Draft Quarterly Progress Report

Feed the Future Aquaculture Project

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1. EXECUTIVE SUMMARY

1.1. Introduction

The Feed the Future Aquaculture project is a five year transformative investment in aquaculture focused on 20 southern districts in Barisal, Khulna and Dhaka divisions, Bangladesh, which started in October 2011. This report describes the achievements of FtF-Aquaculture project activities implemented during the 6th quarter (January to March 2013) along with cumulative progress on FtF indicators. Due to the seasonality of fish and shrimp production, which is out of sync with the project year, final harvesting of aquaculture production was completed in this quarter. The achievements summarized below relate to progress of project activities. Progress against the FtF indicators that were not reported on previously are now included in this report. .

1.2. Project Objectives

The project contributes to achieving the Feed the Future goal of sustainably reducing poverty and hunger through four objectives, each linked to one of four project components. These are summarized in Table 1. The following subsections detail achievements relating to activities in each component, along with cross-cutting issues, project management and M&E.

Table-1: Project components and objectives

No.	Project Components	Objectives
1	Fish and shrimp seed	Dissemination of improved quality lines of fish and shrimp seed
2	Household aquaculture	Improving the nutrition and income status of farm households
3	Commercial aquaculture	Increasing investment, employment and fish production through commercial aquaculture
4	Institution and policy	Policy and regulatory reform and institutional capacity building to support sustainable aquaculture growth

1.3. Project Achievements by Component

1.3.0. Project Management

An additional 199 new field staff have been recruited by PNGOs during the reporting quarter in order to support greater numbers of project farmers included in the year 2 and expand project outreach and scale up activities. To coordinate the additional project activities, 14 new WorldFish staff have been recruited and placed in 4 regions. . Training and procurement units have shifted to the Khulna Office to improve synergy of work with other project units. . In this quarter (January-March 2013), FtF-Aq has established new collaborations with the Climate-Resilient Ecosystems and Livelihoods (CREL) project, ACDI/VOCA, HKI, Muslim Aid, Flinders University, two prawn hatcheries, Khulna University, WAB trading (Nature Care Foundation) , and SPRING. Implementing Partners' re-contracting agreements have been completed. The Bangladesh Fisheries Research Forum (BFRF) contract is being extended and BFRF has been implementing PhD programs in collaboration with Bangladesh Agricultural University to improve genetic quality of *Rohu* and *Mola*. Collaboration with the Department of Fisheries (DoF) is ongoing on import of Specific Pathogen Free shrimp FtF-Aquaculture has also initiated discussions with Solidaridad, STDF, BFFEA, BSFF, Solidarity Centre,for better linkages and project supports.

Component 1: Improved Fish and Shrimp Seed

The project works with 28 new hatcheries (22 carp and 6 Tilapia) as partners in 2013. The project also continues its cooperation with the 38 carp, 18 tilapia and 14 shrimp hatcheries selected in 2012. In the reporting quarter, a total of 16,908 kg rohu, 253 kg catla and 1,308 kg of mrigel brood fish were distributed to new and existing partner hatcheries. Four ponds have been developed as milt bank and stocked with 2,790 kg of male brood (1,590 numbers). One hatchery (Indrazit hatchery) has been selected from Faridpur region to breed *Shing* and local *Sarputi*. Under Khulna region, two prawn hatcheries were selected to implement a biosecurity model. In this reporting quarter 28 aeration towers have been provided to newly selected carp hatcheries. 14.40 million PCR tested WSSV negative PL was delivered to the FtF project farmers.

Component 2: Improving the nutrition and Income Status of Farm Households

The project selected 30,242 new households through PNGOs for 2013. In order to cover this number of households, the Barisal and Faridpur regions extended their activities in 6 new Upazilas. The project will also continue support to 19,841 fish farmers from the previous year. A total of 1207 farmer training groups have been formed during this quarter and a leader has been selected from each groups. The project is supporting a total of 50,083 households in this way this year. The Monitoring and Evaluation Unit has developed a farmers' profile database on the basis of data collected by field staff. The training unit provided ToT to 167 new field staff through 5 sessions in this quarter. Field staff will begin training farmers in the next quarter. Fifteen trainings/workshops were conducted by the training unit, for 772 participants (688 Male and 84 female).The training unit has developed and printed updated training materials, for field staff.

Component 3: Commercial Aquaculture

The project has selected 25401 new households which include 20,210 shrimp farming households from Khulna region and 5191 fish farming households from Khulna, Barisal and Faridpur regions. 808 groups for new shrimp households and 209 for new commercial fish households have been formed. The project installed 260 cages last year and installed 160 new cages for 2013, totaling 420 cages for tilapia farming. Fifty new cages have already been stocked during this quarter in Faridpur. Two farms have been selected from Jessore for development of a Recirculating Aquaculture System (RAS). Fresh water will be pumped through the tank allowing high value Shing catfish to be stocked at high density. . A Super Intensive Pangas (SIP) farm of 2600 m²is under construction at Amtali Upazila of Barisal and the farm will be stocked with 80,000 Pangas fingerlings which are now being nursed at a pond nearby. The farm will use water exchange by tidal flow with a potential production of 350 MT/ha/ in 8 months; much higher than the 80 MT/ha maximum currently achieved in Bangladesh. The project has started preparations to establish a crab hatchery in an unused prawn hatchery near Khulna, crab culture has a high potential for export and hatchery seed will reduce pressure on the natural stocks . The farmers' group training will start end April 2013.

Sanitary and phytosanitary standards (SPS) of shrimp from Bangladesh are generally considered to be not very high. The main problem appears to be the involvement of several traders between the farmer and the processor. These traders have no incentive to spend money or effort to maintain the quality of the shrimp, for example to add good quality ice, since they will resell without record. They may even be interested to increase the weight of the shrimp through creative methods, which further reduce the SPS of the shrimp. Several efforts have been tried or proposed to "shorten the value chain" but with little result until now. WAB trading company (also known through its Bangladesh representation as Nature Care Foundation) is

one of the exceptions who have formed groups of 100 shrimp farmers each, who receive training together, coordinate harvesting of shrimp and manage jointly a collection center with help of two full time WAB staff. Shrimp are bought at market rate directly from the group; the money is deposited the next day in the joint account of the group. Three group representatives have to sign jointly to take out funds. The main advantage for the group to cooperate with WAB trading is a guaranteed price, which is not subject to delayed payment or unexpected commission costs. The culture system for organic shrimp does not allow the use of feed so input costs are low and the production is fairly low but stable at about 300 kg/ha.
The advantage of WAB in this system is that they buy directly from the farmer; the farmer delivers the shrimp at the agreed time, with ice that is provided by WAB the day before. The SPS of the product will be optimal. Since the product is certified organic is fetches a higher price in Europe which compensates for the additional costs of ice, staff, collection center and packing materials. The system is mainly limited by the working capital since the system requires immediate payment to the farmers and also requires additional costs to operate the system.

Component 4: institutional Development

As part of the support to the implementation of the feed law, a fish feed survey was implemented. The results were presented in a workshop and recommendations of the participants collected. The project will continue to work on feed quality, feed utilization and feed availability in remote areas. Until now for quality brood stock it is necessary to collect wild brood form the rivers of Bangladesh. However just like with other domesticated animals there should be a systematic selection scheme which would over time develop brood stock with improved characteristics, for example faster growth or better feed utilization. The project will work on this in collaboration with DOF, BFRI and WorldFish scientists. Data on aquaculture resources is difficult to access and may be outdated. FtF-Aq has started cooperation with IRRI on developing a GIS database based on satellite images and remote sensing, farmer data can be linked to maps for better transparency and access. A model will be developed which can be adapted by DOF for up scaling.

On the basis of the GIS database opportunities for improvement of farming systems may be identified. The database may also be used to identify conflicting uses of land and problems may be addressed in cooperation with BSFF and DOF. The DOF has a plan to import Specific pathogen Free Shrimp, P. monodon. FtF-Aq is supporting the process with technical advice. SPF shrimp is able to mature in a hatchery so in future aquaculture would not be dependent on nature sources shrimp, which are often infected by virus disease. FtF-Aqua in collaboration with BSSF will train farmers and feed shops on Good Aquaculture Practices. Training of Trainers will be given to DOF staff and the target group training will be implemented by DOF staff. In the DOF Seed farm in Jessore, FtF-Aq is supporting the set-up of a tilapia hatchery where eight cohorts will be maintained which will be mated according to a strict system which will prevent inbreeding. DOF will operate this hatchery with own funds. FtF-Aq is testing PLs for WSSV by PCR testing. The PCR labs are set up in the DOF hatchery in Cox's Bazar and at Khulna University. Staff of DOF and KU will be involved in testing and will be trained on the job. Labor conditions in shrimp processors have been under discussion in recent years. Uncertainty on the actual situation causes confusion with the consumers. FtF-Aq will support the activities of the Solidarity Center on increased awareness on labor rights with workers and staff of processing factories. This activity is part of an MOA between SC, BSFF and BFFEA.

1.0. Lessons learned and plan for next planning period

COMPONENT 1:

- A large quantity of brood stock has been delivered to the partner hatcheries. The hatcheries have agreed to reduce their existing poor quality brood stock and sell the phased-out fish as table fish. This process will be monitored by monthly update of the hatchery brood pond status.
- To reduce infection with virus, female shrimp brood stock should be kept separate as soon as possible after arriving at the hatchery. For this the one mother (shrimp/one tank system will be applied in a number of selected hatcheries. These hatcheries that should have a partner (linked) hatchery in the Khulna area will be given preference for PCR testing. After testing a number of batches of WSSV free Nauplii can be jointly stocked in one tank to save tank space. This is called mother tested system.
- Linked hatcheries are identified in the Khulna area. These will be used to rear the mother tested WSSV free PLs. Before actual implementation of this system, an MOA with each linked hatchery needs to be made to agree on the testing system to follow.
- Quality seed is produced at the hatchery. Farmers need to be more aware about the origin of this seed so they can specifically demand quality seed from a known source. A traceability system will be developed where the farmer will receive with his batch of quality fingerlings a poster that will include a name and picture sticker from the respective fingerling trader, nursery, hatchery and natural river source.

COMPONENT 2:

- A need was identified to increase field staff's supervision and accountability for training implementation. A system has been started, and all field staffs have signed the commitment, which will assure that field staff will inform the field supervisor by SMS 60-30 minutes before the farmer training about actual site and timing of the training. Supervisors will have the most updated training schedule and may make unannounced visits to the training.
- The farmers who have seen increased production of Mola in stocked ponds, show interested to stock Mola in their pond next year. Farmers will be motivated to sell live Mola to their neighbors, without the need for the project to invest time and funds in this. The project has done tests with different types of nets with varying results, more work is needed. Attraction of mola by water flow or light does not seem to work. Cast net is considered the most convenient way to catch Mola; however this net needs considerable skill and strength. More trials will be needed to identify a method suitable for young and old.

COMPONENT 3:

- The main message that is promoted for commercial carp farmers is the use of large fingerlings and the use of feed. However few farmers in the project have enough funds to implement this technology in a large pond. The coming season the project will focus on implementing more intensive carp farming in ponds that are representative for the type of ponds in the project area. The guideline for demos has been adjusted accordingly.
- A few selected farmers with large capital will be supported with commercial aquaculture technology to develop more advanced models of production using Koi, Tilapia, and Pangasius as well as high value indigenous species.
- Shrimp farmers have a problem to sell their shrimp at a fair price, since they depend on local middlemen. It would be better if the processors could buy directly from the farmer groups, which

would improve traceability and increase accountability for the quality of the shrimp. The coming year it will be discussed with selected processors how the value chain can be shortened. (Same as last report). A MOA has been signed with Nature Care Foundation to cooperate on research on organic shrimp production as well as on thedevelopment of a group collaboration and certification system.

- To improve product quality the coming year the cooperation between farmers in a group will be given more attention. Synchronized stocking and exchange of ideas shows benefit among group members. It was found that a high percentage of mother shrimp are infected by WSSV according to PCR testing.
- The possibility of bringing in SPF shrimp for distribution to suitable hatcheries will be further pursued. SPF shrimp reproduce in captivity which makes the hatcheries less dependent on natural shrimp. The SPF shrimp have been selected for good growth for several generations so under suitable conditions they will grow faster than regular shrimp. These discussions have further progressed and soon may result in import of SPF shrimp.
- Fish and shrimp feed is in short supply in the remote areas, due to shortage at national level and higher transport cost. Through coordination with feed factories, local suppliers and farmer groups, there may be scope to improve the availability of feed.

COMPONENT 4:

- (Continuing) Several ongoing projects are involved with input quality. The AIP project is concerned with distribution of feeds as part of their effort to develop 3000 input suppliers. The Best/BFQ projects with funding from Norad and EU and the FAO Food safety Project with funding from the Dutch Embassy have the capacity to test for adulteration of feeds. FtF-Aq will collaborate to support the monitoring of feed ingredients and also complete feeds and will especially emphasize the need of follow up after testing.
- (continuing) The brood stock quality of carp and tilapia hatcheries has been increased with support of FtF-Aq. The phase-out of old brood stock needs to be monitored to be able to assess actual impact of the improved brood stock supply. Total production capacity of hatcheries has increased due to improved brood stock and better management practices. Through cooperation between hatcheries the overproduction of spawn needs to be prevented. Quality indicators for hatcheries will be developed in collaboration with DOF. All these activities contribute to the effective implementation of the Quality Seed Act.
- FtF-Aq will contact international organizations, contact with IDH from the Netherlands is ongoing, who can assist to identify buyers of shrimp who are interested to buy shrimp that are produced by small farmers under good aquaculture practices. GAP includes requirements for environmental impact, no use of restricted chemicals and good labor conditions. Increased interest from international buyers may make the processors more motivated to cooperate on the improvement of working conditions and implementation of the labor laws.

1.5. Monitoring and Evaluation

FtF Aq's M&E unit completed a database of the selected households of the FY 2013. In the Barisal region, the M&E unit has used McAid system using Smart Phone with Nabo Jibon-MYAP program of Save the Children funded by USAID to select and complete data collection of 20,055 new beneficiaries (77% Female) for year 2013. In Khulna, the regional project office has selected a total of 31,643 commercial and household aquaculture beneficiaries for project supports (41% Female). The Faridpur regional project office has also completed selection of 4,095 commercial and household aquaculture

farmers (38% Female) to bring them under project supports in fiscal year 2013. Out of project target beneficiaries 52% female and 48% is male ***(See details in annex-2).*** The M&E unit conducted the end of production cycle impact survey in March 2013. The project M&E unit implemented this survey using in-house resources to measure progress against Feed the Future Indicators and key project targets by collecting random sample data from 4,012 households and other target groups in four regions. The study was designed considering the Data Quality Assessment (DQA) themes of USAID. Regional M&E staff, and project Technical Specialists were used to validate and ensure data quality. The survey results are reported in the report and in FtFMS reporting. Modifications and corrections were made to the Project Monitoring and Evaluation Plan (PMP) and shared with USAID for further comments. The farmer record book introduced by the project during last year has been reviewed and modified considering the field context. The M&E unit has introduced a growth performance survey to track performance of seed from project supported hatcheries and non- supported hatcheries during the harvesting period, the data has been collected and analyzed. The growth performance survey will continue during the next production period.

1.6. Key Project Targets and Achievements:

The key indicators and targets for the project are summarized in Table 2 below. The value of incremental sales at farm level attributed to FtF-Aq implementation was considered in three major areas; shrimp, fish and horticulture. FtF-Aq has two types of beneficiaries; the "training supported" farmers (15,844 ha) and the "quality seed supported" farmers (78,400 ha). There are two categories: fish and shrimp farmers. The number of "quality seed supported" farmers is higher, but the individual impact is usually lower than for "training supported" farmers as the preceding category of farmers had access to improved seed only while the later received training from the project in addition to accessing seed. The table below provides information on the progress and achievement of FtFMS indicators which were not previously reported at the end of FY12.

Table 2*: Project Target and achievement summary (As March 2013)*

Key Indicators	**Project Progress and Target**				
	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-March 2013)
Yields of rice, fish and potatoes (MT/ha)					
Shrimp (average)	-	-	0.35		0.361
Fish (Average)	-	-	1.94		2.402
Horticulture (Average)	-	-	8.95		8.637
4.5-2: Number of jobs attributed to FTF-Aq implementation	-	-	10,000		6, 500
4.5-4: Gross margin per unit of land, kilogram or animal of selected product ($/Ha)					
Shrimp	-	-	929		2069
Fish	-	-	1496		4736
Vegetables/Horticulture	-	-	982		1719
4.5.2-2: Number of hectares under improved technologies or	16,800	By Direct HHs : 15,844 ha by	145,724		103,515

Key Indicators	Project Progress and Target				
	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-March 2013)
management practices as a result of USG assistance		quality seed HHs: 78400 ha (Estimated)			
4.5.2-5: Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	45,587	45,689 23,356 Male 22,333 Female	75,931	To be reported annually	45,587
4.5.2-7: Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	45,587	45,689 23,356 Male 22,333 Female	75,931	To be reported annually	45,587
4.5.2-13 Number of rural households benefiting directly from USG interventions (S)	45,587	Direct HH: 45,689 By quality seed HHs: 850000*	704,112		592,915
4.5.2-23: Value of incremental sales at farm level attributed to FtF-Aq implementation ($ Million)	0	9.06 [0.36cage and hatchery] 8.69 [9 months shrimp production]	42.33		90.64

Note: * estimated by calculating the number of spawn produced by project supported hatcheries multiplied by number of fingerling produced from one kg spawn multiplied by no. of fingerlings stocked by a non-project households

2. PROGRESS BY PROJECT COMPONENT

2.1. Project Management

2.1.1. Staffing

During the reporting quarter, the FtF Aquaculture project recruited 14 staff considering implementation needs. These included five Technical Specialists, two Training Officers, two Hatchery Technicians, two Farm Technicians for Super Intensive Pangas (SIP) farming, and two Finance Officers for four regional offices. PNGOs also recruited 199 new staff. These include one Deputy Team Leader, one Finance and Administrative Officer, 26 Field Coordinator/Field Supervisors and 171 Extension Officers/Field Organizers/Market Promoters who will serve in Barisal and Khulna regions under CODEC, SpeedTrust and depots respectively. Among the 199 newly recruited staffs, 176 are male and 23 are female. Beside these, one national feed consultant, one national commercial aquaculture consultant, one international feed consultant, one international crab hatchery expert, one international shrimp disease expert, one international aquaculture specialist (Carp Seed) and one national Aquaculture consultant contributed to the project. The Training Manager and Procurement Coordinator were transferred to the Khulna Project head Office to coordinate activities with other project units (Monitoring and Evaluation, Finance, Administration and Communication).

2.1.2. Partnership

The project has developed a joint plan with Save the Children (SC) as a technical partner. SC will conduct horticulture related training for project staff and follow up for implementation at farmer level. The FtF Aquaculture M&E unit and Save the Children MIS unit are continuing to run farmers database in the McAid system at Barisal region. Due to the end of CODEC-IPAC project, the partnership with WorldFish was ended. The new CREL project funded by USAID and managed by Winrock International will take its place. Initial contact has been established for cooperation on livelihood activities including development of crab nursing and grow-out. CODEC will be engaged as implementing partner to implement part of the household aquaculture component of FtF Aquaculture project activities through IPAC activities with CREL. The process of selecting shrimp depots and hatcheries as project partners was completed during this quarter. MOAs between the depots and hatcheries have been signed. During this reporting period, MOUs were signed with ACDI/VOCA, HKI, CODEC, SpeedTrust, Muslim Aid and Flinders University Adelaide, Australia. . The Bangladesh Fisheries Research Forum (BFRF) contract is under extension and BFRF has been implementing national PhD programs in collaboration with Bangladesh Agriculture University to improve genetic quality of Rohu and Mola. FtF-Aq is in regular contact with Blue Gold, Solidaridad, STDF, BFFEA, BSFF, Solidarity Center, and WAB / Nature Care Foundation to identify opportunities for cooperation.

2.1.3. Procurement

In this quarter, five PCR kits were procured to ensure the WSSV testing of shrimp PL. A total of 43,500 stickers, 2,000 notebooks, 1,000 pocket notebooks, 275 training bags and 1,200 folders were procured to support the training unit in providing training to participants. The unit procured 26 electronic balances and 42 spring balances for Technical Specialists and Hatchery Technicians. Eight brood transportation tanks, one self-prime pump and two batteries were procured in Jessore region to ensure better brood transportation. Nine laptops and 23 motorcycles were procured for new staff. An NAS backup system was installed in Khulna project office in order to ensure data backup. One freezer was procured for Faridpur region to preserve the milt which will be collected from the milt bank.

COMPONENT-1

2.1. DISSEMINATION OF IMPROVED QUALITY LINES OF FISH AND SHRIMP SEED

MAJOR ACCOMPLISHMENT AND RESULTS:

2.1.1. Component Target and Achievement

The FY 2013 (Oct 2012 to Sep 2013) targets and the present achievements of the reporting quarter (Jan-Mar 2013) are presented in Table 3. The project selected 22 carp, 06 shrimp and – 6 tilapia hatcheries, procured brood and distributed among carp hatcheries, developed plan for delivering training, and also drafted hatchery operational manuals.

Table 3: Key targets and achieved of seed production and distribution component-1

Indicators	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-March 2013)
No. of carp hatcheries	40	38	63	22 new selected	60
No. of tilapia hatcheries	20	15	30	6 (2 at Faridpur and 4 at Jessore)	21
No. of shrimp hatcheries	15	14	30	15 are in process of selection	29
No. of prawn hatcheries	-	-	10	2 prawn hatcheries selected and rest is under process	2
No. of non-project households with improved fish seed	-	-	495,868	-	530,224
No. of non-project households with improved Tilapia seed	-	-	132,231	-	Tilapia brood stocked in hatchery, this year fry will be distributed to farmers
No. of non-project households with screen shrimp seed	-	-	30,763	-	17,325

Indicators	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-March 2013)
No. of PCR tested shrimp PL	250 million	273 million	500 million	14.40 million	287.40 million
Amount of carp spawn produced	6,000 kg	10,272 Kg	9,450	To be updated next quarter	10,272 kg

2.1.2. Progress against key outcomes:

1. Distribution of existing and imported improved strains of Rohu, Catla, tilapia, Pangas and prawn to public and private hatcheries/centers:

In Jan-Mar 2013, a total of 22 new carp and 6 new tilapia hatcheries were selected in Barisal and Jessore region.. One new hatchery has been selected at Morelganj of Khulna region, first in this region, to introduce improved fish seed and create an easy access to surrounding areas of Bagerhat district. This hatchery has been stocked with 396 kg of quality brood stock. . In the last quarter, 16,908 kg Rui, 253 kg Catla and 1,308 kg of Mrigel brood fish were distributed to existing and new hatcheries. In order to ensure proper gonadal development before breeding, vitamin A, D and E was provided as a sample to the carp hatcheries in this quarter.

Four ponds were selected to develop a milt bank (two at Jessore, one at Faridpur and one at Barisal). In a milt bank male quality brood stock is maintained. In future a selection program is planned which will produce every year newly selected high quality males. Milt from these males is collected, preserved by a process developed by the FtF-Aq project, and distributed to partner hatcheries all over the FtF-Aq area. Transport times of up to 24 hours maintaining temperature 4-6 degree Celsius have been achieved with good results. The milt bank will make milt of high quality brood stock available to remote hatcheries at low cost. One government hatchery was selected in Barisal and the pond was stocked with 440 kg brood on 20 February 2013. Two milt banks have been established at DoF fish seed multiplication farm and Niribili Polli hatchery in Jessore. A total of 600 kg quality Rui, Catla, Mrigel and mirror carp were stocked in the Niribili Polli hatchery, of which 60 kg of mirror carp were stocked this quarter. The milt bank of DoF, Jessore was stocked with 1,300 kg of Rui, Catla and Mrigel brood stock. Another milt bank has been developed in DoF farm of Faridpur. The pond was stocked with 450 kg of quality brood. The overall objective of the milt bank is to improve the quality of fish seed produced by project supported hatcheries while reducing production costs, and to demonstrate the genetic and economic advantage of using quality milt from centrally established gene banks, similarly as it has been done in livestock. Produced offspring will be used for consumption, not as brood stock, to avoid inbreeding.

A total of 3,000 mirror carp brood fish were produced until December 2012, and 1,054 breeders (1,478 kg) from this stock have been distributed to 32 partner hatcheries in this quarter.

2. Capacity building for staff, hatchery and nursery operators:

The training unit provided a day-long workshop with 6 new hatcheries on 29 January 2013 in Barisal to share their progress, problems and solutions and plan for the next year. A day-long training on

brood and hatchery management with participation of 12 hatchery owners and technicians was facilitated by the FtF Aq's international Hatchery Consultant Mr. Francois Rajts in Barisal on February 12, 2013. A two-day long training was organized on carp and tilapia hatchery management and improved brood stock development for quality seed production which was held on 21-22 March 2013.

3. Linkage building among actors associated with aquaculture value chains:

One hatchery (Indrazit hatchery) has been selected from Jessore region to breed Shing and Deshi Sarputi, both high value species with high demand by growers and consumers. Two farms have been selected at Jessore for developing a Recirculating Aquaculture System (RAS). The RAS system is described in the Research and Innovation sub-section below. In Khulna region, two freshwater prawn hatcheries were selected and an MOA was signed on cooperation to develop an improved biosecurity procedure to reduce disease in prawn hatcheries. Initial results after two weeks of culture are encouraging. No disease has developed even though neighboring hatcheries have again disease problems, like last year. Reduced disease will increase the availability of freshwater prawn seed and may significantly increase the production and export of freshwater prawn this year. If the two hatcheries manage to complete the whole culture cycle, then other interested hatcheries will be offered training in the improved technology. .

GIFT tilapia cohorts:

No new GIFT tilapia brood stock was imported or distributed in this quarter. The project is giving continuous supports and assistance for proper management of the available brood stock. A long term selection system will be set up to develop an improved line of tilapia especially for Bangladesh conditions, using eight imported cohorts. By using cohorts of a number of families, and by crossing between cohorts, inbreeding is avoided and the genetic diversity is preserved.

4. Increase awareness, availability and use of PCR tested shrimp PLs

A total of 5,000 posters promoting PCR tested shrimp PLs were published. A service provider has been selected and a contract has prepared for the production and staging of 10 popular theatre shows in the program area to promote use of PCR tested PLs. A script development workshop will be held on 22 April 2013. Board binding of 100 posters carrying messages on screened PL was completed, and these will be distributed among the project supported depots. A project brief brochure is designed and 3000 copies are printed. A documentary on benefits of using PCR tested shrimp PLs was developed, and two episodes of Mate o Manush were produced and aired on Bangladesh Television (BTV), anchored by prominent media personality Mr. Dewan Siraj. The documentary is also being aired in the local cable network in Khulna.

2.1.3. Success story: Previously Failed Fish Nursery Owner Awarded for Success

Small unused pond now meeting family nutrition need and bringing money

Photo: WorldFish/Barisal

Aminul Islam receiving the award of best nursery owner 2012 from upojila Fishery Officer

"it is quality seeds, proper technology and management that turned my failure to success, thanks to FtF aquaculture" – successful nursery owner Bacchu Mia

While speaking to the audience after receiving an award as successful fish nursery owner from the Department of Fisheries, Aminul Islam Bacchu Mia expressed his gratitude to Feed the Future Aquaculture project funded by USAID for his success.

Son of Abdul Barek Howladar and resident of Amtali, Barguna District, Bacchu Mia started working in his father's farm after passing SSC in 2002. After failing in nursery business he decided to go abroad but returned in 2007 without luck. It was the feed the Future Aquaculture project staff who encouraged him to restart his nursery business identifying previous faults behind his failure. He started his new journey with appropriate training and intensive assistance of FtF Aquaculture staff. It seems wise to him to collect fish seeds from the project assisted hatcheries around Barisal. This year he collected 7.25 kg seeds of ruhi, catla, mrigel, silver carp, grass carp, bighead, and puti. In 2012, he has sold 250,000 ruhi, 160,000 katla, 80,000 mrigel, 115,000 silver carp, 30,000 grass carp, 19,000 bighead and 16,0000 puti fingerlings with a total price of 1,086,500 taka. His total expenses were 490,000 taka for nursery pond preparation, spawn cost, feed cost, pond management cost, labor cost etc. He has a stock of 200,000 taka planned to be sold as over wintered fingerlings.

Local farmers are eager to buy fingerlings from Bacchu Mia as these fingerlings grow faster than others. The project has provided him 2.5 kg quality seed out of the total 7.25 kg stocked in his nursery ponds to produce and increase availability of quality fingerling. The project also provided him 666 kg feed and a record book to keep track of his eight ponds with a total water surface of 12,000 m².

After observing the differences between project seed and traditionally grown seed from the same hatchery, Bacchu Mia's opinion was, "it is quality seeds, proper technology and management that turned my failure to success, thanks to FtF aquaculture". FtF Aquaculture spawn produce good fingerling without deformity and the survival of fingerlings number is much higher in comparison with other available spawn. He has decided to collect his entire stock from the FtF aquaculture supported hatcheries.

2.1.4. Success story: FtF Aquaculture Beneficiary Fish Hatchery owner awarded

Effective technology and inputs fetch National award to hatchery owner

Photo: WF/ Barisal
Najrul Islam Mantu with the Best Hatchery award

"FtF Aquaculture is the first effective external support I have got in my 25 years old business" – *Najrul Islam Mantu, owner of the Srom O Projukti Fish Hatchery*

Access to proper technical assistance has been always a big hurdle for the hatchery business of Bangladesh. Even the big hatcheries face the obstacles as a complete solution was rarely in existence. Najrul Islam Mantu, owner of the Srom O Projukti Fish Hatchery situated at Ujirkhali Upojila of Barisal district has gone through the same before working with Feed the Future Aquaculture project funded by USAID.

Srom O Projukti Fish Hatchery is a large concern with 7 acres of water body consisted of 15 ponds. Feed the Future Aquaculture project has assisted him in keeping improved management, getting improved technology and better input. This year he is expecting to produce 1.2 metric tons of white fish seeds which were of a ton last year. Mr. Mantu is awarded as the best fish hatchery owner from Barisal district in the National Fishery Week 2012.

According to Najrul Islam Mantu, this success is heavily owed to FtF Aquaculture assistance in more than one aspect. "FtF Aquaculture is the first effective external support I have received in my 25 years of business" he commented. To keep the seed quality high by reducing carbon dioxide and increasing volume of dissolved oxygen in the water he is using a FtF Aquaculture prescribed oxygen injector machine (32,000 taka) and an aeration tower (28,000 taka including transport and installation) made of locally available materials. Hands on training from the project have helped his technicians to use the project provided microscope for in-farm research. Now he is convinced to keep the record using project provided record book format. The project found 320 kg quality brood out of his existing total 1,000 kg of rui brood and provided 220 kg rui brood (cost Taka 76,665), which ensures his hatchery produced seed quality.

Mr. Najrul is the first hatchery owner in Bangladesh who has successfully utilized 600 gram preserved milt purchased from FtF Aquaculture Milt Bank (cost taka 800) to produce fish seed. He is expecting that once established as a system, this technology will increase the hatchery production as it will spare the cost involved in stocking male broods. On the other hand, this is providing a solution of old fatal problem of inbreeding.

Srom O Projukti hatchery is planning to produce 2000 kgs of quality fish seed keeping the cost same and to be sold at market price. And it is possible, commented Mr. Najrul, due to FtF Aquaculture assistance.

2.1.5. Pictures:

	
Farmer are happy with improved brood	Setting water tower in a hatchery

COMPONENT-2

2.2. IMPROVING THE NUTRITION AND INCOME STATUS OF FARM HOUSEHOLDS

MAJOR ACCOMPLISHMENT AND RESULTS:

2.2.1. Component Target and Achievement:

The key targets for 2013 and last quarter achievements of Component 2 are shown in Table 3. Most of the target activities have started implementation. The household fish farmers are being selected from Khulna, Barisal and Faridpur region.

Table 1: Key targets and achievement of household fish farming component-2

Indicators	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-March 2013)
No. of household fish farms	20,000	20,002	50,000	30242	50,248
No. of HH with Small Indigenous Species (SIS)	6,000	4,615	15,000	Small fish will be stocked in next quarter	4615
No. of household fish demo	160	161	103	Selection on going	
No. of cages	250	260	380	420 (260 old + 160 new)	
Total fish production (MT)					
Training farmers	-	-	3,447		3032
Seed supported farmers	-	-	86,793		165,882
Yield (mt/hac)					
Training farmers	-	-	2.98		2.729
Seed supported farmers	-	-	1.73		2.363

2.2.2. Progress against key outcomes

1. Improve quality and access to feed

ToT was provided to project staff on household pond fish culture and dike cropping management for new and old staff to promote extension services to the selected farmers.

A fish feed value chain analysis which was started during October 2013 was finished in this quarter. The Feed law review by FtF-Aq in assistance with DoF was focused in this quarter. The study will

provide guidance on investments required in the feed sector of Bangladesh to support sustainable growth of aquaculture.

2. Household nutrition and income from integrated homestead fish and vegetable cultivation increased in MYAP target groups

Recruitment of ninety one new field staff t has been completed under the PNGOs. Two new Upazilas (Dashmina and Taltali) under Barisal and 5 new Upazilas (Boalmari, Sadarpur, Madaripur Sadar, Rajoir and Sariatpur) under Faridpur region were selected. The CODEC, Bagerhat field staff extended their activities within their existing Upazilas where they worked last year.

The NJ-MYAP and CODEC/CREL implementing partners selected 18,182 and 10,000 new household fish farmers, respectively, in their working areas. 2,060 additional farmers were selected from the Faridpur region. The NJ-MYAP will continue supporting 12,000 farmers while in Khulna 8,000 first year IPAC farmers will be supported by CODEC as a partner of CREL and WF in 2nd year, though the frequency of training support for these farmers will be reduced to half (for instance, 4 training sessions will be provided for each of the farmers groups instead of 8 sessions)

A total of 725 and 400 new farmer groups were formed by NJ-MYAP and CODEC/CREL respectively 82 farmer groups were formed in the Faridpur region. Groups consist of 25 farmers on average.

Demo ponds are in the process of being established to demonstrate of the benefits of improved pond management, pond dike vegetable cultivation and SIS production to training and non-project farmers. 103 HHs demonstration ponds (consisting old and new) will be set up in Khulna Jessore and Barisal regions. *See annexure for details*.

The project adopted a partnership approach to prepare a joint work plan and formal agreement in consultation with existing partner Save the Children-NJ. The Climate Resilient Ecosystems and Livelihoods (CREL) project implemented by Winrock International and funded by FtF-USAID submitted a proposal to work with the FtF-Aq project. The MOA is under review by the WorldFish head office, Penang, Malaysia. The Implementation Partners CODEC and IPAC have ended up the partnership MOA in December 2012. Two consultation meetings were held with each of the partners to agree on a new contract for the coming year.

3. Refinement and increased adoption of SIS production technologies and improved nutritional status of producing households

Seven sources of the Small Indigenous Species (SIS) mola fish have been identified during year one in the CODEC, Bagerhat area and three sources were identified in the Barisal working area.
Orange flesh sweet potato (OFSP) was introduced during the last quarter. Vegetable seed and OFSP vines were distributed to the farmers to increase homestead production and home consumption as part of the efforts to increase the variation in available food and to provide extra income. A panel tasting of OFSP was organized in Pashim Gulishakhali village, Morelganj, Bagerhat. A total of 30 group members collected SP-4, SP-7, and SP-8 varieties from their gardens and cooked and gave comments on their preference in taste and texture of the three varieties.

Based on the existing documentation, knowledge, and experience, the following Aquaculture/Agriculture - Nutrition Linkages Package is being developed and implemented in

collaboration with partners (e.g. HKI and Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING), CIP, AVRDC, Nobo Jibon, SAVE and national partners):

WorldFish "Signature" Aquaculture/ Agriculture - Nutrition Linkages Package
Beginning with:

- Aquaculture (large fish (carps) with micronutrient-rich fish species in homestead pond, or other production systems e.g. rice field/wetlands) – for sale (carps) and home consumption and inclusion of:
- Homestead vegetable (nutrient-rich, focus on orange-fleshed sweet potato) production (based on the Helen Keller International (HKI) model) – in the homestead and on pond dykes – for home consumption and sale
- Promotion of increased consumption of micronutrient-rich fish and vegetables, especially in the first 1,000 days of life, and adolescent girls
- Behaviour change communication for improving knowledge and practice of essential nutrition and essential hygiene actions
- Gender transformative approach (e.g. regarding norms, attitudes and practices in relation to food purchase, food preparation and processing, intra-household food distribution, work load)
- Monitoring and evaluation of processes and impacts on production, productivity, consumption, nutrition and health

2.2.3. Success story Little Household Pond can become a Great Resource

Training on aquaculture and gardening can turn small household pond in to great resource

Photo: WF/ Bagerhatl
Tahmina Begum beside her pond checking the growth of her fish

" change in life is possible by house hold pond Aquaculture"– Tahmina Begum, household farmer, Bagerhat

Tahmina Begum is an industrious woman. Her husband's name is Nur Mohammad, Vill: Joymoni, Upazila : Mongla Dist.: Bagerhat. She has a 10 decimal pond besides her home. She used to stock fingerlings in her pond without maintaining any ratio and without providing supplementary feed for fish and she used to care little about post stocking management. Her pond dike was never thought of any use for additional income.

Tahmina joined as a group member of USAID funded FtF Aquaculture project on April 2012 and received 8 sessions of trainings (5 on aquaculture, 2 on homestead vegetable gardening and 1 on gender issue). This training changed her perception on household pond aquaculture. She has got a clear scientific knowledge from FtF training sessions.

In 2012, Tahmina stocked fingerlings in her pond by counting. She stocked 400 fish fry with average weight of 143 gm and 6"in size. She stocked four species 120 pieces of Rohu, 30 pieces of Catla, 90 pieces of Silver carp and 160 pieces of Mrigel. She stocked the fish on 15 July, 2012. The growth performance of the fish found to be very satisfactory. Tahmina observed that it was possible due to regular fertilization, daily feeding and different fish species beside stocking by scientific ratio. She also used pond dike for growing various types of vegetable.

Tahmina has produced 68.5 kg of Rui (taka 13,700), 16.5 kg of Katla (taka 3,135), 47 kg of Silver Carp (taka 6,110), 68 kg of Mrigel (taka 12,280), 34 kg Sarputi (taka 4,760), 19 kg of Tilapia (taka 2,280) and 7 kg of Galda (taka 3,500). Out of total 260 kg production her family consumed 63 kg and she sold 197 kg. Total stocking cost was taka 12,620. Total feed and management cost was taka 12,650 (Feed –taka 11,250 and the rest are lime, fertilizer and other post stocking cost). As a result the total expenditure is taka 26,264 and the net profit from fish selling is taka 19,461. In the last year she earned only 7500/- taka from her pond. Mortality rate of stock was 5%.

In her pond dyke, she has produced 80 kg of Bottle gourd (lao), 20 kg of Indian Spinach (pui shak), 27 kg of Cucumber (sasha), 6 kg of Bitter gourd (karalla), 39 kg of Chal kumra, 40 kg of Bean, 8 kg of Tomato and 2 kg of Chichinga. Out of total produced 222 kg vegetable, her family consumed 106 kg (taka 1,737) and she sold 116 kg (taka 2,213). Her total expenditure for vegetable production was taka 892).

Now she believes that a change is possible by house hold pond Aquaculture and counts her household pond as a great resource for her life

2.2.4. Picture:

	
Farmer also stocked Tilapia in pond	*Curry with Mola fish demonstration*

COMPONENT-3

2.3. INCREASING INVESTMENT, EMPLOYMENT AND FISH PRODUCTION THROUGH COMMERCIAL AQUACULTURE

MAJOR ACCOMPLISHMENT AND RESULTS:

2.3.1. Component Target and Achievement:

Table 2: Key target and achievement of commercial component-3

Indicators	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-Mar 2013)
No. of shrimp household	20,000	20,071	40,000	20,212	40281
No. of commercial fish	5,000	5,033	10,000	5,191	10224
No. of shrimp demo	67	69	125 (22 old + 103 new)	Selection on going	
No. of commercial fish	50	61	43 (20 old + 13 new + 9 intensive	selection on going	
No. of shrimp nursery	50	50	10 (6 old + 4 new)	Selection on going	
No. of commercial fish	214	211	195 (72 old + 123 new)	Selection on going	
Total fish production (MT)					
Training commercial fish (MT)			2,903		4,656
Training commercial shrimp (MT)			5,363		4,969
Yield (MT/ha)					
Training commercial fish farmers (MT/ha)			5.00		4.849
Training shrimp farmers (MT/ha)			0.40		0.38

Indicators	Target FY-1 (Oct 2011-Sept 2012)	Achievement FY-1 (Oct 2011-Sept 2012)	Target FY- 2 (Oct 2012-Sept. 2013)	Achievement on 6th Quarter (Jan–Mar 2013)	Cumulative Achievement as of FY-2 (Oct 2011-Mar 2013)
Shrimp PL supported farmers (MT/ha)			0.32		0.346

2.3.2. Progress made against Key Outcomes:

1. Expansion of commercial aquaculture in the southern region (Establish component management structures and finalize work plans)

Several consultation meetings were organized to refine component activities and targets and create synergies during this quarter. The project planned to work with PRICE project partners during 2013, but it was not possible to complete final the agreement with PRICE, so the project has been expanded its work in Khulna region in collaboration with shrimp depots in Khulna region instead. The project is now working with a wide range of partners at field level to implement the commercial aquaculture component. This includes 11 depots and 11 linked hatcheries.

2. Productivity and profitability of shrimp culture increased (Working with partner depots to develop commercial shrimp and prawn smallholder to improve yields and quality standards)

Total 38 new partner depots were identified and MOAs were signed to implement shrimp related activities. 76 new staff (61 Extension Facilitators + 15 Field Supervisors) has been appointed by partner NGOs and depots to implement the shrimp and fish sub-component in Khulna region. An additional, 20,000 shrimp farmers have been selected for project support this year. Altogether 40,071 farmers (including 20,071 year 1 farmers) will receive support. . A total of 806 new shrimp farmers groups have been formed. One group is comprised of 25 farmers, including a group leader. The farmers' group training will start in April 2013. 131 ghers and ponds are in process of selection to use as demonstration ponds (125 shrimp and 6 commercial fish).

To promote quality feeds and embedded services to farmers the project will support fish feed companies to improve their feed quality and ensure the delivery of embedded services to the farmers or clients. This work will begin in the next quarter. A consultant has begun working on the development of a service package for the improvement of feed quality among small scale local level feed mills and developing the extension capacity of local dealers.

3. Productivity and profitability of commercial pond-based aquaculture increased

After the signing of new MoU's, 15 new staffs were appointed by existing partner NGOs to facilitate training for commercial farmers. A total of 4,792 new commercial fish and 420 cage farmers (old and new) were selected from Khulna, Faridpur and Barisal regions. 5,033 farmers are also being supported with refresher training. To facilitate new commercial farmers 206 groups were formed (199 for commercial fish and 7 for cages).

A total of 43 commercial pond demonstrations will be supported by the project this year for disseminating improved technologies and management practices. The 43 demos will include 20 old demo farmers, 13 new demos and 9 new intensive aquaculture demos.

A total of 420 cages (260 old and 160 new) were set up in all regions for dissemination of improved technologies and management practices. The production results from last year's cage trials indicated that production of tilapia in cages is profitable. If groups share the work of feeding and night guarding then the average time investment for each member is about 70 hours over a 3 month time period for a 25 member group. At the end of the cycle the profit is distributed and each member will receive between 2000 and 3000 taka depending on growth and survival of the fish. The resulting profit per hour invested is high then normally received by day labor, which indicates that the activity is profitable for small scale farmers and landless laborers. Main constraint at the moment for expansion is the initial capital need to buy the material to make the cages. Experiments are planned to develop a cage design with lower cost, also culture trials will be initiated with other higher value fish species which will increase the sales price of the fish at similar feed input costs. Initial results indicate that one a group has developed a good system of cooperation, the culture is continuing and a regular income is achieved without further need for support by the project.

Pangasius: A super intensive Pangas farm of 2600 m^2 has been established at Amtali of Barisal and 80,000 Pangas fry have been stocked in three nurseries which were collected from Jessore region. The larger size fish seed will be stocked in the grow-out pond during end of April, 2013Technical and partial input support for operation of the farm is being providing by the project.

4. Commercial culture of new brackish water species established

Tengra: Mangrove Hatchery and Fisheries of shamnagar Satkhira has been supported last year for brackish water Tengra production. Based on last years' experience the hatchery owner redesigned and renovated his hatchery and ponds. The hatchery bought Tengra brood from local natural sources and started rearing the brood stock following the technical advice from the project.

Tengra fry will be available for stocking in shrimp ponds in May and June. Tengra will provide an extra income for the shrimp farmers besides the income from shrimp. Shrimp is all sold and exported but Tengra is used for home consumption and for the local market so it contributes more to the local nutrition.

Mud Crab: Dr Colin Shelley was contracted to assess the potential for setting up a crab hatchery. The crab hatchery consultant visited a prawn hatchery currently not under operation to explore its suitability for conversion into a crab hatchery. Dr Shelly has finalized his reported, which showed that the culture of crab from hatchery reared seed can be profitable. The quality and availability of crab seed from a hatchery will be more uniform than that sourced from the wild. At the moment the collection of small crabs from nature is affecting the natural population and will in future lead to shortage of crabs. So the development of a hatchery will benefit the local livelihoods as well as the environment. CREL and SEAL have already expressed interest to cooperate in the development of crab nurseries that would raise the small crabs from the hatchery stage to a size suitable for stocking by grow out farmers. Crab is exported live to several countries and there is a good potential for further increase. The market price is similar to shrimp.

2.3.3. Success story FtF Aquaculture Technology brought "Miracle" in Shrimp Production

Rokon Dorji has broken the curse of low shrimp production following effective technology and inputs

Photo: WF/ Bagerhat
Rokon Dorji

"FtF Aquaculture technology has brought a change, which is nothing less than a miracle for me"– *Rokon Dorji, Shrimp farmer, Bagerhat*

Rokon Dorji's shrimp pond (with a water surface of 2400 m2 was infected with White Spot Syndrom Virus five times claiming a heavy toll on his shrimp production. He is a 34 years old shrimp farmer , son of Lutfur Dorji, of village Mandra situated in Bishnupur Union of Bagerhat Sadar Upazila. He has a decade long experience of culturing shrimp since the year 2000.

Rokon came to know of the technologies promoted by USAID funded Feed the Future Aquaculture project from his fellow farmers who are trained by the project. His receptive mind allowed him to stock PCR tested shrimp seeds. At the same time he also followed FtF Aquaculture prescribed density of the shrimp in the pond, maintained water quality and provided proper feed. These changes bring a good production which, according to Rokon, is nothing but a "miracle."

In 2011, he stocked 16,000 Bagda (Tiger Shrimp) (taka 6,400), 2000 Golda (Freshwater Prawn) (Taka 4,400) and 200 white fish (Taka 1000). He spent taka 10,000 for pond preparation and taka 15,000 for feed and other materials. His net profit was taka 5,950 (total income taka 42,750 – total expense taka 36,800).

Following FtF Aquaculture advise, in 2012 Rokon stocked 10,000 PCR tested white spot virus free Bagda PL (taka 5,000), 200 Golda juveniles (taka 2,000), 1,500 Golda PL (taka 4,000), 80 white fish fingerling (taka 900). His other expenditures were taka 21,000 for feed (420 kg) and taka 5,000 for lime. Bagda stocking density was 4 per square meter and survival rate was 47%. His net profit for the year 2012 was taka 66,610 (total income taka 1,04,510 – total expense taka 37,900). He produced 124 kg Bagda, 45 kg Golda and 71 kg of Rohu carp and grass carp.

2.3.4. Pictures:

	
Shrimp harvested by farmer to sell at local market	Commercial fish farming

COMPONENT-4

2.4. POLICY, REGULATORY AND INSTITUTIONAL CAPACITY BUILDING TO SUPPORT SUSTAINABLE AQUACULTURE GROWTH

MAJOR ACCOMPLISHMENT AND RESULTS:

2.4.1. Progress made against Key Outcomes:

1. Improved public and private services for rural fish farmers in the southern region

Planned in next quarter

2. Operational system for collection, analysis and use of aquaculture statistics

During the reporting quarter one staff has been recruited by WorldFish to work on Geographical Information Systems (GIS). The staff will be partly funded from FtF-Aq. A linkage has been establish with IRRI which will be formalized in future to cooperate on the development of a GIS which will include land use and water management is coastal areas. FtF-Aq will cooperate to include more detail on aquaculture resources. This system will enable the authorities to take decisions on farming systems, including aquaculture, based on better data. The same database can also be used to give advice to farmers on timely stocking and harvesting.

The coastal area is changing due to changing production systems and also climate change. This may lead to conflicts due to disagreement on water management. FtF-Aq plans to use the GIS database to identify potential conflict areas. A combination of awareness raising and training may reduce local conflicts. Better communication and information may reduce misinformation.

In order to develop an aquaculture resource database of varying aquaculture resources FtF-Aq in cooperation with BSFF and IRRI will be working together from next quarter. IRRI will be the main source for GIS while BSFF will be in charge to collect the farmer resource data in several selected unions. BSFF in cooperation with DOF will start to identify the areas and causes of conflict. After development of the model, this GIS can be expanded to the whole country.

3. Established Aquaculture Research Priorities -Aquaculture research cooperation strengthened between Bangladesh and US researchers

WorldFish and FtF-Aq have offered to cooperate in a number of research proposals from Bangladesh Agriculture University (BAU) to the AquaFish Innovative Lab project. This project is coordinated by Dr. Russell Borski, Ph.D., Professor Department of Biology. North Carolina State University, Raleigh, USA. There is also a plan that FtF-Aq will be involved with research on nutrition, also under the same program.

4. Reformed Policy and Regulatory Environment for Future Aquaculture Growth

4.1. Regulations, tools and capacity to implement the new feed Law

The scheduled feed study was completed this quarter with a workshop.

Study summary:

This study was conducted using various assessment tools, including FGD (focus group discussion), in and key informant interviews with semi-structured questionnaires for collecting information from different stakeholders along the value chain. The study also reviewed secondary information and utilized secondary data from various reliable sources.

The study was led by two foreign experts, Dr. Kurt August Rosentrater, Assistant professor of Iowa State University, USA (Feed processing) and Dr. Rattanawan Mungkung, Professor, Kasetsart University, Thailand (Life Cycle Analysis) and two local consultant Mr. Mamun-Ur-Rashid (Feed and Value Chain Expert) and Mr. Sk. Ahmad-Al-Nahid (LCA expert and lecturer of Chittagong veterinary and animal science university)

The conclusions of the feed study are that the growth of both commercial aquaculture and commercial fish feed production in Bangladesh over the past 10 years has been remarkable, and there is considerable room for further expansion of both sectors over the medium to long term, given a growing population with rising incomes and strong cultural preferences for fish consumption. This represents a major strength and opportunity for the feed sector. However, the industry is also confronted by a number of weaknesses and threats. These include the volatile political situation; lack of knowledge on raw material quality, feed formulation, machine operation and selection; a high dependency on imported raw materials; limited implementation of legislation on feeds; and ongoing market consolidation which may reduce competitiveness in the long run.

The rate of expansion in the production and uptake of manufactured feeds has been so rapid that the industry has yet to mature. It is likely that considerable consolidation will take place over the coming years, as farmers become more sophisticated in their feed management and preferences, and the benefits of higher quality feeds become more readily apparent, forcing those companies producing inferior products to raise the bar or exit the industry. In the meantime, educating farmers on good manufacturing practices, proper feed management practices, and enforcement of existing legislation, designed to ensure the quality of manufactured feed, can help to support the aquaculture industry as it continues to expand and modernize.

The FtF project plans to follow up on the conclusions of the study as well as on the recommendations of the final workshop. Main opportunities are a collaboration with the FAO food safety project for analysis of feeds and feed ingredients on contaminants. Also the DOF will be supported where possible to implement the feed law for better enforcement of the existing legislation. The project will also work with household as well as commercial farmers in improved utilization of feed, and in improvement of availability in remote areas.

Shrimp groups

Until now for quality brood stock it is necessary to collect wild brood form the rivers of Bangladesh. However just like with other domesticated animals there should be a systematic selection scheme which would over time develop brood stock with improved characteristics, for example faster growth or better feed utilization. The project will work on this in collaboration with DOF, BFRI and WorldFish scientists.

- Data on aquaculture resources is difficult to access and may be outdated. FtF-Aq has started cooperation with IRRI on developing a GIS database based on satellite images and remote

sensing, farmer data can be linked to maps for better transparency and access. A model will be developed which can be adapted by DOF for up scaling.

- On the basis of the GIS database opportunities for improvement of farming systems may be identified. The database may also be used to identify conflicting uses of land and problems may be addressed in cooperation with BSFF and DOF.

- The DOF has a plan to import Specific pathogen Free Shrimp, P. monodon. FtF-Aq is supporting the process with technical advice. SPF shrimp is able to mature in a hatchery so in future aquaculture would not be dependent on nature sources shrimp, which are often infected by virus disease.

- FtF-Aq in collaboration with BSSF will train farmers and feed shops on Good Aquaculture Practices. Training of Trainers will be given to DOF staff and the target group training will be implemented by DOF staff.

- In the DOF Seed farm in Jessore, FtF-Aq is supporting the set-up of a tilapia hatchery where eight cohorts will be maintained which will be mated according to a strict system which will prevent inbreeding. DOF will operate this hatchery with own funds.

- FtF-Aq is testing PLs for WSSV by PCR testing. The PCR labs are set up in the DOF hatchery in Cox's Bazar and at Khulna University. Staff of DOF and KU will be involved in testing and will be trained on the job.

Introduction of Specific Pathogen Free (SPF) shrimp: Brood stock of shrimp is caught from the wild. They are to a large percentage infected by virus. DOF is planning to import a selected strain of tiger shrimp that is free from the viruses known to cause disease. DOF has asked FtF-Aq for assistance. Establishment of experimental facility for quarantine of imported shrimp, assistance with preparation of bio-secure shrimp farm for experimental grow-out

Long-term selection program for carp: FtF-Aq is supplying hatcheries with quality brood; the best brood available in Bangladesh is sourced directly from the wild, because this is free from inbreeding. Just like other domesticated animals, carp should have strains, which are selected for good growth or other important characteristics. FtF plans to assist Government and private hatcheries with technical support to set up a long-term selection program. Cooperation is on with BFRI to repair existing pond facilities, contract experts. With existing stocks of FtF-Aq start up a selection program including tagging, family selection

Shrimp marketing support: At the moment most shrimp are collected from farmers by small intermediaries who resell to other traders who sell to the shrimp processors. FtF plans to organize farmers into groups who can sell directly to processors. These groups would function better with more technical support on harvesting and on post-harvest handling. Support to groups of farmers in joint harvesting and marketing by technical assistance and training.

Labor conditions in shrimp processors have been under discussion in recent years. Uncertainty on the actual situation causes confusion with the consumers. FtF-Aq will support the activities of the Solidarity Center on increased awareness on labor rights with workers and staff of processing factories. This activity is part of an MOA between SC, BSFF and BFFEA. Good labor conditions will

add to a better image for Bangladesh shrimp and will result in a better international market price, which will ultimately benefit the target group of the FtF-Aq project.

3. RESULT MANAGEMENT AND COMMUNICATION:

3.1. Performance and Result Management

WorldFish M&E team initiated an impact survey on March 20th to measure project progress against FtF indicators in year 1. The survey will be completed by mid-April and a report will be presented to USAID at the end of April. A total of 4012 farmers will be surveyed: 1575 household fish farmers; 340 commercial carp farmers, 1410 shrimp farmers, 45 carp nurseries, 15 shrimp nurseries and 48 carp hatcheries. Economic and management data from all of the 260 cages will also be collected by next April 2013. This impact survey will be conducted by project front line staffs (EF/MP). The M&E team designed a data entry template for impact survey data entry. Data will be entered with the help of 10 temporarily hired Data Entry Operators. The M&E team was involved in processing new farmer selection for 2013 and data entry has been completed. In the Barisal region, the farmer selection data entry process was completed through McAid software which allowed field staffs to enter farmer selection profile data directly into the main computer system using smart phones.

3.2. Research and Innovation

Establishment of outbreed founder stocks for Silver carp genetic improvement program: Genetic improvement of eroded silver carp hatchery stocks is started during July 2012, by reciprocal cross breeding of selected pairs from four different hatchery stocks, using 28 pair of parents for each line. The eggs were incubated from each pair separately. The hatchlings from every pair then were mixed in equal quantities and stocked in nursery ponds in 17 hatcheries. During January-March 2013, the stocks have been inspected and selected fingerlings were stocked (see Annex 2 and 3), to create two outbred founder populations.

Preservation method of fish milt: Ice-cooled preservation of fish milt is a simple method, which is used to supply milt from high quality brood stock lines to remote rural hatcheries. The main advantage of using milt from best quality males of a milt bank is the automatic prevention of inbreeding. Wild-origin males of Indian Major Carps are used for milt distribution to hatcheries. Thus, the produced hatchlings are improved in every case, even if the fertilized egg is obtained from poor quality females Following the last year success of trials with preservation in the FtF Aquaculture project in Jessore, we have established Milt Banks in Jessore, Faridpur and in Barisal. The profit of hatcheries can be significantly increased by using preserved milt. This method is opening a possibility to keep mainly female breeders in the commercial hatcheries and the milt can be supplied from controlled male stocks of Brood Banks. It would reduce the production cost of spawn. The milt bank and related preservation technology will result in better distribution of high quality brood stock lines to remote areas at a lower cost.

Pilot super-intensive culture of Pangas (SIP): In Vietnam, the average production rate of striped catfish (Pangasionodon hypophthalmus) is about 350 tons/ha/6-8 months, but some farms are achieving up to 600 MT/ha harvest in a single cycle of production.

In Bangladesh, one production cycle per year is possible. The actual highest production in limited cases is 80 tons/ ha/year; one cycle per year. It is due to lack of proper site selection, pond design and technology.

During this quarter an appropriate site was found in Amtoli, Barguna district, for establishing one pilot tidal-flow pond. It is estimated that there are similar appropriate sites in Patuakhali, Barguna, Bhola districts as well as in other districts on the sides of Karnafuli and Halda rivers, where the salinity does not

exceed 8.0 ppt (about 25% of full saline water) and the tide difference between high and low tide is more than one meter. The potential area is estimated at a few thousand hectares of low lands. Pond construction started in March and is expected to complete at the end of April 2013. Excavation is delayed, because only 50-70 workers could be hired, instead of the recommended 150. Finally an excavator machine was taken to complete the earth work. Fingerlings were stocked for pre-growing in partner nurseries in the middle of March, in order to have readily available large fingerlings for stocking the grow-out pond, as soon as the construction will finish. Recruitment of 2 persons, experienced in Pangas culture, has been completed. They will stay at the project site, to help the farmer in carrying out the pilot activity and monitor this activity. Pangasius, which is cultured in water which is regularly refreshed, has a lighter color flesh, which is required by many importing countries. In Vietnam the water is refreshed by diesel pumps. The described method in Bangladesh, if successful, will be more economic and may open new opportunities for export of fish from Bangladesh

Recirculation Aquaculture System (RAS) development: RAS can be placed near a large water body. The water body is used as biological filter. In the RAS the fish is cultured at high density. The RAS can be placed near the homestead for higher security, connecting pipes can be extended. After observing initial results, modifications will be made to make the system accessible to a variety of users. It is expected that the system can be used by functionally land less farmers who live near a water body, with or without tidal flow. A small concrete tank, possible similar to the common toilet rings can be used to keep the fish. Regular water exchange can be done by pump, tidal flow or manually. Different high value fish species can be used to identify the optimal result.

3.3. Media and Communication

As a part of the strategy for awareness building among the mass people who are directly or indirectly involved in aquaculture farming in the southern region, the communication and documentation unit has facilitated the process of publishing 8 news articles in different local newspapers on project interventions and achievements. Seven (7) of them featured the Farmers Field Day observance at the program area while another focused the successful implementation of WorldFish technology by a women farmer. Two (2) episode of Mati O Manush (a popular TV show on agriculture) featuring the FtF Aquaculture were aired on Bangladesh Television on 20 February and 02 March. One episode of 'Hridoye Mati o Manush' featuring FtF Aquaculture was aired on Channel-i on 26 March. Five (5) news features were telecasted by the private TV Channels on project activities of Faridpur region. A Television Spot on PCR tested shrimp seed was telecasted (total 900 times) in the Khulna and Satkhira district by the private cable TV channels. Three thousand (3000) copies of a bilingual (Bangla and English) project brief were published during the quarter along with a poster (5000 copy) to promote the PCR tested shrimp seed. Information supply by mobile: Various mobile companies are developing information services for agriculture farmers with varying degree of success. FtF-Aq plans to provide technical support on aquaculture to strengthen the supply of information on aquaculture via mobile. Besides providing information on aquaculture, other mobile services can be created, for example a farmer reporting system on outbreaks of diseases. Support to the mobile information system will be provided through the development of frequently asked questions and answers, training of call center staff and assistance in the identification and development of additional services

3.4. Training and Knowledge Management

15 trainings/workshops were conducted by the training unit, regional offices and program staff on different topics within this reporting quarter, for 772 participants (688 Male and 84 female). The participants were PNGOs staffs, project staffs, hatchery owners, and nursery owners. ToT trainings were conducted by the training unit on household pond fish culture and dike cropping management,

Environment Friendly Shrimp culture, and Quality Seed Production through Improved Hatchery Management. WorldFish consultant, Dr. Hussein, Mr. Raj and Mr. Shawquat facilitated training on a tilapia and carp breeding plan & genetic management for quality brood stock development and seed production for better breeding and quality seed production as well as training on Nursery Management for Commercial Farming.

SL	Training topic	Participant type	No. of session/ Batch	No. of Participants		
				Male	Female	Total
1	Experience Sharing Workshop with Old Carp Hatchery Owners	Hatchery owners (Carp + Tilapia)	2	64	2	66
2	Quality Seed Production Through Improved Hatchery Management	New Tilapia/Catfish Hatchery owners	1	24	1	25
3	Fish transportation and Tilapia sex reversal technique and early sex identification	Technical Specialist	1	7	0	7
4	Nursery Management for Commercial Farming	Nursery owners	1	10	0	10
5	Carp and Tilapia Hatchery Management and Improved Brood Stock Development for Quality Seed Production	FtF Staff, DoF/BFRI staff	1	18	1	19
6	TOT on Household Pond Fish Culture and Dike Cropping Management for FtF field staff	NGO staff, FtF Aqua	5	148	19	167
7	TOT on Commercial Aquaculture & dike cropping Management for FtF field staff	Hatchery staff, FtF Aqua	1	21	6	27
8	Tilapia and carp breeding Plan & genetic management	WorldFish staff	1	18	1	19
9	TOT on Environment Friendly Shrimp culture and dike cropping management	Depot Staff	2	59	2	61
10	Orientation and sharing of Nursery impact survey form	WorldFish staff (TS & HT)	2	15	0	15
11	Introducing impact survey forms and plan for impact survey	EF/MP and TS	9	210	46	256
12	Planning workshop	Old hatchery owners	1	6	0	6
13	Program orientation	PNGO staffs	1	54	6	60
14	Brood and hatchery management	HT, WF staffs	1	12	0	12
15	Effective field training strategy development	TS, FC, DTL and TO	1	22	0	22
	Total			**688**	**84**	**772**

3.5. Gender

The project is working with a total of 100,144 households in 2013 of which in 54% the woman in the household was the training participant and in 46% households the male was the training participant. The training participants are expected to be the main person responsible to manage the aquaculture resource in the household. . Overall 14% female and 86% males staffs were recruited for project implementation. In all areas of the project, additional learning sessions were held with aim of increasing women's

involvement in shrimp and fish farming activities. In this quarter, the training unit delivered trainings and arranged workshops attended by 89% male and 11% female participants.

4. FINANCE

Expenses report for the period from Oct 2012 – Mar 2013

ICLARM - Bangladesh FtF (AIN)	Actual Expenses Oct – Dec'12 U$	Actual Expenses Jan – Mar'13 U$	Actual Expenses Oct'12 – Mar'13 U$
Personnel	192,938	226,654	419,592
Equipment and Supplies	26,402	62,457	88,859
Travel	54,779	70,351	125,130
Workshop and Conference	(44,143)	4,134	(40,009)
Training technology and Dissemination	42,196	183,582	225,778
Field Costs/Research	75,395	183,637	259,032
Publication	559	123	682
Communication	758	19,200	19,958
Contractual	170,077	151,417	321,494
Organizational Overhead	112,044	207,358	319,402
Coordination	15,000	-	15,000
Grant Administration Fee	3,416	-	3,416
Total	**649,421**	**1,108,912**	**1,758,334**

At present our obligated fund is	US$ 3,288,634
Less: Expenses for Oct 2012 to Mar 2013:	US$ 1,758,334
Obligated fund available	**US$ 1,530,300**

5. ANNEXURES

Annex 1: Progress Details by Project Components

1.1. Project Management:

Sl.	Major Outputs	Key achievement and results
1.	**Project management and regional program-1**	
1.1.	Set up facilities and logistics for project operation in 20 districts of Jessore, Khulna, Barisal and Faridpur regions	• Two training officers recruited and placed in Khulna and Barisal Office • 23 motor cycles purchased for new senior field staffs and distributed as 3 for Khulna staffs, 6 for Faridpur staffs, 11 for Barisal staffs and 1 for Jessore staffs. • 30 bicycles purchased by CODEC Bagerhat for field staffs to implement field operation. • Faridpur office was equipped with high speed internet, last year the facilities were not available in this area. It will facilitate to transfer bigger size of project documents quickly.
1.2.	Increase communication capabilities	• Three thousand (3000) copies of a bilingual (Bangla and English) project brief were published during the quarter along with a poster (5000 copy) to promote the PCR tested shrimp seed • Developed and modified FtF Aqua's Communication strategy
1.3.	Project staff capacity building	• 256 project and partner staff (46 are women) were trained on monitoring and impact measurements. • 254 project staff was provided refresher ToT on fish production and management • Hatchery technicians and Technical specialist has received training on Brood and hatchery management • TS, FC, DTL and TO have received training on Effective field training strategy development
1.4.	Sustaining Improved Aquaculture Services	• Out of target 6; 3 aquaculture service centers have been set up located at Satkhira, Paikgaccha and Bagerhat under Khulna region.

1.2. ***Component-1: Fish and shrimp seed improved***

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
2.	***Component-1: Fish and shrimp seed improved***	
2.1.	Distribution of existing and imported improved strains of Rohu, Catla, Tilapia, Pangas and prawn to public and private hatcheries/centers	• One new hatchery (Sonali Matsho Hatchery) has been selected at Morelganj under Khulna region. Noted that, there was no hatchery selected in 2012 in Khulna region • 28 new hatcheries (22 carp and 6 tilapia) were selected for 2013. A total of 5 carp and 2 tilapia have been selected in Faridpur region, 12 carp and 4 tilapia in Jessore, and 5 carp in Barisal. • 396 kg brood of rui, catla and mrigel were already distributed to the new

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
		hatchery of Khulna • 414 kg quality broods were distributed on 20 February 2013 to DoF pond in Barisal and milt collection will be started on late May 2013 • 2 milt banks were established; one in DoF and another in Niribili Polli hatchery at Jessore • 80,000 Pangas fingerlings were supplied from Jessore to Amtali to stock in a super intensive Pangas farm of Jessore. • 2 farmers were selected to develop Recycling Aquaculture System (RAS) at Jessore • 2 packets of vitamin A, D, E and 1 vial for each of carp hatcheries were distributed for proper gonadal development before breeding season at Jessore • Data were collected from different prawn hatcheries and a report submitted in March 2013 which includes existing physical and technical facilities of the hatcheries, communication facilities, willingness etc., to evaluate and start working with them • Developed disease and bio-security documents of prawn hatchery by a hatchery consultant (Mr. Matt) • One hatchery (Indrazit hatchery) to breed Shing and Deshi Sarputi is selected at Faridpur
2.2.	Distribution of existing and imported improved strains of Rohu, Catla, Tilapia, shrimp and prawn to public and private nurseries/centers	• This is under process to select 400 carp nurseries (80 in Khulna, 100 in Jessore, 200 in Barisal and 20 in Faridpur), 70 Tilapia nurseries (10 in Khulna, 30 in Jessore, 20 in Barisal and 10 in Faridpur), 8 prawn nurseries (4 in Khulna and 4 in Barisal) and 100 shrimp nurseries from Khulna.
2.3.	Capacity building for staff and hatchery technicians	• A day-long workshop with old 6 carp hatcheries were held on 29 January 2013 at Barisal to share their progress, problems and solutions and make next year plan • One day training on brood and hatchery management was organized with participation of 12 hatchery owners was technicians was facilitated by a FtF consultant (Mr. Raj) on 12 February 2013 at Barisal • Weight balance, length scale and water parameter kits were supplied to field staff at Faridpur. • 2-days training on Carp and Tilapia hatchery management and improved brood stock development for quality seed production held on 21-22 March 2013
2.4.	Linkage building among actors associated with aquaculture value chain	• Next quarter
2.5.	Importing improved *Jayanti Rui* and Tilapia	• Next quarter
2.6.	Increase access to quality milt	• Next quarter
2.7.	Increase awareness, availability and use of PCR tested shrimp PLs	• 2,000 posters on screen shrimp PLs printed • 14.40 million virus free tested shrimp PL delivered to FtF project farmers

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
2.8.	Impact monitoring and evaluation equipped	• Impact survey has been started and analysis and report writing on-going • M&E Unit provided training to 256 field staffs & field supervisors and Technical Specialists (125 in Khulna, 12 in Jessore, 22 in Faridpur and 97 in Barisal) on "Introduce and share impact survey questionnaires and plan". • A list of 7134 outreach farmers prepared (Jessore 1806, Barisal 3793and Faridpur 1535) • On 28 March 2013, M&E unit organized to share nursery impact survey form to FtF Jessore staffs

1.3. ***Component-2: Household aquaculture***

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
	Component-2:- Household aquaculture	
2.1.	Program start-up	• 30 new field staffs (22 male and 8 female) were recruited on 2nd February 2013 by CODEC, Bagerhat in order to work with 10,000 new household fish farmers. • 61 new field staffs were recruited by PNGOs under Barisal region • 28 new field staffs (6 are female) have been recruited working from January 2013 to work with new households under Faridpur region • Barisal region instructed the SAVE to reduce their Horticulture Expert numbers from 6 to 4. • Two workshops were organized on 2 and 11 February 2013 to orient program to PNGOs and WF staffs at Barisal with participation of 60 staffs.
2.2.	Household nutrition and income from integrated homestead fish and vegetable cultivation increased in MYAP target groups (Barisal)	• Barisal region participated in Agriculture and Technology fair 2013 for demonstrating FtF technologies and achieved first prize. • New 2 Upazilas (Dashmina and Taltali) under Barisal region and 5 Upazilas (Boalmari, Sadarpur, Madaripur Sadar, Rajoir and Satiatpur) under Faridpur regions were selected to select new farmers for 2013 • New 18,182 household selected (77% are female) in Barisal and 2,066 in Faridpur • 725 groups in Barisal and 85 groups in Faridpur were formed with the new households • To identify value chain actors, SAVE and FtF jointly conducted 2 workshops at Patuakhali and Amtali of Barisal region. • Training unit conducted training on 'Household fish culture and dike cropping management' on 2-7 March 2013 at Barisal for capacity building of FtF PNGOs staffs
2.3.	Household nutrition and income from integrated homestead fish and vegetable cultivation increased in CREL target groups (Khulna).	• 2 batches of 5-days foundation training to 47 new field staffs (38 male 9 female) that are recruited to work with commercial fish farming held on 5-9 February and 10-14 February 2013 at CODEC training center, Bagerhat arranged by Training Unit. • All of targeted 10,000 household fish farmers have been selected by

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
		CODEC. • 400 groups formed and leaders for all groups were selected • Out of target 70 demo ponds, 30 were selected • 320 group meetings were organized with farmers to make effective training need assessment and training sessions plan • A panel test of orange fleshed sweet potato (OFSP) was organized at Pashim Gulishakhali village, Morelganj, Bagerhat. A total of 30 group members collected SP-4, SP-7, and SP-8 from their garden and cooked and tested.
2.9.	2.4 Refinement and increased adoption of Small Indigenous Species (SIS/SIS) production technologies and improved nutritional status of producing households	• 7 sources of Mola fish under CODEC, Bagerhat area identified and three sources were identified in the Barisal working area

1.4. ***Component-3: Commercial Aquaculture***

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
	Component -3 : Commercial Aquaculture	
2.10.	Expansion of commercial aquaculture in the southern region (Establish component management structures and finalize work plans)	• 91 new staffs were appointed to organize new shrimp and commercial fish (76 for shrimp and 15 for fish)
2.11.	Productivity and profitability of shrimp culture increased (Working with partner depots to develop commercial shrimp and prawn smallholder to improve yields and quality standards)	• One new Upazilas (Shamnagar) were selected to work in 2013 with shrimp farmers • New 20,000 shrimp farmers has been selected • 806 shrimp farmers' group formed and all of the group leaders has been selected under 38 old and 11 new depots • Out of target 101 shrimp demo ghers (old 22 and new 79), all potential domo farmers primarily selected to work in 2013 • Out of target 102 staffs (new and weak but old staffs), 2 batches of training on Basic Aquaculture and Aquatic Agricultural system completed and were trained 51 staffs. First batch was held on 23-27 March 2013 with 26 staffs and second batch was held on 28 March to 01 April 2013 with 25 staffs. • 193 group sessions were conducted
2.12.	Productivity and profitability of commercial pond-based aquaculture increased (Working with partner NGOs and association to develop commercial carp farmers to improve yields and quality standards)	• 4,792 commercial fish farmers selected distributed as 1,000 from Khulna, 1974 from Faridpur and 1818 from Barisal • 199 groups of commercial fish farmers were formed came from 40 in Khulna, 84 in Faridpur and 75 in Barisal. • 160 new fish rearing cages installed in different water bodies set up as 40 in Khulna, 50 in Faridpur, 50 in Barisal and 20 in Jessore region.

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
		• For cage, 7 new groups were formed (2 in Khulna, 2 in Faridpur, 2 in Barisal and 1 in Jessore • 65 nets of old cages were replaced and few cages were shifted in new location in Barisal • 50 new cages of Faridpur were set and stocked with 78,000 Tilapia fingerlings (25-30 gm. per fingerlings). These were 1600 were stocked in each of 20 cages and 1500 in each of 30 cages. • 30 cages of Jessore were stocked with 26,000 Tilapia fingerings (stocking size was 22gm). These were 25 cages were stocked with 1400 per cage, 5 cages were stocked with 1000 per cage. • A day-long training on 'Intensive Commercial Aquaculture" was held on 26 February at Faridpur and on 18 February at Jessore facilitated by a consultant (Mr. Shawquat) with participation 20 field staffs. • One super intensive Pangas farm established at Amtoli of Barisal region
2.13.	Commercial culture of new brackish water species established (Establishing the culture of 'new' commercial aquaculture species for the brackish water zone of the southern region)	• Different places namely Munshiganj, Satkhira, Digraj, Mongla, Patuakhali were visited to know prospect of Mud carb farming. • A consultant Mr. Colin Shelly visited to closed prawn hatchery and searched for suitability to convert into crab hatchery.
2.14.	Sector growth expanded through associations: Bangladesh Frozen Fish Export Association; Hatchery Associations; Producer Associations; Community Based Organizations	• Next quarter

1.5. *Component-4: Institutions and Policy*

Sl.	Major Outcomes	Key achievement and results Jan-Mar 2013
3.	***Component 4 - Institutions and Policy***	
3.1.	Improved public and private services for rural fish farmers in the southern region	• Next Quarter
3.2.	Support implementation of Bangladesh-India MOU for fisheries/aquaculture cooperation	• Next Quarter
3.3.	Operational system for collection, analysis and use of aquaculture statistics	• Review current aquaculture statistics system and requirements for improvement through developing and piloting aquaculture resources inventory (FAO/DoF) is initiated • In order to develop an aquaculture resource inventory module for two districts of varying aquaculture resources BSFF along with IRRI and WF would be working together from next quarter.

3.4.	Established Aquaculture Research Priorities -Aquaculture research cooperation strengthened between Bangladesh and US researchers	• Conduct stakeholder consultations and workshops to establish research priorities (contract to USDA Aquaculture Program) it will initiate in next quarter
3.5.	Reformed Policy and Regulatory Environment for Future Aquaculture Growth	• Regulations, tools and capacity to implement the new Hatchery Law • Regulations, tools and capacity to implement the new Feed Law

Annex 2: FtF Aqua Beneficiaries selected for FY 2013

Beneficiary type	**Barisal**		**Khulna**		**Faridpur**		**Jessore**		**Total**		Grand total
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	
Household Aqua Beneficiaries											
Number of Beneficiary	11869	18182	7896	10000		2060	80		19845	**30242**	50087
Group no	485	725	320	400		82	5		810	**1207**	2017
Household fish demo	96		64						160		
Commercial Fish Beneficiaries											
Number of Beneficiary	1982	1818	993	1393	1999	1980	9		4983	**5191**	10174
Group No	81	75	40	55	80	79			201	**209**	410
Commercial fish demo	20		10		20				50		
Commercial Shrimp Beneficiaries											
Number of Beneficiary			19997	20210					19997	**20210**	40207
Group No			765	808					765	**808**	1573
Shrimp demo			69						69		
Other Beneficiaries											
Carp nursery	106		54		30		21		211		
Shrimp nursery			50						50		
Hatchery	6	5		1	5	5	36	13	47	24	71
Cage	100	50	50	40	100	50	10	20	260	160	420
Outreach farmers		3793				1535		1806		**7134**	7134
Total Farmers	14073	20000	29133	31603	2049	4040	110	0	45365	55643	100468
Total Group	**566**	**800**	**1125**	**1263**	**80**	**161**	**5**	**0**	1776	**2224**	4000
Male (%)	22	23	62	59	93	62	61		51	**48**	
Female (%)	78	77	38	41	7	38	39		49	**52**	

Annex 3: Details of trainings and workshops organized during January to March 2013

Name of the training/workshop	Participant type	No. of participant			Date of training	Venue
		M	F	Total		
Experience Sharing Workshop with Old Carp Hatchery Owners	Hatchery owners	40	1	41	8-Jan-13	Montu Mia's Mango Garden
Quality Seed Production Through Improved Hatchery Management	New Tilapia/Catfish	24	1	25	10-Jan-13	FtF Jessore office
Experience Sharing Workshop with Old Tilapia Hatchery Owners	Old Tilapia hatchery owners	24	1	25	14-Jan-13	Parjaton, Benapole
Fish transportation and on Tilapia sex reversal technique and early sex identification for TSs	TSs and HTs	7	0	7	28-Jan-13	FtF Jessore office
Planning workshop	Old Hatchery staff	6	0	6	29-Jan-13	FtF Barisal Office
Program orientation	PNGO staff	54	6	60	2, 11 Feb	CODEC, Barisal
TOT on HH pond fish culture and dike cropping management	FO, Acct, FC, PC, TS,	34	3	37	5-9 Feb	CODEC training center, Bagerhat
Brood and hatchery management	Hatchery technician and new WF staff	12	0	12	12-Feb-13	Barisal
TOT on HH pond fish culture and dike cropping management	EF, FO, FC, TS	20	6	26	10-14 Feb	CODEC training center, Bagerhat
Effective field training strategy development	TS, FC, DTL, TO	29	0	29	17-Feb	Hotel Tiger garden International, Khulna
Nursery Management for Commercial Farming	Farmers	10	0	10	17-Feb-13	FtF Aq office, Jessore
Carp and Tilapia Hatchery Management and Improved Brood Stock Development for Quality Seed Production	FtF Staff, DoF/BFRI staff	18	1	19	21-22 Feb-13	RRF Jessore
Orientation and Sharing of Nursery Impact survey form	FtF Aq. Jessore staff	8	0	8	28-Feb-13	FtF Aq office, Jessore
TOT on HH pond fish culture and dike cropping management	MP, FS, DTL, TS	31	2	33	19-23 Feb	CODEC training center, Patuakhali
TOT on HH pond fish culture and dike cropping management	MP, FS, DTL, TS	35	1	36	24-28 Feb	CODEC training center, Patuakhali
Workshop on Nursery Management for large scale commercial aquaculture farmers	Commercial farmers, TS, FC	21	0	21	26-Feb	FtF conference room, Faridpur
TOT on HH pond fish culture and dike cropping management	NGO staff, FtF Aqua	28	7	35	03-07 March	CODEC
TOT on Commercial Aquaculture & dike cropping Management for FtF field staff	Hatchery staff, FtF Aqua	21	6	27	10-14 March	BAPARD, Kotalipara Gopalgonj
Introduce and share impact survey questionnaire and plan	EF, FC and TS	9	4	13	18-Mar	FtF Faridpur office

Introduce and share impact survey questionnaire and plan	EF, FC	8	1	9	20-Mar	Sonali Matsya hatchery Kotalipara, Gopalganj
Introduce and share impact survey questionnaire and plan	FO of CODEC	32	8	40	18-19 March	CODEC, Bagerhat
Introduce and share impact survey questionnaire and plan	Depot staff	20	0	20	16 and 20 March	Paikgacha
Tilapia and carp breeding Plan & genetic management for quality brood stock development and seed production	WorldFish staff	18	1	19	21-22 March	RRF, Jessore
TOT on Environment Friendly Shrimp culture and dike cropping management	Depot Staff	32	1	33	24-28 March	CODEC, Bagerhat
Orientation and Sharing of Nursery Impact survey form	WorldFish staff (TS & HT)	7	0	7	28-Mar	FtF Jessore Office
TOT on Environment Friendly Shrimp culture and dike cropping management	Depot staff	27	1	28	29 Mar-02 Apr	CODEc, Bagerhat
Introduce and share impact survey questionnaire and plan	MP/FS/SDTL	16	2	18	13-Mar-13	CODEC, Barisal
Introduce and share impact survey questionnaire and plan	Depot staff	23	3	26	16-Mar-13	ASC, Satkhira
Introduce and share impact survey questionnaire and plan	Depot staff	28	11	39	17-Mar-13	CODEC, Bagerhat
Introduce and share impact survey questionnaire and plan	Depot staff	20	0	20	20-Mar-13	FtF Office, Paikgacha
Introduce and share impact survey questionnaire and plan	MP/FS/DTL	33	7	40	19-Mar-13	SpeedTrust, Kalapara
Introduce and share impact survey questionnaire and plan	MP/FS/DTL	29	10	39	21-Mar-13	CODEC, Amtali
Introduce and share impact survey questionnaire and plan	EF/Data Enumerators	12	0	12	19-Mar-13	Jessore Office

Annex 4: FtF Aqua Supported Hatcheries for FY 2013

a. FtF Aqua supported new Hatcheries for FY 2013

Sl no	Region	Name of hatchery	Hatchery owner	Upazila	District	Hatchery type
1	Jessore	New Molla Fish Production Center	Shah Newaz Molla	Abhaynagar	Jessore	Carp
2	Barisal	South Vally Agro Fisharise Complex Ltd	Shamim Ahmed	Wazirpur	Barisal	Carp
3	Khulna	Sonali Motsho Hatchery	Abdul Jalil	Morrelganj	Bagerhat	Carp
4	Jessore	Gazi Motsho Hatchery	Gazi Md. Nuruzzaman	Maheshpur	Jhenaidah	Carp
5	Jessore	Hamza Hatchery	Idrish Ali	Kotwali	Jessore	Carp

Sl no	Region	Name of hatchery	Hatchery owner	Upazila	District	Hatchery type
6	Jessore	Rashida-Mohiuddin Fish Ltd	Hazi Moshiur Rahman(Shakil)	Sharsha	Jessore	Carp
7	Jessore	Anan Fish Hatchery	Khalid Shams(Babu)	Kotwali	Jessore	Carp
8	Jessore	Allahar Dan Motsho Hatchery	Moshiar Rahman-Ashadur	Kotwali	Jessore	Carp
9	Barisal	Hizla Agro Complex Ltd	Hahiz Ahmed	Hizla	Barisal	Carp
10	Barisal	M/S,Motsho Bangla Hatchery	Boshiruzzaman(Milon)	Nalchity	Jhalokati	Carp
11	Jessore	Mili Motsho Hatchery	Dilip-Shushanto	Kotwali	Jessore	Carp
12	Barisal	Rabeya Motsho Utpadon Center Hatchery	H.M. Shamsul Haque	Gaurnadi	Barisal	Carp
13	Jessore	Firoza Motsho Hatchery	Oliar Rahman	Kotwali	Jessore	Carp
14	Faridpur	F.S.Agro Fisherise ltd	Kamrul Hosen	Tungi Para	Gopalganj	Carp
15	Barisal	Chanchal Motsho Hatchery	Chanchal Biswas	Bauphal	Patuakhali	Carp
16	Jessore	Adhunik Motsho Chash Prokolpo	Shoukat hosen	Kotwali	Jessore	Carp
17	Jessore	Sagor Motsho Hatchery	Waheduzzaman	Kotwali	Jessore	Carp
18	Jessore	Boyshakhi Agro BD Ltd	Obaidur Rahman	Narail Sadar	Narail	Carp
19	Faridpur	Suraya-Noor Motsho Hatchery	Abu Naser	Balia Kandi	Rajbari	Carp
20	Faridpur	Sonaidanga Motsho Hatchery	Rafiqul Islam	Balia Kandi	Rajbari	Carp
21	Faridpur	Shejuti hatchery and dairy farm Ltd.	Sharafat Hossain	Boalmari	Faridpur	Carp
22	Faridpur	Haturia Khamar Bari Ltd.	Kazi Nasir Uddin	Gosairhat	Shariatpur	Carp
23	Faridpur	Sonali Hatchery	Motahr hossain sarker		Faridpur	Tilapia
24	Faridpur	Haturia Hatchery	Nasiruddin		Gopalgonj	Tilapia
25	Jessore	Sundorbon Mono Sex hatchery	Golam Murtuza	Avoynagar	Jessore	Tilapia
26	Jessore	HMM Matso Hatchery Ltd.	Md. Faruq	Avoynagar	Jessore	Tilapia
27	Jessore	New Mollah Fish production center	Shahnewaz	Tengulia., voynagar	Jessore	Tilapia
28	Jessore	R Rahman Agro farm	Bulbul	Narail Sdara Avoynagar	Jessore	Tilapia

b. FtF Aqua supported old hatcheries

sl	Region	Name of hatchery	Hatchery owner	Upazila	District	Hatchery type

sl	Region	Name of hatchery	Hatchery owner	Upazila	District	Hatchery type
1	Barisal	Bay of Bengal Fisheries and Dairy Complex Ltd.	Abdus Salam	Kala Para	Patuakhali	Carp and Tilapia
2	Barisal	Bhai Bhai Motsho Hatchery	Zakir Mridha	Galachipa	Patuakhali	Carp Hatchery
3	Barisal	CCDB Unmukta Hatchery	Mohoshin Khan	Gaurnadi	Barisal	Carp Hatchery
4	Barisal	Fulloshri Agro Farm Ltd.	Alamgir Hosen	Agailjhara	Barisal	Carp and Tilapia
5	Barisal	Shrom Projukti Motsho Utpadan Prokolpo	Nozrul Islam	Ujirpur	Barisal	Carp Hatchery
6	Barisal	Sonatala Motsha Hatchery	Zakir Hosen Miraz	Barguna Sadar	Barguna	Carp Hatchery
7	Faridpur	Ali Agro Pvt. Ltd.	Shahnewazzaman Chow	Gopalganj Sadar	Gopalganj	Carp and Tilapia
8	Faridpur	Indrajit Motsho Hatchery	Bishnuchandro Malo	Faridpur Sadar	Faridpur	Carp Hatchery
9	Faridpur	Molla Hatchery	Abu Bokkor Molla	Faridpur Sadar	Faridpur	Carp Hatchery
10	Faridpur	Prashanta Motsho Hatchery	Shamol Kumar Sikder	Balia Kandi	Faridpur	Carp Hatchery
11	Faridpur	Sonali Motsho Khamar	Motahar Hossain	Kotalipara	Gopalganj	Carp Hatchery
12	Jessore	Afil Aqua Fish Hatchery Limited	Afil Uddin	Sharsha	Jessore	Carp Hatchery
13	Jessore	Annan fish hatchery	Sheikh Khalid Shams (Babu)	Jessore Sadar	Jessore	Carp Hatchery
14	Jessore	Banchte Sheka Matschya Hatchery	Banchte Shekha	Jessore Sadar	Jessore	Carp Hatchery
15	Jessore	Bismillah matschya hatchery	Munshi Afsar Uddin	Jessore Sadar	Jessore	Carp Hatchery
16	Jessore	Chowdhury Matschya Hatchery	Alhaz Ikramul Islam Chowdhuri	Jessore Sadar	Jessore	Carp Hatchery
17	Jessore	Haque Fish Production Center	Mostofa Jamal	Jessore Sadar	Jessore	Carp Hatchery
18	Jessore	Jagorani chakra foundation fish hatc.	Jcf	Jessore Sadar	Jessore	Carp Hatchery
19	Jessore	Jessore fish hatchery	Md. Rezaul Haque	Jessore Sadar	Jessore	Carp Hatchery
20	Jessore	Kapotakkha fish hatchery	Md.Shamsuddin Islam	Jessore Sadar	Jessore	Carp Hatchery
21	Jessore	Karnafully Matschya Hatchery	Md. Mohimuddin Gazi	Jessore Sadar	Jessore	Carp Hatchery
22	Jessore	Lulu matschya hatchery	Md.Ohidulla Lulu	Jessore Sadar	Jessore	Carp Hatchery
23	Jessore	Ma-fatima fish hatchery	Md. Feroj Khan	Jessore Sadar	Jessore	Carp Hatchery
24	Jessore	Maowla Fish & Agricultural Farm	Yousuf Ali	Abhaynagar	Jessore	Carp Hatchery
25	Jessore	Matri Fish Hatchery & Integrated Farm	Md.Zahidur Rahman Golder	Jessore Sadar	Jessore	Carp Hatchery
26	Jessore	Matschya Kanon	Shahabuddin	Abhaynagar	Jessore	Carp Hatchery
27	Jessore	Modhumoti hatchery	Ekramul Kobir Pintu	Jessore Sadar	Jessore	Carp Hatchery

sl	Region	Name of hatchery	Hatchery owner	Upazila	District	Hatchery type
28	Jessore	Muktesswari Fish Hatchery	Md.Abdul Alim	Jessore Sadar	Jessore	Carp Hatchery
29	Jessore	Niribili Palli Hatchery	Md.Anowar Hossain Sardar	Jessore Sadar	Jessore	Carp Hatchery
30	Jessore	Nowapara fisheries complex	Md.Ruhul Kuddus	Abhaynagar	Jessore	Carp and Tilapia
31	Jessore	Pari fish hatchery	Md.Moslem Uddin	Jessore Sadar	Jessore	Carp Hatchery
32	Jessore	Prabir Matschya Khamar	Bhabotosh Biswas	Jessore Sadar	Jessore	Carp Hatchery
33	Jessore	Rita Matschya Hatchery	Md. Rofiqul Kobir (Babu)	Jessore Sadar	Jessore	Carp Hatchery
34	Jessore	Rupali fish hatchery	Hafez Sheikh Mezbah Uddin	Jessore Sadar	Jessore	Carp Hatchery
35	Jessore	Shuvro matschya hatchery	Md.Saifuzzaman	Jessore Sadar	Jessore	Carp Hatchery
36	Jessore	Soma & Eva fish hatchery	Indrojit Barmon	Jessore Sadar	Jessore	Carp Hatchery
37	Jessore	Sonali Matschya Hatchery	Sheikh Bahauddin	Jessore Sadar	Jessore	Carp Hatchery
38	Jessore	Umma hatchery & Matschya khamar	Nitai Chandra Barmon	Jessore Sadar	Jessore	Carp Hatchery
39	Barisal	Kalapara Prawn Hatchery	A.K.M.Aminur Islam		Patuakhali	Tilapia
40	Jessore	Noapara (Mono Sex) Tilapia Hatchery	Mizanur Rahman	Abhaynagar	Jessore	Tilapia
41	Jessore	M/S Khan Matsha Hatchery	Alhaj Abu Bakar Khan	Abhaynagar	Jessore	Tilapia
42	Jessore	Fultala Fish Hatchery	Md. Zakir Sardar	Abhaynagar	Jessore	Tilapia
43	Jessore	New Nawapara Tilapia Hatchery	Md. Zakir Hossain Mojomder	Abhaynagar	Jessore	Tilapia
44	Jessore	Golden Thai Monosex Tilapia Hatchery	S M Rekabul Islalm	Abhaynagar	Jessore	Tilapia
45	Jessore	Super Thai Tilapia Hatchery	Hazrat Ali	Abhaynagar	Jessore	Tilapia
46	Jessore	Genetic Fish Hatchery	Farazi Masudul Alam (Jargish)	Abhaynagar	Jessore	Tilapia
47	Jessore	Anik Monosex Tilapia Hatchery	Babu Bhabbesh Chadro Bouragi	Abhaynagar	Jessore	Tilapia
48	Jessore	Ava Limited	Najma Begum	Jessore Sadar	Jessore	Tilapia
49	Faridpur	Ali Agro Hatchery	Shah Niamuzzaman Chowdhury		Gopalgonj	Tilapia
50	Faridpur	Kalu Khalia Matsha Hatchery	Md. Moniruzzaman		Rajbari	Tilapia

Annex 5: FtF Aqua Supported Technology Demonstration for FY 2013

Detailed demo Interventions	Khulna	Jessore	Barisal	Faridpur	Total
Demonstration Old farms					
Fish nursery		21	60	10	91
Shrimp nursery	6				6
Commercial aq (Fish)	2	8	9	1	20
Commercial aq (Fish - Intensive)					
Commercial aq (Shrimp)	22				22
Commercial aq (Pangas - Intensive)					
HH Pond Demo	**11**	**3**	**40**		**54**
Old Demos	**41**	**32**	**109**	**11**	**193**
Demonstration new farms					
Fish nursery	5	14	55	30	104
Shrimp nursery	4				4
Commercial aq (Fish)	4		3	7	14
Commercial aq (Fish - Intensive)		11	2	7	20
Commercial aq (Shrimp)	79				79
HH Pond Demo	28		21		49
Total new demos	**120**	**25**	**81**	**44**	**270**
Grand Total	**161**	**57**	**190**	**55**	**463**

Annex 6: Commercial Demo Farmers Position at a glance

Sl No	Name	Organisation	Location	Nos of Pond	T. Area (Acres)	Selected Area(dec)	Technology	Last year Production (Mt/hac)	Terget of Produc. (Mt/hac)
1	Sofiqual Islam	Afil Agro complex	Jessore	35	26,400	2,000	Exotic Koi	8,645	12,350
2	Md.Fariduddin	Ava Fish Hat	Jessore	22	20,000	2,000	Exotic Koi	6,992	12,350
3	Abul kalam		Jessore	13	68,000	2,400	Exotic Koi	7,904	12,350
4	Md. Saifullah	Salima Fifheries	Jessore	09	50,000	2,400	Exotic Koi	8,398	12,350
5	Abdul Haq		Jessore	04	5,160	1,400	Exotic Koi	8,151	12,350
6	Abdur Rahman	Munshi Agro Complex	Jhenaidah	14	12,000	1,400	Exotic Koi	0	12,350
7	Mohashin hazi	R.M.Fisheries	Jessore	28	528,000	2,600	Exotic Koi	0	12,350
8	Salma Yesmin		Jessore	07	17,600	600	Exotic Koi	0	12,350

9	Kamrul Hossin	F.S Agro	Gopalganj	14	30,000	2,000	Exotic Koi	0	12,350
10	M.Rahman	Amin Fishery	Rajbari	14	40,000	2,400	Exotic Koi	0	12,350
11	Abu Nasir	Suraia noor	Rajbari	07	16,000	520	Exotic Koi	0	12,350
12	Ashok Das	Raj Hatcheris	Faridpur	06	14,200	1,600	Exotic Koi	0	12,350
13	Shamaprashad	Bijoi fisheries	Faridpur	10	28,000	1,400	Exotic Koi	0	12,350
14	Abdul Mannan		Jessore	02	4000	1600	Tilapia	7,163	14,820
15	Reajul Islam		Faridpur	10	24000	1600	Tilapia	7,904	14,820
16	Liton Mia	Liton Fisheries	Faridpur	06	8800	1000	Tilapia	0	14,820
17	Asaduzzaman	Axis Agro	Barisal	09	11000	1600	Tilapia	12,350	14,820
18	Md.Aminul		Borguna	12	16800	1600	Tilapia	5,928	14,820