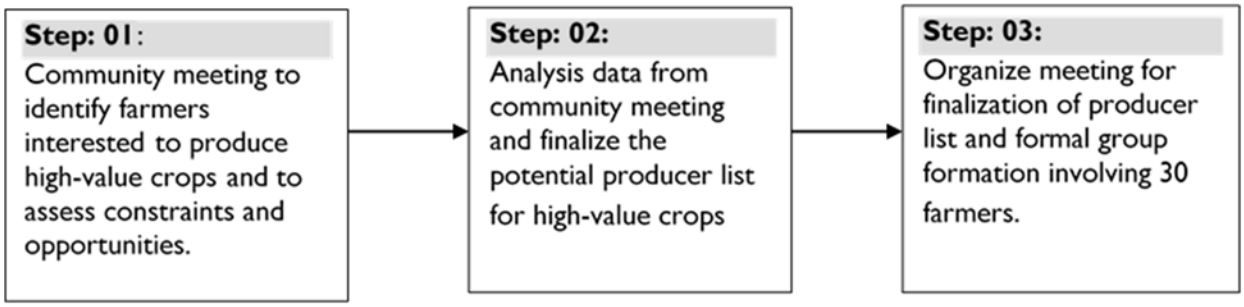
Area	Upazila	Union	Villages
Gazipur			
HVC: Vegetables			
Production area-01	Gazipur Sadar	Pubail UP	Shikulia, Satianipara, Khiligao, Udor, Somorsingh, Biddan
	Kaligonj	Nagori UP	Birtul, Parwan, Rayerdia, Talia, Ketun, Tekbari, Gararia, Mothbari,
Production area-02	Sreepur	Maona UP	Chakpara, Solingmore, Singh dighi, Singerdighi, Deowanerchala
		Telihati UP	Taltoli, Dumbarirchala, Udoikhali, Saitilia, Toikerchala, Godherchala, Satirbazar, Telihati, Tepirbazar, Hazerarchala, Uttorpalayt
Production area-03	Kaliganj	Jangalia UP	Joy Ramber, Khoikora, Satiani, Brahmangaon, Luduria, Khoikora, Satiani, Brahmangaon,
HVC: Poultry (Broiler)			
Production area-04	Gazipur Sadar	Pubail UP	Megdubi, Harbaeed, Haidorabad, Rahapara, Nilerpara, Kolerbazar, Dokhinkhan, Amrabad
Production area-05	Kapasia	Shighosree UP	Vitipara, Hariadi, Kuriadi, Borober, Boroibari
		Raeed UP	Vikartek, Pechudia, Lohadi, Moishan, Amreed, Dighirkanda, Belashi, Dikdia, Borohor, Hayeljor, Noshingpur, Hayeljor, Raeed,
Jessore			
HVC: Vegetables			
Production area-01	Jessore sadar	Churamonchati and Kashimpur	Village: Abdulpur, Churamonkati, Poltadonga, Bijoynogor, Bagdanga, Shantola, Shatiantola, Sajiali, Vogolpur, Khozarhat, Gobila, Belermat, Kamlapur, Nurpur, Dakatia, Bijoy nagar, Ghona, Doulatdihi, Shialdari, Khitibdia, Mirapur
Production area-02	Jessore sadar	Ichali & Lebutola	Village: Nongorpur, Rajapur, Labutala, Kodalia, Bir Narayanpur, Tazrol, Britikapara, Goarpur, Khajua
Production area-03	Monorumpur	Vazgati	Village : Hurgati, Chalkidanga, Diloabari, Jaypur)
Production area-04	Monorumpur	Chaulahati, Moshinagar & Saympur	Sahapur, Haiatpur, Soila, Sigerher kejura, Chaluahati, Tripurapur, Saymkur, Ghiba, Mobarokpur, Panichattor, Gobikattopur, Hakimpur, Rampur
Production area-05	Monorumpur	Horihornag	Village : Salamotpu, Modonpur, Khatura, Soroskati, Muragacha, Modupur, Bora Kaimkhola
Production area-06	Chowghasa	Sorupdha & Narayanpur	Soropdah, Belermat, Bagardari, Vetvora, Kongsaripur, Tangurpur, Zialgari, Anderkuta, Kharincha, Bailapoata, Narayanpur, Hazrakhana, Chaugacha sadar
Production area-07	Chowghasa	Fulshara, Jogodispur, Patibila	Tetulbaria, Dorgapur, Kotalipur, Sayedpur, Arpara, Jinaikundho, Sadipur, Patibila, Muktada, Boro Niamotpur, Haiytpur, Dakhinsagor, Arkandi, Kandi, Marua, Sarufpur, Chakla

During the fourth quarter, CCBA expanded its intervention areas to 19 new villages, mainly under three new unions (Ruhita, Hakimur, and Patibala) as well as existing unions (Chaluahati, Churamonkathi, and Lebutola under Monirmpur; Chougacha and sadar Upazila of Jessore).

B. FORMATION OF PRODUCER GROUPS

In year 1, CCBA established 157 male producer groups and 73 female producer groups in Jessore, and 45 male producer groups and 29 female producer groups in Gazipur. Production groups were formed to provide efficient service, technology transfer, and capacity building, and to facilitate access to inputs, finance, and markets. Producer groups were formed following community meetings, focus group discussions, and analysis of opportunities and constraints of interested producers to grow ten selected HVCs during two major cropping seasons.

Figure 1. CCBA producer group formation process



Producer groups were formed from among small and marginal farmers having: minimum available land (0.30-0.45 acres); interest to grow year-round high-value crops; considering economy of scale and market demand of a commodity; willingness to work with the project; willingness to work in a group to get access to knowledge, skills, and new technology; and willingness to adopt good agricultural practices including appropriate post-harvest handling methods, etc. In Gazipur, considering the demand of the GDA partner, CCBA targeted small poultry farmers with the capacity to produce 500–1,000 birds in one production cycle (30-40 days) in addition to high-value vegetable producer groups having minimum available land size of 0.30-0.45 acres. Additional selection criteria included interest to produce high-quality broilers to supply to Golden Harvest for processing and to grow year round high-value crops.

Table II. Producer groups engaged in HVC production, post-harvest management, marketing, and poultry

	Number of groups			Number of producer		
	Gazipur	Jessore	Total	Gazipur	Jessore	Total
Vegetable						
Male	45	157	202	1,350	4,710	6,060
Female	29	73	102	870	2,190	3,060
Poultry						
Male	8	-	8	240	-	240
Total	**82**	**230**	**312**	**2,460**	**6,900**	**9,360**

Note: CCBA is not working in backyard poultry, which is the primary mechanism through which women are involved in poultry, and is focusing on small scale commercial poultry.

CCBA organized women producer groups in addition to the existing producer groups to address backyard production systems in the project area focusing on food and nutrition security of the family and creating jobs for those who are not actively engaged in any economic activities. CCBA has organized 2,190 women in 73 groups in Jessore and 29 in Gazipur who were otherwise not engaged in any economic activities.

During the reporting quarter, the project formed 64 high-value crop producer groups involving more than 1,900 individual producers across the three regions of Jessore and organized 1,470 poultry and high-value vegetable producers in 46 producer groups in five production areas of Gazipur.

C. SUBSECTOR ANALYSIS

CCBA completed the sub-sector analysis during the December–March period. The project selected and analyzed two agricultural subsectors based on the USAID subsector analysis approach. CCBA selected subsectors based on production potential, competitiveness, impact potential, industry leadership potential, along with other cross-cutting issues. CCBA initially selected seven important subsectors. Staff and consultants gave weighted scores to all the subsectors and ranked them, ultimately selecting the two highest ranking subsectors (vegetables and poultry) for further in-depth study.

CCBA conducted the analysis in Gazipur, Narshingdi, Jessore, and Comilla. The most important issue considered was total quantity of production and yield potential of the selected products in a specific location. Since the project is focused on reducing post-harvest losses while increasing fresh products' value by establishing cold chain, the interventions will not be cost-effective if there are no economies of scale in production. So, for both subsectors (vegetables and poultry), locations with higher production and yield were prioritized. Additional factors considered in the analysis included presence of a large number of farmers, suitable agro-ecological conditions, and proximity to main hubs and processing facilities of the GDA partner and other interested agribusinesses. Considering all the aforementioned criteria, CCBA is implementing vegetable subsector activities in Jessore, Gazipur, and Jessore; and poultry subsector activities in Gazipur.

D. SELECTION OF HIGH-VALUE COMMODITIES

CCBA aims to increase the incomes of small and marginal farmers, particularly women, through production of high-value agricultural crops based on market demand. Project staff conducted a field and desk study to identify the most profitable vegetable crops in the selected project areas. The study analyzed cost and return of several horticultural crops compared with Boro high-yielding variety (HYV) paddy, one of the widely cultivated crops throughout the country and among the most profitable of the cereals. Through the HVC ranking, CCBA found that production of garden pea, onion, cauliflower, tomato (summer and winter), eggplant (summer and winter), carrot, yard long bean, cucumber, bitter gourd, and green chili will yield net profits to the farmers of BDT 33,000 – 60,000 per acre in comparison to net profit of BDT12, 500 from Boro HYV paddy on the same unit of land.

CCBA selected high-value agricultural products such as vegetables, poultry and poultry products, fish, and milk products (ice cream) in collaboration with Golden Harvest, as there is a growing market which will contribute to increased profitability for producers and processors alike.

E. LOCAL SERVICE PROVIDERS

Local Service Providers (LSPs) act as an important link between producers, input suppliers, traders, and other market actors, wholesalers, and retailers. They also provide technical and extension services to the farmers. LSPs assist producers in accessing critical information and knowledge (such as market prices) so that producers may enter and successfully act in agricultural markets. LSPs will ultimately function on a fee-for-service basis to ensure sustainability.

CCBA established 68 LSPs, 40 from Gazipur and 28 from different production areas of Jessore, to provide technical and business support to poultry producers of Gazipur and high-value vegetable producers of Jessore. CCBA selected LSPs from among lead farmers and agro-input sellers who possess entrepreneurial knowledge of poultry feed, vaccines, seed, fertilizer, pesticides, and market linkages. Two one-day trainings were conducted by the DCOP and Field Coordinators for both the LSP groups, one at Jessore and the other at Gazipur, on the project objectives, services they will be required to provide the beneficiaries, and opportunities of for their business and income.

Some of the trained LSPs already started providing extension services, assisting the project in linking with the producer groups, organizing trainings, supplying seeds, and acting as a link between producers, wholesale markets, and Golden Harvest.

F. TRAINING

Figure 2. In Jessore, CCBA trained farmers on improved techniques for producing HVC and post-harvest management.

CCBA provides training and capacity building to actors and facilitators at every link of the value chain and cold chain. CCBA training modules focus on introducing modern technologies for production, harvest, and post-harvest handling of HVC from farm to fork; safe and environmentally friendly practices at the farm and processing levels; ethical business practices; ensuring compliance with best practices across the supply chain; and adherence to national and international safety and quality standards. CCBA facilitated one-day trainings for selected high-value horticultural producers in all the selected project areas and provided them with technical support by engaging sector resource persons/specialists to conduct both classroom-based trainings and field demonstrations. Trainings utilized a participatory approach, including brainstorming, question and answer sessions, practical experience sharing, and group work.

Based on the training needs assessment, CCBA developed and field tested a training curriculum for both high-value vegetables and poultry farmers in collaboration with resource persons from BARI, DAE, and Department of Livestock Services. Training materials were developed in collaboration with local experts from the research organization, private sector, and extension department. In addition, CCBA

emphasized gender equity in separate two-day trainings to create opportunities for women to be involved in income generation activities, and to enhance their economic empowerment and nutrition.

The project organized 69 farmer training events involving 1,992 farmers (658 female, 1,334 male) in Gazipur on HVC production and post-harvest technology as well as broiler production, management, treatment, and marketing. The project also facilitated a total of 149 training events in 65 villages of 15 unions for smallholder farmers on high-value crops in three upazillas in Jessore (Chowgacha, Monirampur and Jessore Sadar). CCBA provided training for 3,352 farmers (including 183 women) in Jessore on HVC production, post-harvest handling, and marketing. Additionally, 1,715 women in women's producer groups trained on vegetable production, post-harvest handling, and nutrition in Gazipur and Jessore.

CCBA started its training during the end of December 2013, and trained 598 farmers in Jessore on new technologies for production and post-harvest management of high-value crops, and also provided technical assistance. Due to political instability and violence, support to farmers was temporarily suspended at the start of program activities. Training on broiler production, management, and marketing was first conducted from January to March. A training needs assessment for poultry farmers was conducted through three focus group discussions (FGD) at Pirojali, Fakir Bari, and Sarkar para during the period.

Figure 3. Trainers demonstrate how to manage tomato crop to horticulture producers in Jessore.

CCBA trained a total of 6,459 selected producers, including 1,946 women, on high-value vegetable cultivation technology and post-harvest handling focusing on eggplant, yard long bean, bitter gourd, cauliflower, tomato, garden pea, chili, onion, and carrot as well as on broiler production, management, treatment, and marketing. CCBA trained 211 poultry producers on modern bio-safe poultry production technology for meat production. CCBA followed up on trainings with field-based technical assistance which has helped farmers to better understand and practice new techniques and use new technologies.

Table II. HVC trainings by gender and region (October- September)

Region	Number of training	Men	Women	Total
Gazipur	49	1,334	58	1,392
Jessore	112	3,169	183	3,352
Total	**161**	**4,503**	**238**	**4,744**

CCBA is trying to reach as many women farmers as possible to increase their role in production and post-harvest activities. CCBA has engaged 1,715 women in the project areas who were otherwise not engaged in any economic activity. In total, there are 2,190 women farmers in 73 groups in Jessore, and 870 women farmers in 29 groups in Gazipur. So far, 37 groups (1,115 women) have been trained in Jessore, and 20 groups (600 women) have been trained in Gazipur. The two-day trainings focused on backyard HVC

production, hygiene, and nutrition. Farmers were trained on year-round production of four to five high-value nutritious vegetables in the homestead/backyard and post-harvest handling, particularly harvesting technique using sharp knife, staggered harvesting, cleaning, sorting by size and packing in suitable boxes, field heat removal, etc. Following these topics, farmers were trained on hygiene and participated in practical sessions on cooking nutritious food including combining several kinds of colored vegetables, pulses, or beans and adding rice for a balanced and healthy diet for the whole family including children, mothers, and elders. The farmers were also provided with sample seeds for planting in their backyards. Table III below shows the number of groups and participants by regions.

Table III. Number of women's producer groups by region

Region	Number of groups	Number of participants
Gazipur	20	600
Jessore	37	1,115
Total	**57**	**1,715**

In Jessore, during the fourth quarter, CCBA trained 624 high value crop farmers, organized in 21 groups, mostly on production and post-harvest technology of garden pea in all three project areas. CCBA also conducted one-day trainings for 955 women farmers in Jessore, organized in 32 groups, on production techniques of homestead high-value production, pest management, harvesting, post-harvest handling, nutrition and cooking processes to ensure a healthy diet.

CCBA directly reached to 6,459 producers, slightly exceeding the Y1 target, of which 4,744 (73.4%) were trained on high value commodities production, post-harvest management & marketing and 1,715 (26.5%) women on vegetable production, post-harvest handling and nutrition. Out of total participants 1956 (about 33.3%) participants were women.

G. TRAINING OF TRAINERS FOR POST-HARVEST HANDLING

Minimizing post-harvest losses is one of the primary objectives of CCBA. Technical expertise in this important area is nearly absent in Bangladesh. To develop a critical mass of resource persons with technical knowledge of post-harvest management, CCBA organized its first Training of Trainers (TOT) on "Post-Harvest Handling of High-Value Crops" on February 11, 2014 at Jessore Circuit House Conference Hall. The CCBA Chief of Party welcomed participants and gave a brief presentation of the project's goal and objectives as well as the objectives of the TOT. Local government officials, representatives from research and extension institutes, representatives of the local Chamber of Commerce, and fruit and vegetable traders were also present in the event. Of the 35 participants, 11 came from the DAE, seven from BARI, 15 from local NGOs, and two from CCBA. Participants in this training are expected to train others on the post-harvest issues and techniques learned about in this training. The training covered the causes and effects of post-harvest losses, causes of post-harvest deterioration, post-harvest diseases of fruits and vegetables, major causes

Figure 4. Participants at the TOT in Jessore learned about optimal post-harvest handling techniques for HVCs.

of quality loss, maturity indices and harvesting of fruits and vegetables, determination of maturity, harvesting and field handling, methods of reducing post-harvest losses, cleaning, sorting, and grading, treatments, pre-cooling, cooling and storage of products, packaging, storage/transport basket use, modified atmosphere packaging, and transportation.

A TNA was conducted among interested resource persons from BARI, DAE, Bangladesh Agricultural Development Corporation, and local agriculture NGOs to develop the training curriculum. A post-harvest handling expert from Hortex Foundation, Dhaka, was brought to Jessore to conduct the day-long training sessions. A participatory training methodology followed. Classroom-based training was followed by practical training and a field visit and field exercise.

H. INTRODUCTION OF NEW TECHNOLOGIES

New technologies are the key drivers to address endemic problems that HVC producers face such as low production, infestation of pest of diseases, maintaining sustainable yields and soil health, environmental pollution, higher cost of production, losses due to improper harvesting and post-harvest handling, etc. In order to address the problems of CCBA producers, the project designed its interventions to introduce new technologies among its farmers, so that they can get sustained higher yields and minimize their cost production by adopting environmentally friendly approaches.

CCBA introduced garden pea as a new crop in Jessore during December 2013 based on its high yield, strong economic return and market demand, and nitrogen fixing properties which will eventually reduce the need to apply urea to the soil. Thirty-two farmers from three groups cultivated garden pea in Sayedpur village of Chowgacha Upazila. Since farmers were not previously familiar with garden pea cultivation practices, CCBA provided technical assistance from the time of sowing. Germination tests were conducted, and farmers sowed seeds in raised beds following line sowing and maintaining proper spacing distances. CCBA producers applied vermi-compost and recommended doses of fertilizer. Farmers achieved fairly good yields and they earned better prices at the local markets where they typically sell produce considering delayed plantation, poor knowledge about the crop, and scarcity of good quality of seeds. The technology has left a positive impact on the farmers' minds, which is expected to drive them to plant garden pea more timely with proper care.

Tomato was not a new crop in the Jessore project area, but farmers were commonly cultivating Nobin, an Indian variety, as well as a local non-descript variety characterized by widespread disease and low yields. CCBA introduced two new varieties, *Delta* and *Mintu Super,* two high-yielding varieties for which there is a strong market demand (market prices tend to be higher for these HYVs). CCBA provided training to 63 tomato farmers in Durgapur, Kotalipur, and Syedpur village focused on production and post-harvest handling of tomato and similar cool crops. The field-based, hands-on training emphasized planting techniques and practices such as preparing A-frames, boron spraying to mitigate boron deficiency in the soil, aphid control, and spraying tomatotne hormones on flowers to promote regular fruit setting. These treatments are affordable for farmers, but are not readily available in all project areas.

Onion is a profitable crop but farmers of Arpara village, Jogodispur union under Chougacha Upazila in Jessore used to cultivate onion by sowing cut bulbs, which was the main cause of disease, high losses, and low income. CCBA staffs identified the problem and motivated farmers to try to use true seeds to improve yields and maximize profit. CCBA introduced *Taherpuri King*, one of the best available varieties for good yields and long keeping quality. Despite the delay in getting seeds due to frequent road blockades, farmers received hands-on training on how to sow seeds directly after conducting seed germination tests, and how to maintain planting distances instead of the normal practice of raising seedlings and transplanting. Direct seeding is a completely new technology for the farmers, and is useful when seedlings are not available or the time for raising seedlings is over. Ten farmers decided to adopt the new technology and earned higher prices due to high market demand of the variety and long keeping quality.

In CCBA project areas, farmers previously grew local low-yielding spring beans (average yield 3MT/ acre) during early summer, particularly, in Syedpur and Dhakhin Sagar villages of Chowgacha Upazila, and Shahapur village of Monirampur Upazila. But this year, with the support of CCBA, farmers planted two high-yielding varieties suitable for the area. CCBA provided seed, production technologies, and training on two yard long bean varieties – *Kagornatoki* and 1070 Lalteer. *Kagornatoki* is a comparatively older high-yielding variety but farmers in the area did not have previous knowledge of this variety. The 1070 is a new hybrid variety, characterized by longer and greener colored beans compared to *Kegornatoki* and is a HYV. Market price and demand for both the varieties are high. About 40% of the trained farmers adopted the new varieties. Others are expected to follow once they see the improved yields and price received at market. Seeds of both varieties were introduced through CCBA LSPs. CCBA technical staff provided technical assistance to the farmers.

CCBA introduced two new varieties of cucumber – Alabi green (Lalteer) and Green line (Chia-Tai) – in the area, which produce higher yields and have excellent market demand. CCBA also introduced a new technology in the area, raised bed for sowing cucumber seeds, which was found to be effective during the rainy season. In Chowgacha, CCBA organized two clusters of chilli farmers consisting of 300 farmers and introduced two new hybrid varieties of chili: Sonic (Lalteer) and Premium (Lalteer). CCBA also introduced summer cauliflower (Maradona) and summer tomato (Summer King) in the project area in collaboration with ACI seeds.

I. DEMONSTRATIONS AND TECHNOLOGY TRANSFER

During year I, CCBA established 71 demonstrations plots in the FtF area of Jessore and 10 in Gazipur to showcase performance of new varieties and technologies. This activity started in the winter of 2013 in Jessore. The project established demonstration plots at farmers' fields in Arpara village of Chowgacha upazila and Shahapur village of Monirampur Upazila, one with 1070 Lalteer and the other with Kegor Natoki. In addition to one-day trainings, seeds were provided to the farmers. About one third of the trained farmers adopt improved technologies and practices. Demonstrations are set up in larger crop fields where farmers in the community and surrounding area can visit to observe the new technologies, varieties, etc.; CCBA also links these farmers with LSPs and trains some producer groups at these demonstration sites.

CCBA established 30 demonstrations to showcase the effect of vermi-compost and tricho-vit on plant growth along with trichogama and bracon – two beneficial insect predators – and pheromone traps for biological control of pest and diseases in eggplant fields in Hurgati, Chalkidanga and Baghbari, Hyatpur village under Monirampur Upazila. The combination of multiple biological and safe production technologies helped reduce the use of pesticides by 10%, saving about BDT 15, 000 to 20,000 in 0.33 acres of eggplant crop over one cropping cycle.

In addition to the introduction of new cauliflower and tomato varieties to CCBA farmers, the project established 30 demonstration plots at farmers' fields in Baler Math and Tengurpur village in Chowgacha Upazila, Jessore and Parwan and Birtul villages in Gazipur. One-day trainings and seeds were provided to the farmers hosting demonstrations. CCBA staffs regularly visited the plots and provided technical advice.

The project assisted bitter gourd farmers of Nongorpur village, Lebutola Union of Jessore Sadar upazila through result demonstrations of Biotin M, a bio-pesticide produced by Russel IPM, USA to control white fly and bitter gourd fruit borer along with use of poison bates. Ten demonstrations were established in the area. The combination of biological and safe production technologies helped minimize the use of pesticides. Farmers were also exposed to two new technologies of pruning cucumber and bitter gourd water shoots, which contributed to plant health and yield.

J. COLD CHAIN MANAGEMENT, OPERATIONS TRAINING NEEDS ASSESSMENT AND TRAINING ON COLD SUPPLY CHAIN MANAGEMENT

World Food and Logistic Organization (WFLO) conducted a cold chain management and operations TNA to: 1) evaluate Golden Harvest's current operational knowledge of refrigerated warehousing, transportation, and logistics, best practices, and identify gaps; and 2) evaluate the existing knowledge of international cold chain management techniques and standards amongst major stakeholders (government, private companies, associations, NGOs) in the cold chain industry.

Figure 5. COP, WFLO experts, and Golden Harvest participants at a training on cold supply chain management.

To carry out the needs assessment, two cold chain experts, Mr. James Eason and Mr. Mike Morton, both experts in refrigerated warehouse operations, transportation/logistics, and business development, traveled to Dhaka in October 2013. They met with representatives from Golden Harvest and other private sector representatives who have initiated or are planning to enter the cold storage industry in Bangladesh. The team visited two cold stores, one near Dhaka and the other in Munshiganj district, facilitated by the Bangladesh Cold Storage Association (BCSA).

Figure 6. Cold supply chain management training session.

Based on the recommendation of the international experts of WFLO, CCBA organized two training programs on cold chain supply management for the cold chain stakeholders between April and June. The first training was organized for Golden Harvest Agro Industries Ltd.; the second training was organized for the members of BCSA. The two WFLO experts, James Eason, a cold supply chain expert, and Michael Morton, expert on operation and warehousing, conducted both trainings. CCBA COP moderated the sessions.

The course covered the fundamentals of the food storage industry, cold chain users, management and warehouse operation, preservation, principles of refrigeration, cold chain warehouse, modern warehousing, cold storage safety, human resource management, Hazard Analysis Critical Control Point (HACCP), and other basic food safety issues.

The trainings were interactive using different teaching methods and mediums including several short videos, power point presentations, open discussions, and question and answer rounds. During the first training session, three representatives of Golden Harvest attended. During the second training event, 27 participants from the BCSA, ACI logistics, and super shops attended. The course generated interest among the participants. The participants requested to organize additional trainings on cold storage operation and management. CCBA plans on discussing this further with the association to assess their needs.

K. CLUSTER FORMATION, COLLECTION CENTERS AND MARKETING AND PLANNING COMMITTEES

Figure 7. Eggplant farmers at Hurgati Collection Center are busy in post-harvest handling operation.

As a part of its strategy to create linkages between producer groups and input and output markets, CCBA has started forming "clusters" of 150-300 farmers to achieve the economies of scale needed to drive private sector involvement. Each cluster is composed of 7-10 producer groups, depending on the area and number of farmers engaged in farming in the broader geographic area. Farmers within a producer group and within a cluster will produce one to two similar crops so that an economy of scale is achieved for better marketing. Each of the clusters will be linked to a collection center – a "village market" from where products will move to regional and national markets including super stores and processing plants of Golden Harvest and others. Collection centers serve as a point to aggregate product produced by producer group members.

In Jessore, a total 30 clusters were formed in seven production areas involving about 7,000 farmers, while in Gazipur 10 clusters were formed in five production areas involving 2,460 farmers.

CCBA established its first collection center at a central point in Hurgati village, Vhojgati Union of Monirampur Upazila to facilitate aggregation and post-harvest handling of eggplant and other high-value crops produced by more than 180 eggplant farmers in one cluster. Farmers, acting independently, were previously unable to effectively aggregate and sort their products. CCBA facilitated the process and assisted producer groups within the cluster.

A Marketing and Planning Committee was formed to oversee and manage the collection center, headed by Mr. Nazmul Huda. Huda, a lead farmer, was elected democratically by producer group members. Mr. Shariful Alam, another farmer with existing market linkages, was selected to collect market information and keep track of the total available quantity of marketable produce. Farmers are already frequently using the collection center for post-harvest handling operations, packing according to sizes, weighing their produce on a digital scale, and sending their produce in crates to specific markets based on market information. Previously, farmers were often cheated at the market on weight, as wholesalers or middlemen sometimes use tampered traditional weighing scales. Now farmers write down the weight on every crate or basket at the collection center before loading, reducing incidences of cheating on weight. Farmers of Hurgati area are sending their products to distant markets of Jessore and Khulna where they are receiving higher prices. CCBA provided three crates as in-kind support to the collection center following a demonstration.

CCBA established its second collection center at a central point in Nongorpur village, Ichali Union, Jessore Upazila to facilitate collection and post-harvest handling of bitter gourd and other high-value crops produced by more than 120 farmers in one cluster. Farmers of Nongorpur village were previously unable to effectively collect, sort, and sell their products due to the absence of a proper collection center. Many farmers used to pile their products on the road side and then used to pack their produce in large sacks to send to wholesalers. Mud, high temperatures, heavy rainfall, etc. resulted in substantial loss of quality. A USAID team along with the CCBA AOR visited the location at the request of the COP to support this center and construct a road through another USAID funded construction project implemented by Local Government Engineering Department (LGRD). The team was highly impressed to see CCBA field activities, particularly the collection center. The team, along with LGRD engineers, in principle agreed to construct a road for transportation of eggplant and build a good collection center.

The project established its third and fourth collection center at Bagbari, under Chaluahati Union of Monirampur upazila, and Sharupda of Chougacha Upazila of Jessore. Bagbari is located at the middle of Haiytpur, Shahapur, Mobarokpur village under the Monirampur upazila of Jessore. The collection point is about 21 kilometers away from Monirampur upazila, but the road infrastructure is bad and transportation of fresh produces is very challenging. As a result, farmers do not receive fair prices due lack of any local aggregation point, and post-harvest loss is high due to poor infrastructure. The farmers in this area grow eggplant, cucumber, YLB, and bitter gourd due to high flood free land and good soil condition. CCBA assisted farmers in establishing one collection center on private land donated by a local rich farmer with the purpose of farmers using it as a collection center to aggregate produce. A nine-

member "Bagbari vegetable collection point management committee" was formed to operate the center. CCBA provided weighing scale, plastic crates, and secateurs for proper harvesting, grading, sorting, cleaning, weighing, and packing for the farmers linked with the collection centers. The collection point committee is now renting plastic crate to farmers and bazar at a rate of one taka per day. A local service provider was given responsibility to operate weighing machine at the cost of two taka for weighing 40 kg of vegetables. The committee is maintaining proper records of service charges.

L. MARKET LINKAGES

CCBA has been working closely with the producer groups and market committees centering collection centers to establish effective market linkages between the clusters and wholesale market directly. The project has facilitated several trainings, conducted by CCBA's Marketing Manager, for collection center operators on marketing, organizing buyer-seller meetings, and visiting wholesale marketers. CCBA has facilitated the establishment of functional linkages between all four collection centers, farmers, and wholesales markets of Jessore, Khulna, Navaron, Shibchar, Madaripur, Faridpur, Jhinaida, Kalligonj, and Kustia. The goal of the trainings is the improve collection center operators' knowledge of successful marketing operations.

CCBA has established market linkages between Khulna Sonadanga Wholesale Market and the CCBA MPC of Monirampur Upazila. The market prices of this regional wholesale market are significantly higher than the Upazila market of Monirampur where farmers of Hurgati village used to sell their products. Usually farmers cannot access wholesale markets due to the pervasive role of commission agents and middlemen, but due to CCBA interventions, farmers of Hurgati gained access to the market and are receiving good prices, making a net profit margin between BDT 3.00-6.0 per kilogram of product. CCBA organized a buyer-seller meeting between wholesalers and the MPC and a successful deal was agreed upon by both sides for a regular supply of well-graded, clean, and safe vegetables.

Two wholesalers, Mr. Zakir and Mr. Shahid of Khulna market, which are about 45 km from the remote Hurgati village, regularly transported two to three truckloads (4-6 MT) of safe, uniform, and prime quality eggplants directly from the field-based collection point three days per week.

A number of large "convenience stores" have cropped up in Dhaka recently, in contrast to small neighborhood grocery stores. These shops cater the needs of middle class people who find it convenient to buy daily groceries as well as some fresh vegetables, fish, and poultry at a single location. Mina Bazar, Shwapno, and Agora are among the more successful brands. Although the total quantity of fresh vegetables traded in these shops is not significant in comparison to the quantity of fresh produce that reaches Dhaka every day, there are opportunities to link CCBA farmers to some of these outlets. Shwapno has a number of super markets across the country; CCBA struck a deal to supply them with the first consignment of tomato and onion produced by CCBA farmers in Jessore after approval of product sample and price. Through a local trader of Arpara Bazar collection center, CCBA facilitated the supply of 2,000 kg of properly cured and sorted onion, and 500 kg of tomato to the Shwapno outlet. The supply didn't continue due to the sudden increase in the local price of onion, and unavailability of tomato. However, CCBA is planning to make a fresh initiative to analyze constraints and address all the issues.

Figure 8. Poultry supply being delivered to Golden Harvest by CCBA Sonargaon farmer.

Golden Harvest requested that CCBA ensures the supply of broiler chicken for processing, since they have had difficulties in sourcing good quality live birds and they lacked the proper supply chains to get an uninterrupted supply of chickens. CCBA established contact with one poultry cluster at Kapasia and had several meetings with the cluster members. CCBA also conducted a constraints analysis of the group (a study used to identify and analyze why the enterprise is not making a profit and/or what constraints to growth the enterprise faces) to ensure supply of live birds to Golden Harvest. CCBA facilitated a buyer-seller meeting with Golden Harvest and Kapasia cluster. The farmers and Golden Harvest entered into a contract that solidifies the arrangement, including the rate per kilogram of bird, date of supply and quantity, average size, and transportation cost. In this deal, Golden Harvest gets a steady and reliable supply of high quality birds at a pre-fixed rate and farmers have a dependable buyer for their product who pays good prices.

CCBA also facilitated the supply of chicken from Sonargaon Poultry Cluster to Golden Harvest. CCBA organized a buyer-seller meeting between Golden Harvest and Sonargaon Poultry cluster. Following the meeting, Golden Harvest enlisted the cluster as a supplier, and agreed on a supply schedule and price. Accordingly, broiler poultry supply chain has been effectively established between broiler farmers of Kapasia and Gazipur and Golden Harvest.

M. GOLDEN HARVEST ACTIVITIES

Golden Harvest has restructured its processing plants at Gazipur and established several cold stores at four locations of the country. The company has procured 6,950 freezers with capacities of 235 liters, 285 liters, and 450 liters, 30 refrigerated vans for transportation of its produce, and 19 cold storages in different locations including its main processing center at Gazipur, investing a total of USD 9,030,667. CCBA has organized poultry and vegetable farmers to supply broiler chickens and fresh vegetables. Through the cold chain initiative 573 full time jobs have been created.

Golden Harvest has completed renovation and vertical extension of their existing structure at Hotapara, Gazipur. They have shifted their vegetable and meat processing facilities to the second floor and ice manufacturing will be started on the first floor. They have also shifted their office and snacks production facilities, and fixed two cargo lifts for lifting products.

The first Cold Chain Sub-hub at Dhaka was inaugurated by H.E the US Ambassador in Dhaka Dan W. Mozena on September 19, 2014 at Tejgaon Industrial Area where mission director Ms. Janina Jaruzelski, Ms. Ramona M L Hamzaoui, Mark Tegenfeldt, Mark Mitchell Nelson, Mohammad Shibly of USAID Mission, Mr. Rajib Samdani, Managing Director, Mr. Samad Chowdhury, COO of Golden Harvest, and CCBA COP joined. USAID, CCBA, and Golden Harvest jointly organized the event. The project

provided technical assistance to establish cold storage, plastic crates, weighing scales, trolleys, and cartons for proper storage of produce.

II. PROGRAM PROGRESS (QUANTITATIVE IMPACT)

A. SUBMISSION AND APPROVAL OF M&E PLAN

The USAID M&E team comprised of Marunga Manda, two other members of his M&E team, and AOR Mohammad Shibly organized a meeting with the CCBA COP and M&E Manager at USAID's office on June 26, 2014 to discuss the revised M&E Plan submitted earlier after incorporating comments and suggestions provided by USAID consultant on M&E framework based on the updated FtF Indicator Handbook of 2013. The team advised to follow the revised M&E framework, finalize indicators based, and follow new definition guidelines of Performance Indicator Reference (PIR) sheet, on M&E framework, signed project documents, and comments provided by the M&E team. The M&E Plan was further revised and sent to the USAID team on July 22, 2014 for final approval. USAID approved the plan on July 27, 2014.

B. BASELINE DATA ON CCBA TARGET HOUSEHOLDS

CCBA collected baseline data on family composition, household-owned land and area under cultivation, existing agricultural practices, area under high-value crop production, technologies or management practices employed, post-harvest management practices, marketing, income expenditure, and nutritional diversification through a pre-tested structured questionnaire for Jessore and Gazipur areas. Baseline data was collected through a third party field data collector with experience in data collection. CCBA M&E staff trained the data collector and later guided and supervised the data collection process. The CCBA M&E team closely supervised data collection; and undertook data quality control through random sampling. M&E has completed baseline of household data collection, coding, and editing of the field surveyed data, and has computerized the data.

Figure 9. Inauguration of first cold chain hub at Dhaka.

C. HIGH –VALUE CROP CULTIVATION, COST, AREA, AND SALES

CCBA trained 6,495 farmers on production and post-harvest handling of HVCs during the reporting period; however, farmers had only one full cropping season during the summer, and were only available for training and other technical support part of the winter season due to political instability. Among the trained farmers, 2,012 farmers (about 30%) applied new technologies which has resulted incremental sales. The 30% technology adoption rate is promising as adoption rates are often lower during the first year after a technology has been introduced. Though 252.29 hectares of land came under new technologies for the first time, the impact

of the technology is yet to be translated into real results. Moreover, winter being the main production season of high-value vegetables, farmers could not get access to inputs and markets due to long political turmoil which constrained farmers' production and marketing. Farmers' incremental sales during the period was USD 837,879 which will eventually increase during the coming year when most of the trained farmers will adopt new technologies and get a full year for crop production. CCBA directly benefited 4,744 rural households. Four collection centers were established by the project for aggregating products, sorting, grading, cleaning, packing, and market linkages. During the period, 573 full time jobs have been created. A total of 28 enterprises, women producer groups, and producer association applied improved technologies on food safety, production and post-harvest handling, food preparation, etc. The project could not reach its target in all indicators due to political impasse at the onset of the project and was compelled restrain its acceleration during the first winter season from October to January. In addition, selection of commodities based on the requirement of GDA partners delayed selection of locations, and poor understanding of the cold supply chain among the stakeholders and staffs, the long period required to establish cold chain facilities, and poor response of farmers to follow good and safe agricultural practices are regularly hampering project progress.

During the reporting period, the M&E team collected 11 cost return data of three high-value crops, eggplant from 6 cultivators, cucumber from 3 cultivators, and cucumber from 2 cultivators, through a structured data collection checklist/format and analyzed accordingly. The following graph (Figure 9) show sales, investment and return data per acre (0.405 hectors) of the mentioned crops. The highest return was observed in cucumber (BDT 261,970) and the lowest is bitter gourd (BDT 101,238).

Figure 9. Sales, investment, and return per acre (in taka)

Golden Harvest already invested USD 9,030,667 for establishment of cold storages, freezers, and refrigerated vans, which is a significant investment. Once those facilities are in full operation, a pilot cold chain system will be in operation and project farmers as well as consumers are expected to benefit significantly.

III. PROJECT ADMINSTRATION

The COP facilitated monthly project review and progress meetings to review project activities and developed monthly plan of action and quarterly work plan. Project staff regularly visited project sites and worked closely with the farmers. Annual activity plan was developed.

Overall, the political and economic situation was unstable during year 1 of implementation, fluctuating between relative peace and violence. Rural roads and roads linking districts are often in poor condition, and heavy traffic was not conducive for trade. LSP workshop was conducted to orient LSPs on CCBA purpose and activities, and to assess LSPs' capacities, and a number of new gender focused initiatives were taken including demonstrations of nutritious food preparation and hygiene.

IV. CHALLENGES

CCBA established four collection centers in collaboration with producer groups. Establishment of aggregation centers or collection points is big challenge due unavailability of suitable government land. Moreover, village roads are not accessible during the rainy season which hinders transportation. These collection centers are temporary in nature and need to be reconstructed using bricks and mortars otherwise those will not be useable after a short period.

Cold chain concept is quite new and it is difficult to involve other stakeholders, particularly BCSA and super shops to participate in the program. Golden Harvest is presently focused on ice cream and limited scale of poultry processing. Considering project life, it would be difficult to bring significant change in this specialized system. Golden Harvest is not ready to purchase producers' products fully which is most important in order to make the project successful. Adoption of new technologies is always slow and within such a short time it would not be possible to generate incremental sales as per project target, same is true in case of job creation.

The political situation in Bangladesh began to deteriorate in October 2013, significantly restricting staff movement. As a result, it was difficult for staff to undertake field visits, conduct studies, and organize trainings. Furthermore, farmers in the project areas could not access required inputs in a timely fashion or access markets during peak harvest periods.

ANNEX 1: CCBA (JULY 13 TO SEPTEMBER 14) PERFORMANCE

FTF Ref.	Indicator & Disaggregation	Unit	Year One Target	Cumulative Achievement (Jul '13-September '14)
4.5.2-7	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	Number	5,000	6,459
	Male			4,503
	Female			1,956
4.5.2-5	Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance	Number	2,000	2,120
	Male			1,996
	Female			124
	New			2,120
	Continuing			0
4.5.2-42	Number of private enterprises, Service Provider, Farmer Groups, producer organizations, water user's associations, women's groups, trade and business associations and community-based organizations (CBOs) that applied improved technologies or management practices as a result of USG assistance	Number	40	28
	New			
	Continuing			
4.5.2-2	Number of hectares under improved technologies or management practices as a result of USG assistance	Hectares	350	256.48
	New			256.48
	Continuing			
	Male			236.48
	Female			20.00
4.5.2-13	Number of rural households benefiting directly from USG interventions	Number	3,000	4,744
	New			4,744
	Continuing			0
	Male			4,503
	Female			241
4.5.-2	Number of jobs attributed to FTF implementation	Number	3,000	573
	Male			328
	Female			245
	New			573
	Continuing			573
4.5.2-23	Value of incremental sales (collected at farm-level and outlets) attributed to FTF implementation	USD	1,000,000	$839,598.6

FTF Ref.	Indicator & Disaggregation	Unit	Year One Target	Cumulative Achievement (Jul '13-September '14)
4.5-10	Total increase in installed storage capacity (m3) (GH)	M^3	1,000	2,297+274= 2,571
	Dry			0
	Freezer and Cold stores= Cold		1,000	2,297+274=2,571
4.5.2-38	Value of new private sector investment in the agricultural sector or food chain leveraged by FTF implementation	USD	$ 2,500,000	$9,030,667
CCBA	Post-harvest losses (% of total)	Percent	3%	0
CCBA	Number of certifications for compliance with international food handling standards awarded to local	Number	1	0