Annual Activity Report-2016

(January-December, 2016)

Agricultural Advisory Society (AAS)

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Acronyms/Abbreviations

AAS	Agricultural Advisory Society
BADC	Bangladesh Agricultural Development Corporation
BAPA	Bangladesh Paribesh Andolon
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
Boro	Winter Rice, Transplanting: December-February
BRAC	Bangladesh Rural Advancement Committee
BRF	Bangladesh Rice Foundation
BRRI	Bangladesh Rice Research Institute
BTV	Bangladesh-Television
BVF	Bio-Village Forum
CABI	-
CBOs	Community Based Organizations
CCs	Community Coordinators
CIAT	Centro Internacial de Agriculture Tropical
CIMMYT	International Maize and Wheat Improvement Center
CSISA-BD	Cereal Systems Initiative for South Asia-Bangladesh
DAE	Department of Agricultural Extension
EC	Executive Committee
ED	Executive Director
FAMPAT	Farmer's participatory training
FAO	Food and Agriculture Organization
FARMSEED	Farmer-to-farmer seed exchange system
FGD	Focused Group Discussion
FtF	Feed the Future
gm	Gram
GPS	Global Positioning System
IFPRI	International Food Policy Research Institute
IRRI	International Rice Research Institute
JOBS	-
Kg	kilogram
MEAS	Modernizing Extension and Advisory Services
MOU	Memorandum of Understanding
NGOs	Non-Government Organizations
No.	Number
NPNL	non-pregnant, non-lactating
PC	Project Coordinator
POs	Partner Organizations
PRISM	-
RDA	Rural Development Academy
RPFs	Resource Poor Farmers
T.Aman	Late Summer Rice, Transplanting Aman: July-August/September
T.Aus	Early Summer rice, Transplanting: March-April
t/ha	ton/hectare
Tk./kg	Taka/ kilogram

I. Vision

To promote sustainable agricultural production strategies in order to improve the livelihood of Bangladesh's rural poor.

II. Mission

To create more wealth in the hands of small and poor farmers, by improving their agricultural skills and capacities and by demonstrating ways in which they can better manage their available resources.

III. Background of AAS

The AAS Approach to Agricultural Development: AAS has, from its earliest days, approached the challenges of agricultural development in Bangladesh from the perspective that Bangladesh, after all, is a rich country, blessed with abundant agricultural resources, (i.e., fertile land, plenty of low cost farm labor and abundant reserves of easily available, continuously renewed fresh water). AAS believes that Bangladesh's endemic poverty is simply a reflection of its lack of capacity to effectively manage its rich endowment of agricultural resources. Furthermore, the nation has been too slow in developing its agricultural production capacity. Accordingly, AAS has focused its available energies on helping Bangladesh's farmers to become more productive; to, in the context of their rich land, small plots, plentiful labor resources and abundant supplies of fresh water, substantially increase their output.

AAS's sustainable agricultural development strategies are focused on:

- ***Modifying traditional agricultural practices to accommodate sustainable higher yielding production practices***
- ***Advocating the use of sustainable intensive cropping, fishery and livestock production and investment strategies***
- ***Using field based demonstrations to model " a higher standard of best practice"***
- ***Popularizing its strategies through a network of community based partners***
- ***Using state of the art training modules: Farmer's participatory training (FAMPAT) and Focused Group Discussions (FGD) to overcome knowledge and skill deficits***
- ***Emphasizing poverty alleviation, gender equity, environmental preservation, value chain and supply chain strategies***
- ***Promoting participatory approaches at every stage of project planning and implementation***

Bangladesh has traditionally been a rice-based society; indeed, it remains so today. Now that the country has reached food-grain self-sufficiency but food and nutrition security for all is the utmost challenge for the nation, AAS is pioneering the introduction and popularization of high value, non-rice and specialty-rice crops along with their in-field irrigation technique. AAS has made a material contribution to the introduction and popularization of new, higher yielding strains of well-known vegetable, fruits, spices and specialty rice varieties. Through its

demonstration based training programs, AAS has helped small plot cultivators adapt their farming practices to accommodate the requirements of higher value, higher yielding crops, fishery (fish fattening strategies) and livestock. AAS is using state of the art training methodologies to accelerate the uptake of promising new varieties and improved agricultural technologies. Accordingly, AAS's agricultural programs have materially affected the capacity of Bangladesh's small plot farmers to increase their wealth on the basis of a more efficient use of their quite formidable resources. Their results have been impressive.

IV. Background of AAS Establishment

The idea of establishing an agricultural NGO to provide quality technical support to other, more generic NGOs; developing their capacity in the field of agriculture was first mooted by a group of prominent professionals including Dr. David Gisselquest, Mr. Harun-Ar-Rashid, Dr. A.J.M Azizul Islam, William H. Derrenger, Dr. Noel P. Magor, Carol M. Gisselquist, Dr. Tariful Islam, Dr. Goyanath Sarker and Dr. Humayun Kabir in 1989. With this end in view, this group formed a non-profit, non-political, rural service provider and civil society organization called Agricultural Advisory Services. To meet government and registration requirements the name was later changed to Agricultural Advisory Society (AAS) from January 1991.

Since its inception, AAS has implemented a numerous projects to alleviate poverty among the resource poor and small farmers of Bangladesh. AAS has been working as a bridging organization for technology transfer between farmers, partner organizations (POs), community based organization (CBOs), input/output traders, private companies, relevant public sector actors, such as Department of Agricultural Extension (DAE) and other research institutions (eg. BRRI for rice technology, BARI for non-rice crop technology and BADC as a source of foundation and certified seed, etc).

V. Project Activities and Achievements

AAS implemented a number of projects/activities to alleviate poverty and create new wealth among the resource poor and small farm families of Bangladesh. The major activities and achievements of AAS during **January to December 2016** are as follows:

A. Video show research project

1. Background

As per agreement between the International Maize and Wheat Improvement Centre (CIMMYT) and Agricultural Advisory Society (AAS), CIMMYT-BD has engaged AAS to increase knowledge, skill and practice (KSP) of farmers on quality rice seedlings production through video show on healthy rice seedlings production under the approved project on "conducting video show on healthy rice seedlings production during 2016 Boro season" in 20 upazilas of 8 project districts within Jessore and Faridpur CIMMYT-BD hubs in south west region of the country. As per provision within the agreement between CIMMYT-BD and AAS, brief description on the progress/achievement of the assigned activities are presented in this section of the report covering the completed project cycle during 1 October 2016 to 31 December 2016 in 20 upazilas of eight project districts under two CIMMYT-BD hubs (**Jessore hub:** Narail, Jessore,

Jhenaidah and Chuadanga districts and **Faridpur hub:** Gopalganj, Madaripur, Faridpur and Rajbari districts).

2. Project location and logistics

The approved activities of the project were implemented in 20 upazilas of eight districts (Jessore, Narail, Jhenaidah, Chuadanga, Rajbari, Faridpur, Madaripur and Gopalganj districts) in the south western region based on the suggestion made by CSISA-III project staff of CIMMYT-BD. Among the eight project districts, the highest number of involved upazilas was involved for Rajbari and Jessore districts (4) followed by Faridpur and Jhenaidah districts (3), Chuadanga and Narail districts (2) and minimum upazila in Gopalganj and Madaripur districts (1) within 20 FTF districts in southern regions in the country. The project eight districts within 20 FTF districts are shown in Figure.2.

AAS deployed seven staffs (1 Project Coordinator, 2 Team Leaders, 2 Field Coordinators and 2 IT operators -ITOs) to implement the decided activities of the approved project in 20 upazilas of eight districts under two CIMMYT-BD hubs. Harun-Ar-Rashid, Executive Director, AAS worked as the Project Coordinator as shared time (4 days/month) based in Dhaka.

AAS assigned project staff hired two microbus with reasonable rental rate from Jessore district. AAS financial staff managed the approved fund expenses for the implementation of the project activities. AAS arranged other relevant logistic supports required for the implementation of approved project activities in eight districts within Faridpur and Jessore hubs of CIMMYT-BD.

The staffs of two video show teams were provided two sets of video show equipment, large screen with stand, banners with iron made stand, tables, black cloth for shed etc. before administering the video show at the selected locations in 20 upazilas of eight project districts within two CIMMYT-BD hubs.

3. Project staff training

AAS conducted one day training for the involved project staffs at AAS training room, AAS HQ, Lalmatia, Dhaka on 6 October 2016 on the project implementation planning and guidelines for the implementation of project activities and their target along with the achievement strategy in eight districts under Faridpur and Jessore CIMMYT-BD hubs. The training for one day was conducted by Harun-Ar-Rashid, Executive Director, AAS and Project Coordinator (PC) of video show project of CIMMYT-BD.

4. Administering video show

At the beginning of the video show project, project staff collected the list of the video show locations (villages) from CSISA-III staff of Faridpur and Jessore hubs of CIMMYT-BD. Later, project staff finalized the video show event schedule (venue, date & time) in consultation with community coordinators/lead farmers and other relevant stakeholders under the overall guidance of the assigned CSISA-III staff of two CIMMYT-BD hubs. Accordingly, total of 498 events schedule finalized at 498 locations and total of 498 video show events implemented in eight districts upon approval from CSISA-III staff of two CIMMYT-BD hubs.

The project staff implemented 498 video show events at 498 communities (185 villages) in 20 upazilas of eight districts within Faridpur and Jessore CIMMYT-BD hubs (Table.1) following a

decided “Protocol of video show”. The decided protocol of a video show event is presented in Figure.1.

Figure.1: Protocol of Video Show Event

Protocol:

Video Show Event

(2016 Boro)

Set-up Banner

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Set-up Multi Media Presentation (MMP) Equipment

↓

Registration

(Participants list preparation)

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Conduct Video Show

↓

Conduct Q & A session at Plenary

↓

Introduction of Community Coordinator

↓

Record GPS Coordinates

Project prepared two sets of banners for two video show teams for fixing the banners at each video show event under the guidelines and design provided by the CIMMYT-BD. Project staff also prepared iron made folded two stands for conveniently fixing the banner at each event site of video shows in eight districts.

As per presented protocol of a video show event and at the beginning of the event, the project staffs (ITOs, TLs and FCs) along with micro bus drivers were responsible for fixing the banner on the iron made movable and folded stand at the most visible place at 498 video show event venues. Both ITOs were responsible as lead persons in collaboration with project TLs, FCs and micro drivers for set-up the multimedia presentation equipment, large screen and black cloth shed (during day time) at the most convenient place at the venues for the audiences. The project staffs were responsible to register the majority of the farmer participants during the event show period using the monitoring format. In case of documentation of the large number of total audiences (excluding children, under aged audiences etc.) through head counting by the community representatives; and other relevant stakeholders under the facilitation of TLs & FCs of the video show project during the video show events. Project ITOs conducted video show on large screen with an introductory speech by the TL/FC of the project. After video show, project staff (TL, FC and ITO) was conducted the question & answer (Q & A) session at plenary as an

open floor to all audiences of the video show event. After Q & A session, community coordinator was introduced among the audiences at each video show event venue. A follow-up video show event was conducted after the Q & A session on the basis of demand from the audiences. At the end of video show, project staff recorded GPS coordinates by either GPS machine or smart phone at each video show event site.

The project implemented the video show activities at 498 communities (185 villages) in 66 unions under 20 upazilas in eight districts (Faridpur, Gopalganj, Rajbari, Madaripur, Jessore, Chuadanga, Jhenaidah and Narail districts) within the command area of two CIMMYT-BD hubs in southern regions of Bangladesh (Table.1).

5. Video show events

Total of 498 video show events conducted by two video show teams at 498 communities (185 villages) in 66 unions in 20 upazilas of eight districts within two CIMMYT-BD hubs during 20 October 2016 to 20 December 2016. Of the total 498 video show events, of which 245 video show events conducted in Faridpur hub and 253 video show events conducted in Jessore hub. Among the eight project districts, the highest number of video show events conducted in Rajbari district (159) followed by Jhenaidah district (98), Jessore district (81), Faridpur district (62), Chuadanga district (54), Narail district (20), Gopalganj district (13) and the lowest in Madaripur district (11). Out of a total of 185 video show conducted villages, of which the highest number of villages was conducted video shows in Rajbari district (62 villages) followed by Faridpur district (35 villages), Jessore district (26 villages), Jhenaidah district (25 villages), Chuadanga district (15 villages), Gopalganj district (9 villages) and Madaripur district (6 villages).Total of 498 video show events conducted during 20 October 2016 to 20 December 2016 (62 days) with an average about 4 video show events per team per day at 498 communities in 20 upazilas of eight districts. Total of 498 video show events conducted at 185 villages in 66 unions under 20 upazilas of eight districts of two CIMMYT-BD hubs are presented in Table.1.

Table.1: Summary locations (No. of villages, unions, upazilas and districts) of 498 video show events under 2 CIMMYT-BD hubs

Hub	District	Upazila (No.)	Union (No.)	Village (No.)	Events (No.)
Faridpur	Faridpur	3	12	35	62
	Gopalganj	1	2	9	13
	Rajbari	4	17	62	159
	Madaripur	1	3	6	11
FaridpurHubTotal		**9**	**34**	**112**	**245**
Jessore	Chuadanga	**2**	6	15	54
	Jessore	4	12	26	81
	Jhenaidah	3	12	25	98
	Narail	2	2	7	20
Jessore HubTotal		**11**	**32**	**73**	**253**
Grand Total		**20**	**66**	**185**	**498**

6. Venue type for video show

Total of 498 video show events conducted at 14 types of venues in the project areas, of which the highest number of videos show events conducted at farmer house (281) followed by market place (68), in front of shop (53), educational institution field (32), road side (25), religious establishment field (23), union parishad campus (5), tea-stall (4), club field (2) and least number of video show events conducted in rail gate field, NGO office ground, bus stand, hospital field and pouroshova field (1). Out of a total of 281 video show events conducted at farmer houses, of which the higher number of video show events was conducted at farmer house in Faridpur hub (151 events) than Jessore hubs (130 events). Venue type-wise number of video show event(s) in two CIMMYT-BD hubs is presented in Table.2.

Table.2: Venue type-wise number of video show events under 2 CIMMYT-BD hubs

Venue Types	Event (No.)		
	Faridpur Hub	Jessore Hub	Total
Rail gate field	1	0	1
Religious Establishment field	8	15	23
Educational Institution field	10	22	32
Farmer house	151	130	281
Hospital field	1	0	1
Market place	39	29	68
NGO office ground	1	0	1
Road Side	2	23	25
In front of Shop	25	28	53
Tea-stall	3	1	4
Union Parishad Campus	4	1	5
Bus stand	0	1	1
Club field	0	2	2
Pouroshova field	0	1	1
Total	**245**	**253**	**498**

7. Audiences at video show events

Total of 52,603 audiences watched video shows at 498 video show events at 498 communities (185 villages) in 66 unions in 20 upazilas of eight districts under two CIMMYT-BD hubs, of which 71% male audiences (37,126) and 29% female audiences (15,477) was calculated. Average about 106 audiences watched video show per video show event, which was observed higher in Faridpur hub (110 audiences/events) than Jessore hub (101audiences/event). The higher number of audiences watched video show in Faridpur hub (27,056) than Jessore hub (25,547). Among the eight districts, the highest number of audiences watched video show in Rajbari district (17,073) followed by Jhenaidah district (10,136), Jessore district (8,447), Faridpur district (6,765), Chuadanga district (4,232), Narail district (2,732), Gopalganj district (1,818) and Madaripur district (1,400). Out of a total of 15,477 female audiences watched video show, of which the higher number of female audiences watched video show in Faridpur hub (7,774) than Jessore hub (7,703). Among the eight involved project districts, the highest number of female audiences watched video show in Rajbari district (5,382) followed by Jhenaidah district (3,379), Jessore district (2,359), Faridpur district (1,598), Chuadanga district (1,497), Narail district (468), Gopalganj district (448) and Madaripur district (346). Of the total 37,126 male audiences

watched video show, of which the highest number of male audiences watched video show in Rajbari district (11,691) followed by Jhenaidah district (6,757), Jessore district (6,088), Faridpur district (5,167), Chuadanga district (2,735), Narail district (2,264), Gopalganj district (1,370) and Madaripur district (1,054). Among the eight involved project districts, the highest number of audiences per event was calculated in Gopalganj district (140 audiences/event) followed by Narail district (137 audiences/event). Madaripur district (127audiences/event), Faridpur district (109 audiences/event), Rajbari district (107audiences/event), Jessore district (104 audiences/event), Jhenaidah district (103 audiences/event) and Chuadanga district (78 audiences/event). Hub and district wise documented number of male, female and total audiences in eight districts under two CIMMYT-BD hubs is presented in Table.3.

Table.3: Number of audiences of 498 video show events and number of audiences registered in eight districts under two CIMMYT-BD hubs

Hub	District	Event (No.)	Audience (No.)			Audience / event (No.)	Audience registered (No.)
			Male	Female	Total		
Faridpur	Faridpur	62	5167	1598	6765	109.12	3893
	Gopalganj	13	1370	448	1818	139.84	831
	Rajbari	159	11691	5382	17073	107.37	11895
	Madaripur	11	1054	346	1400	127.17	619
Faridpur Hub Total		**245**	**19282**	**7774**	**27056**	**110.43**	**17238**
Jessore	Chuadanga	54	2735	1497	4232	78.37	3806
	Jessore	81	6088	2359	8447	104.28	6838
	Jhenaidah	98	6757	3379	10136	103.42	7740
	Narail	20	2264	468	2732	136.60	1555
Jessore Hub Total		**253**	**17844**	**7703**	**25547**	**100.97**	**19939**
Grand Total		**498**	**37126**	**15477**	**52603**	**105.62**	**37177**

8. Registration of audiences

Out of a total of 52,603 audiences' watched video show in eight districts, of which 71% audiences (37,177) was registered on monitoring format at 498 events in 20 upazilas of eight districts. Of the total 37,177 registered audiences, of which 62% registered audiences were male and 38% registered audiences were female. Out of a total of 37,177 registered audiences, of which the higher number of registered audiences was observed in Jessore hub (19,939) than Faridpur hub (17,238). Among the eight involved project districts, the highest registered audiences was found in Rajbari district (11,895) followed by Jhenaidah district (7,740), Jessore district (6,838), Faridpur district (3,893), Chuadanga district (3,806), Narail (1,555), Gopalganj district (831) and Madaripur district (619). Of the total 13,948 female registered audiences, the higher female registered audiences were calculated in Jessore hub (7,702) than Faridpur hub (6,246). Among the eight districts, the highest number of female registered audiences was calculated in Rajbari district (4,533) followed by Jhenaidah district (3,379), Jessore district (2,358), Chuadanga district (1,497), Faridpur district (1,242), Narail district (468), Gopalganj district (301) and Madaripur district (170). Of the total 23,229 male registered audiences, the higher male registered audiences were found in Jessore hub (12,237) than Faridpur hub (10,992). Among the eight districts, the highest number of male registered audiences was found in Rajbari district (7,362) followed by Jessore district (4,480), Jhenaidah district (4,361),

Faridpur district (2,651), Chuadanga district (2,309), Narail district (1,087), Gopalganj district (530) and Madaripur district (449). Number of registered male, female and total audiences in eight districts under two CIMMYT-BD hubs is presented in Table.4.

Table.4: Number of registered total audiences, male and female in eight districts under two CIMMYT-BD hubs

Hub	District	Total Registered	Gender	
			Male	Female
Faridpur	Faridpur	3893	2651	1242
	Gopalganj	831	530	301
	Rajbari	11895	7362	4533
	Madaripur	619	449	170
Total Faridpur Hub		**17238**	**10992**	**6246**
Jessore	Chuadanga	3806	2309	1497
	Jessore	6838	4480	2358
	Jhenaidah	7740	4361	3379
	Narail	1555	1087	468
Total Jessore Hub		**19939**	**12237**	**7702**
Grand Total		**37177**	**23229**	**13948**

9. Community Coordinators

Total of 498 community coordinators (CCs) enlisted for 498 communities (average 1CC/community) in 20 upazilas of eight project districts under two CIMMYT-BD hubs. Of the total 498 enlisted Community Coordinators, the higher number of community coordinators was enlisted for Jessore hub (253) than Faridpur hubs (245). Among the eight project districts, the highest number of community coordinators was enlisted in Rajbari district (159) followed by Jhenaidah district (98), Jessore district (81), Faridpur district (62), Chuadanga district (54), Narail district (20), Gopalganj district (13) and Madaripur district (11). The number of enlisted community coordinators in eight districts under two CIMMYT-BD hubs is presented in Table.5.

Table.5: Number of enlisted community coordinators in eight districts under two CIMMYT-BD hubs

Hub	District	Events (No)	CCs (No.)	Event/CC (No.)
Faridpur	Faridpur	62	62	1
	Gopalganj	13	13	1
	Rajbari	159	159	1
	Madaripur	11	11	1
Total Faridpur Hub		**245**	**245**	**1**
Jessore	Chuadanga	54	54	1
	Jessore	81	81	1
	Jhenaidah	98	98	1
	Narail	20	20	1
Total Jessore Hub		**253**	**253**	**1**
Grand Total/Average		**498**	**498**	**1**

10. GPS Coordinates recording

Project trained field staff (TLs, FCs & ITOs) collected 498 GPS Coordinates of 498 video show event venues in 20 upazilas of eight districts under two CIMMYT-BD hubs in southern regions of the country either by the GPS machines or by the smart phones. The collected GPS Coordinates were documented as hard copy on the pre-decided format and the collected GPS values were entered in Excel sheet in the computer. These values can be used for GIS mapping on the implemented 498 video show events at 498 communities in 20 upazilas of eight districts in southern regions.

11. Lessons learned

1. Implementation of video show was not possible under only the black cloth shed in the bright sunlight during the day time as open sky show. But video show was successfully implemented after placing the white screen inside the black cloth shed under the shading of tress, bamboo bush and house building during day time with bright sunlight.

2. Implementation of large number of video show events (498 events or 4 events/day/team) was possible to achieve during 62 days (20 October-20 December 2016) period with two small video show teams through using community based approaches and placing screen inside the black cloth shed under the shading of trees, bamboo bush and house building during day time in 20 upazilas of eight districts under Faridpur and Jessore hubs of CIMMYT-BD. Such large number of video show events (498 events) with large number of documented audiences (52,603 farmer audiences or 106 audiences/event) was implemented through community based group approach using free-lance social workers (farmers) as community coordinator for each community based informal farmers group. Accordingly, AAS's devoted two small video show teams in collaboration with motivated community coordinators was much successful to implement such large number of video show events with large number of audiences as effective and cost-effective manner in eight districts within two-hubs of CIMMYT-BD.

3. Higher number of women audiences' participation was observed when video show events were implemented with the cluster of large number of houses of the community in eight project districts. Such participation of female audiences was observed much higher in the Hindu Communities; where they are socially accustom to attend such social events. Women participation was found very minimum, when video show events were arranged at market place, school field, road side etc. Women participation was found encouraging during 9:30 am-11:30 am and 5:30-7:30 pm at their communities due to less engagement in their household works.

4. Farmers' (sellers and buyers) participation was found as part time at the video show event during market day at the market place due to their pre-decided tasks at the market. Mostly market intermediaries (actors) were found reluctant to watch video show. To select the suitable space for video show was found difficult during market day at market place. Participation of male farmers was found discouraging, when video show event was organized near by the village of the market place during market day.

5. Higher number of audiences participation was observed at market place (non-market day), road side, tea stall etc. during early evening video show event in eight project districts. Moderate number of audiences participation was observed at market place (non-market day), road side, tea stall etc during late afternoon (after Asar Prayer) video show in eight project districts.

6. Registration of audiences in general was found as difficult task due to several reasons and reasons are (i) farmers are reluctant to register their name as participants through providing information and putting signature, (ii) Lack of time, (iii) sometime too much audiences, (iv) night time video show administration and darkness, (v) disturbing the audiences during video show time, etc. Most audiences were claimed for allowances or snack packets during registration. Moreover, most of the women audiences were reluctant to provide their name, age, cell phone number, their husband's name and putting signature on the format during registration. In general, women are not socially accustomed to provide such information during the registration.

7. After watching video show, most of the farmers' audiences were acknowledged and appreciated the content of the video on seed testing, seed sorting through floating method, seed treatment with fungicide, seed soaking, seed stacking for sprouting, seed rate for use, ideal seedbed preparation, polythene cover used during winter months under low temperature, seedlings uprooting and transportation as the new techniques for quality and healthy rice seedlings production.

8. Question and answer (Q&A) session of the video show event was found as learning session for the concerned farmers' audiences. Average about 70% of the audiences was stayed during Q&A session after first round of video show and only demanded parts of video content was replayed during Q&A session after first round of video show for the better understanding of the interested audiences. Second round of video show was implemented at about 80% of the total video show event venues based on the demand from the audiences. Thus, knowledge retention of the audiences on the video content could be improved lot through implementation of Q&A session after first round of video show followed by second round of video show at the same event venue.

9. There was demand for leaflet on healthy rice seedlings production techniques during Q&A session for proper use of the techniques through reading the leaflet.

10. Video content on the healthy rice seedlings production techniques was downloaded into the cell phone memory among about 3% of the total audiences (about 1500 audiences) for watching the content of the video on the screen of their cell phones. This might be an interesting way to disseminate the agricultural technology through cell phone in the country.

11. In some selected villages, most of the farmers (those who grow high value non-rice crops) were found as reluctant to watch the video show on healthy rice seedlings production.

12. Total of 498 community coordinators were selected and introduced during video show events. Most of them were found very much useful in implementation of 498 video show events successful in eight project districts. Majority of the involved community coordinators feel proud due to increase their social respect and value. Accordingly, the involved community coordinators will be very much useful in future for the project activities implementation in those communities in 20 upazilas of eight project districts.

13. There was a big demand from audiences that the video content should be drama based and joyful.

B. Delivery of Zinc Rice in Bangladesh

Background

Zinc is essential for normal growth and immune function of the human body. Zinc deficiency is the most prevalent nutritional deficiency in Bangladesh, affect 45% of pre-school children and 57% of NPNL (non-pregnant, non-lactating) women. Rice is the primary food source in Bangladesh, providing 70% of per capita calorie intakes and could thus serve as a useful food vehicle for zinc. This could be achieved by developing high zinc rice variety for cultivation and consumption of high zinc rice would be able to prevent our dietary zinc deficiency. Accordingly, AAS has been working to disseminate zinc enrich rice varieties through implementing a project on Delivery of High Zinc Rice in Bangladesh under the funding support from HarvestPlus Bangladesh in southwest and northwest districts since 15 November 2013.

BRRI developed BRRI dhan62 as zinc enrich modern rice variety for cultivation during T.Aman season and consequently National Seed Board (NSB) approved it in 2013 for cultivation during T.Aman season in the country. The variety contains 19 milligram of zinc in one kilogram of cleaned rice and 9 percent of protein, which would ensure better nutrition for our people. It is a photoperiod insensitive variety released for cultivation during T.Aman season. It is one of the short duration T.Aman season varieties. The average yield of BRRI dhan62 is as much as 4.5 tons per hectare of land during T.Aman season. The size of rice is medium long slender and white in color.

BRRI developed BRRI dhan64 as zinc enrich modern rice variety for cultivation during Boro season and consequently National Seed Board (NSB) approved it in 2014 for cultivation during Boro season in the country. The variety contains 24 milligram of zinc in one kilogram of cleaned rice and 9 percent of protein, which would ensure better nutrition for our people. It is a photoperiod insensitive variety released for cultivation during Boro season. It is one of the short duration Boro season varieties. The average yield of BRRI dhan64 is as much as 7 tons per hectare of land during Boro season. The size of clean rice is medium bold and white in color.

BRRI developed BRRI dhan72 as zinc enrich modern rice variety for cultivation during T.Aman season and consequently National Seed Board (NSB) approved it in 2015 for cultivation during T.Aman season in the country. The variety contains 22.8 milligram of zinc in one kilogram of cleaned rice and 8.9 percent of protein, which would ensure better nutrition for our people. Life cycle is between 125-130 days. Plant height is about 116 cm and lodging resistant. Flag leaf is broad, thick and dark green in color. The average yield of BRRI dhan72 is as much as 7.5 tons

per hectare of land during T.Aman season. The size of rice grains is long bold and white in color. 1000 grains weight is about 28 gm.

An Agreement Between Centro Internacionalde Agricultura Tropical (CIAT) and the International Food Policy Research Institute (IFPRI)-HarvestPlus Challenge Program and Agricultural Advisory Society (AAS) (the Collaborator) was made to demonstrate and create awareness on adopting high Zinc rice cultivars among the end users in Gopalganj, Narail, Habiganj and Moulvibazar districts for the 12 months project period during 15 November 2015 to 29 November 2016. As per the agreement, AAS is responsible for dissemination of BRRI dhan64 and BRRI dhan62 as high zinc modern rice varieties during 2015-16 Boro season and 2016 T.Aman season in four districts in the southwest (SW) region (Gopalganj and Narail districts) and in the north east (NE) regions (Habiganj and Moulvibazar districts) of the country.

During 2016 reporting period, AAS was implemented the activities on Delivery of High Zinc Rice in Bangladesh project in Moulvibazar, Habiganj, B' Baria, Jhenaidah, Magura, Gopalganj, Jessore and Narail districts during 2015-16 Boro season and 2016 T.Aman season and their brief description is provided below:

(i) 2015-16 Boro Season

1. Project area and target household

The approved project on the delivery of zinc rice in Bangladesh was implemented on BRRI dhan64 with full demonstration (100 plots) and minikit demonstration (400 plots) during 2015-16 Boro season with 500 farm households (100 full demo farmers and 400 minikit demo farmers) at 21 villages in 12 unions in 4 upazilas of Gopalganj district (Sadar, Tungipara and Kasiani upazilas) and Narail district (Sadar upazila) in southwest (SW) region of the country during 15 November 2015 to 31 May 2016 (Table.6).

Table.6: Upazila-wise number of union and village, selected demo farmer and plot, seed used under full demo and minikit demo of BRRI dhan64 in Gopalganj and Narail districts under southwest region during 2015-16 Boro season

District	Upazila	Union (No.)	Village (No.)	Farmer (No.)			Plot (No.)			Seed Quantity (Kg)		
				Male	Female	Total	Demo	Minikit	Total	Demo	Minikit	Total
Gopalganj	Sadar	6	11	173	55	228	50	178	228	200	534	734
	Kashiani	1	2	7	33	40	0	40	40	0	120	120
	Tungipara	3	4	93	35	128	25	103	128	100	309	409
Gopalganj Total		**10**	**17**	**273**	**123**	**396**	**75**	**321**	**396**	**300**	**963**	**1263**
Narail	Sadar	2	4	84	20	104	25	79	104	100	237	337
Narail Total		**2**	**4**	**84**	**20**	**104**	**25**	**79**	**104**	**100**	**237**	**337**
Grand Total		**12**	**21**	**357**	**143**	**500**	**100**	**400**	**500**	**400**	**1200**	**1600**

The approved project on the Delivery of Zinc Rice in Bangladesh was implemented on BRRI dhan62 as free seed demonstration on 1300 plots with 1300 farm households at 99 villages in 38 unions of 17 upazilas in Gopalganj district (Sadar, Kashiani & Tungipara upazilas), Narail district (Sadar upazila), Magura district (Mohammadpur and Salikha upazilas), Jhenaidah district (Sadar and Kaliganj upazilas), Jessore district (Sadar and Monirampur upazilas), B'Baria district (Bijoynagar upazila), Habiganj district (Bahubal, Sadar and Madobpur upazilas) and Moulvibazar district (Sadar, Rajnagar and Srimangal upazilas) within southwest (SW) and northeast (NE) regions of the country during 15 November 2015 to 31 May 2016 (Table 7).

Table.7: Upazila-wise number of village and union, farmer and amount of seed distributed for BRRI dhan62 under free seed distribution during 2016 Boro season in eight districts of SW and NE regions

District	Upazila	Union (No.)	Village (No.)	Farmer (No.)	Seed distributed (Kg.)
I. North East (NE) Region					
B'Baria	Bijoynagar	1	10	52	156
B'Baria Total		**1**	**10**	**52**	**156**
Habiganj	Bahubal	2	6	64	192
	Sadar	2	10	76	228
	Madobpur	1	1	10	30
Habiganj Total		**5**	**17**	**150**	**450**
Moulvibazar	Sadar	2	13	162	486
	Raj Nagar	2	9	108	324
	Srimangal	2	5	128	384
Moulvibazar Total		**6**	**27**	**398**	**1194**
NE Total		**12**	**54**	**600**	**1800**
II. South West (SW) Region					
Gopalganj	Sadar	6	11	154	462
	Kasiani	1	2	40	120
	Tungipara	3	4	106	318
Gopalganj Total		**10**	**17**	**300**	**900**
Jessore	Sadar	3	5	39	117
	Monirampur	5	12	120	360
Jessore Total		**8**	**17**	**159**	**477**
Jhenaidah	Sadar	2	2	10	30
	Kaliganj	2	3	60	180
Jhenaidah Total		**4**	**5**	**70**	**210**
Magura	Mohammadpur	1	1	1	3
	Salikha	1	1	5	15
Magura Total		**2**	**2**	**6**	**18**
Narail	Sadar	2	4	165	495
Narail Total		**2**	**4**	**165**	**495**
SW Total		**26**	**45**	**700**	**2100**
Grand Total		**38**	**99**	**1300**	**3900**

Eight involved districts for full demo and minikit demo (Gopalganj and Narail districts) and free seed demo (Gopalganj, Narail, Jessore, Magura, Jhenaidah, B'Baria, Habiganj and Moulvibazar districts are shown in Figure.4.

2. Project Implementation Summary

(a) Village selection

At the beginning of the project cycle, the project staff of AAS selected a total of 99 villages as potential for demonstration of BRRI dhan64 and BRRI dhan62 in 17upazilas of involved eight districts during 2016 Boro season, of which 21 villages were selected for full demonstration and minikit demonstration and 99 villages (including 21 demo villages) were selected for free seed demonstration (Table.7).

Out of a total of 21 selected villages in two districts for full demonstration and minikit demonstration with BRRI dhan64 during 2016 Boro season, of which the higher number of villages were selected in Gopalganj district (17 villages) than Narail district (4 villages) within southwest (SW) region. Upazila-wise number of villages and unions in two districts for full demo and minikit demo are provided in Table.7.

Of the total 99 selected villages in eight districts for free seed demonstration with BRRI dhan62 during 2016 Boro season, of which the highest number of villages were selected in Moulvibazar district (27) followed by Habiganj/Gopalganj/Jessore districts (17), B'Baria district (10), Jhenaidah district (5), Narail district (4) and Magura district (2). Upazila-wise number of villages and union in eight districts for free seed demonstration are provided in Table.7.

(b) Farmer selection

The project staff selected total of 1800 farmers in eight districts for 2016 Boro season, of which 100 farmers were selected for 100 full demo plots, 400 farmers were selected for 400 minikit demo plots and 1,300 farmers were selected for 1300 free seed demo plots in eight districts in cooperation with selected 99 community coordinators by the end of November 2015 before distribution of seeds (Table.7).

Total of 500 demo farmers were selected for full demo and minikit distribution for BRRI dhan64, of which 357 farmers were male (71%) and 143 farmers were female (29%) in Gopalganj and Narail districts during 2016 Boro season (Table.7).

Of the total 1,300 selected demo farmers for free seed distribution for BRRI dhan62, of which the highest number of farmers were selected in Moulvibazar district (398) followed by Gopalganj district (300), Narail district (165), Jessore district (159), Habiganj district (150), Jhenaidah district (70), B'Baria district (52) and Magura district (6) during 2016 Boro season (Table.7).

(c) Seed collection and distribution

Total of 5,500 kg seed received from HarvestPlus Bangladesh, of which 400 kg seed of BRRI dhan64 for 100 full demonstration plots, 1,200 kg seed of BRRI dhan64 for 400 minikit demonstration plots and 3,900 kg seed of BRRI dhan62 for 1,300 free seed demonstration plots

during 2016 Boro season for distribution among the 1800 selected demo farmers in eight districts (Table.).

Of the total 400 kg seed of BRRI dhan64 for full demonstration, 300 kg (75 packets) seed was distributed among 75 selected farmers in Gopalganj district and 100 kg (25 packets) seed was distributed among 25 selected farmers in Narail district. Out of a total of 100 seed packets of

Seed packet receiving by a women farmer in Tungipara upazila, Gopalganj district (Left) and women farmers with seed packets in Sadar upazila, Gopalganj district (Right)

BRRI dhan64 for full demonstration, of which 50 packets were distributed among the 50 selected farmers in sadar upazila of Gopalganj district, 25 packets were distributed among the 25 selected farmers in Tungipara upazila of Gopalganj district and 25 packets were distributed among the 25 selected farmers in sadar upazila of Narail district. Of the total 1,200 kg seed of BRRI dhan64 for minikit demonstration, of which 963 kg (321 packets) seed was distributed among 321 selected farmers in Gopalganj district and 237 kg (79 packets) seed was distributed among the 79 selected farmers in Narail districts. Out of a total of 400 seed packets of BRRI dhan64 for minikit demonstration, of which 178 packets were distributed in sadar upazila, 40 packets were distributed in Kashiani upazila, 103 packets were distributed in Tungipara upazila of Gopalganj district and 79 packets were distributed in sadar upazila of Narail district (Table.7).

Of the total 3,900 kg seed of BRRI dhan62 for free seed demonstration in eight districts during 2016 Boro season, of which the highest quatity of seed distributed in Moulvibazar district (1,194 kg) among 398 farmers followed by Gopalganj district (900 kg) among 300 farmers, Narail district (495 kg) among 165 farmers, Jessore district (477 kg) among 159 farmers, Habiganj district (450 kg) among 150 farmers, Jhenaidah district (210 kg) among 70 farmers, B'Baria district (156 kg) among 52 farmers and Magura district (18 kg) among 6 farmers. Out of a total of 3.900 kg seed of BRRI dhan62 for free seed demonstration, of which 1,800 kg seed was distributed in NE region and 2,100 kg seed was distributed in SW region during 2016 Boro season (Table.7).

Male farmers with seed packets in Narail district

(d) Seedbed establishment

A total of 1,800 seedbeds were established with 1,800 involved demo farmers, of which 100 seedbeds were established with BRRI dhan64 for 100 full demonstration farmers in Gopalganj

Seedling raised on the ideal seedbed for BRRI dhan64 (Left) and BRRI dhan62 (Right) in Narail district

and andNarail districts, 400 seedbeds were established with BRRI dhan64 for 400 minikit demonstration farmers in Gopalganj and Narail districts and 1,300 seedbeds were established with BRRI dhan62 for 1,300 free seed demonstration farmers in Gopalganj, Narail, Jessore, Jhenaidah, Magura, B'Baria, Habiganj and Moulvibazar districts under SW and NE regions during 2016 Boro season. Post seedbed establishment field advice was provided by the project staff during their field visit in collaboration with involved community coordinators under the guidance and supervision of the Principal Investigator (PI) of the project.

(e) Seedbed monitoring

Project staff administered the monitoring on the established 1,800 seedbeds (100 full demo seedbeds, 400 minikit demo seedbeds and 1,300 free seed demo seedbeds) until the

Shaiful Islam, PC investigating seedbed (Left) and monitoring seedbed (Right) in Narail district

transplanting of the seedlings in the production plots in 17 upazilas of eight involved districts (Gopalganj, Narail, Jessore, Magura, Jhenaidah, B'Baria, Habiganj and Moulvibazar districts) in SW and NW regions in cooperation with the involved community coordinators and the involved

demo farmers under the guidance and supervision of the Principal Investigator (PI) of the project through using the pre-decided simple monitoring format in Bangla.

(f) Demonstration plots establishment

Total of 470 demo plots were established with BRRI dhan64 during 2016 Boro season at 20 villages in Gopalganj and Narail districts, of which 95 demo plots were full demonstration and

Established demo plots with signboard in Gopalganj district (Left) and Narail district (Right)

375 demo plots were minikit demonstration (Table.8). Of the total 95 full demo plots, of which 75 full demo plots were established in Gopalganj district (50 full demo plots in sadar upazila and 25 full demo plots in Tungipara upazila) and 20 full demo plots were established in Narail district (sadar upazila). Out of a total of 375 minikit demo plots, of which 306 minikit demo plots were established in Gopalganj district (166 minikit demo plots in sadar upazila, 39 minikit demo plots in Kashiani upazila and 101 minikit demo plots in Tungipara upazila) and 69 minikit demo plots were established in Narail district (sadar upazila).

Table.8 Upazila-wise number of village and union, demo farmer and established demo plots with full demonstration and minikit distribution for BRRI dhan64 in Gopalganj and Narail districts of southwest region

District	Upazila	Union (No.)	Village (No.)	Farmer (No.)			Plot (No.)		
				Male	Female	Total	Demo	Minikit	Total
Gopalganj	Sadar	6	10	163	53	216	50	166	216
	Kasiani	1	2	7	32	39	0	39	39
	Tungipara	3	4	91	35	126	25	101	126
Gopalganj Total		**10**	**16**	**261**	**120**	**381**	**75**	**306**	**381**
Narail	Sadar	2	4	71	18	89	20	69	89
Narail Total		**2**	**4**	**71**	**18**	**89**	**20**	**69**	**89**
Grand Total		**12**	**20**	**332**	**138**	**470**	**95**	**375**	**470**

Of the total 1,300 established free seed demonstration plots with BRRI dhan62 during 2016 Boro season at 99 villages in eight districts, of which 600 free seed demo plots were established in NE region and 700 free seed demo plots were established in SW region (Table.8.).

(g) Demonstration plot monitoring

Project staff administered the field monitoring in two batches on 470 established demo plots of BRRI dhan64 (95 full demo plots and 375 minikit demo plots) after transplanting the seedlings to flowering stage of rice crop in 4 involved upazilas of Gopalganj and Narail district in cooperation

Subrota Kumar Ghosh, PC interviewing (monitoring) two demo farmers (Left & Right) in Gopalganj district

with the involved community coordinators and demo farmers through using pre-decided monitoring simple format in Bangla. Collected information from the demonstration plots through administering field monitoring was found very much useful to know the crop status of 470 demo plots in Gopalganj and Narail districts during cropping cycle of the BRRI dhan64. Moreover, the project staffs provided in-field advice to the involved and trained demo farmers on their established demo plots of BRRI dhan64 in 4 upazilas of Gopalganj and Narail districts during their routine visit at 20 project villages.

Project staff also administered the field monitoring in one batch on 1,300 established free seed demonstration plots of BRRI dhan62 with 1,300 free seed demo farmers during 2016 Boro season at 99 villages in 17 upazilas of eight districts during field crop cycle in cooperation with the involved community coordinators and demo farmers through using pre-decided monitoring simple format in Bangla.

(h) Signboard placement

Total of 470 signboards (95 full demo and 375 minikit demo signboards) prepared as per

Subrota Kumar Ghosh placing signboards on full demo plot (Left) and on minikit demo plot (Right)

approved design and placed them at 470 demo plots at 20 villages in 4 upazilas of Gopalganj

district (Sadar, Kashiani and Tungipara upazilas) and Narail district (Sadar upazila) in SW region. However, the fixed signboards was found as very much useful extension tool to promote BRRI dhan64 among the surrounding farmers within and outside of the 20 project villages in 4 upazilas of Gopalganj and Narail districts in SW region.

(i) Imparting farmers' participatory training

A day long training was conducted for 100 full demo farmers in Gopalganj and Narail districts in SW region at 4 training events on BRRI dhan64 during 2015-16 Boro season in collaboration

Mr. Mozibar Rahman, ARDO, HPBD providing training (Left) and participant (Male & female) at the training event in Narail district

with DAE and BRRI regional station, Gopalganj under the guidance of HarvestPlus Bangladesh. Farmers' participatory training was imparted on varietal characteristic, seed production and processing technologies, own use, exchange, sale and the importance of zinc enrich BRRI dhan64 cultivation for the Boro season.

Total of 100 farmers participated at 4 training events, of which the higher number of farmers participated in Gopalganj district (75) than Narail district (25). Out of a total of 100 participated

Mr. Hafizul Hasan, ARDO, HPBD providing training (Left) and participants (male & female) at the training event (Right) in Gopalganj district

farmers, of which 78 participants were male (78%) and 22 participants were female (22%). Out of a total of 20 resource persons contributed in the 4 training events, of which 16 resource persons contributed in 3 training events in Gopalganj district and 4 resource persons contributed in one training event in Narail district (Table.9).

Table.9: District-wise number of trained farmers (male and female), training events and resource persons in Gopalganj and Narail districts of southwest region

District	Trained farmer (No.)			Resource Persons (No.)	Events (No.)
	Male	Female	Total		
Gopalganj	66	9	75	16	3
Narail	12	13	25	4	1
Total	**78**	**22**	**100**	**20**	**4**

(j) Organize field day

Total of 6 field days implemented at 6 communities in Gopalganj, Narail and Jessore districts under SW region, of which the highest number of field days was conducted in Gopalganj district (4) and the lowest number of field day was conducted in Narail and Jessore districts (1) during

Women and men farmers' participants at field in Narail district (Left) and Jessore district (Right)

the harvesting of BRRI dhan64. Of the total 6 implemented field days, 4 field days were implemented at full demonstration clusters and two field days were implemented at minikit and free seed demonstration clusters in Gopalganj, Narail and Jessore districts.

Total of 1,229 farmers attended at 6 field days in Gopalganj, Narail and Jessore districts of SW region, of which 660 male farmers (54%) and 569 female farmers (46%). Among the three

Dr. M.K. Bashar, CM, HPBD speaking at the field day (Left) and farmers participants (women & men) at the field day (Right) in Gopalganj district

involved districts, the highest number of farmers participated at field days in Gopalganj district (973) followed by Narail district (237) and Jessore district (199). The highest number of female

farmers attended in the field days in Gopalganj district (340) followed by Narail district (129) and Jessore district (100).

Total of 42 resource persons contributed in 6 field days' events, of which the highest number of resource persons contributed in Gopalganj district (26) followed by Jessore district (9) and Narail district (7) from DAE (DD, TO, ADD, UAO, SAAO), BRRI (SSO, SO), UZP (Upazila

Participants (women farmers) at the field day in Narail district (Left) and participants (men & women farmers) at the field day in Gopalganj district (Right)

Chairman), UP (chairman, members), press media etc (Table.10).

Table.10: District-wise number of field day(s), farmers attended (male & female) and number of resource persons contributed in six field days in Gopalganj, Jessore and Narail districts

Diatricts	Participants (No.)			Resource Persons (No.)	Field day Events (No.)
	Male	Female	Total		
Gopalganj	453	340	793	26	4
Jessore	99	100	199	9	1
Narail	108	129	237	7	1
Total	**660**	**569**	**1229**	**42**	**6**

(k) Grain Yield

Average about 5.16 t/ha grain yield was observed for BRRI dhan64 from 470 demo plots in Gopalganj and Narail districts, of which average about 5.64 t/ha and 4.68 t/ha grain (paddy)

Husband & wife threshing the harvested demo crop from crop cut (Left) and farmer weighing the clean paddy of demo plot (Right) in Gopalganj district during field day

yield was observed in Gopalganj and Narail districts respectively during 2016 Boro season. Among the four upazilas, the highest average grain yield was computed in Tungipara upazila (5.81 t/ha) followed by Gopalganj sadar upazila (5.74 t/ha), Kashiani upazila (5.40 t/ha) and Narail sadar upazila (4.68 t/ha). In case of full demo plots, about 52% higher grain yield was observed in Gopalganj district (5.81 t/ha) than Narail district (3.83 t/ha). For minikit demo plots, about 9% higher grain yield was observed in Gopalganj district (5.6 t/ha) than Narail district (5.52 t/ha). In case of full demo plots, among the three involved upazilas, the highest grain yield was observed in Tungipara upazila (5.95 t/ha) followed by Gopalganj sadar (5.67 t/ha) and Narail sadar upazila (3.83 t/ha). In case of minikit demo plots, among the four involved upazilas, the highest grain yield was observed in Gopalganj sadar upazila (5.74 t/ha) followed by Tungipara upazila (5.68 t/ha), Narail sadar upazila (5.52 t/ha) and Kashiani upazila (5.40 t/ha). Overall average about 15% higher grain yield was produced for the minikit demo plots (5.56 t/ha) than full demo plots (4.82 t/ha) with BRRI dhan64 during 2016 Boro season in Gopalganj and Narail districts (Table 11).

Table.11: Grain yield (t/ha) of full demo and minikit demo of BRRI dhan64 in Gopalganj and Narail districts during 2016 Boro season

District	Upazila	Grain Yield (t/ha)		
		Demo	Minikit	Average
Gopalganj	Sadar	5.67	5.74	5.71
	Kasiani	0	5.40	5.40
	Tungipara	5.95	5.68	5.81
Gopalganj Total		**5.81**	**5.61**	**5.64**
Narail	Sadar	3.83	5.52	4.68
Narail Total		**3.83**	**5.52**	**4.68**
Grand Total		**4.82**	**5.56**	**5.16**

(l) Economic performance

Cost and return analysis of BRRI dhan64 demonstration during 2016 Boro season was conducted with randomly selected 8 successful demo farmers in Gopalganj and Narail districts after harvesting the demo crop. Summary cost of production, gross-return, net return, cost-benefit ratio, paddy production cost, yield and paddy sale price of BRRI dhan64 during 2016 Boro season in Gopalganj and Narail districts are provided in Table.12.

Table.12: Cost and return analysis of BRRI dhan64 in Gopalganj and Narail districts during 2015 Boro season

Item	Gopalganj district	Narail district	Grand Average
Total Cost (Tk/ha)			
(a) Full cost basis	95252	96583	95918
(b) Cash cost basis	53814	55145	54480
Gross return (Tk/ha)	101019	108596	104807
Net return (Tk/ha)			
(a) Full cost basis	5767	12013	8890
(b) Cash cost basis	47205	53451	50328
Cost-benefit ratio			
(a) Full cost basis	1.06	1.12	1.09
(b) Cash cost basis	1.88	1.96	1.92
Paddy Yield (Kg/ha)	6816	7178	6997
Paddy Production Cost (Tk./Kg):			
(a) Full cost basis	13.99	13.46	13.72
(b) Cash cost basis	7.90	7.68	7.79
Paddy sale price (Tk./Kg)	13.75	13.75	13.75

Average gross-return for BRRI dhan64 was calculated about Tk. 104,807/ha during 2016 Boro season in Gopalganj and Narail districts with average about Tk. 95,918/ha and Tk. 54,480/ha production cost on full cost basis and cash basis respectively. Average net-returns were calculated about Tk. 8,890/ha and Tk. 50,328/ha on full cost basis and cash cost basis respectively. Average paddy production costs (Tk./kg) were calculated Tk.13.72/kg and Tk.7.79/kg on full cost basis and cash cost basis respectively. Average paddy sale price of BRRI dhan64 was calculated about Tk.13.75/kg. About 8% higher gross-return was calculated in Narail district (Tk.108,596/ha) than Gopalganj district (Tk. 101,019/ha). Average net-return was calculated about 108% higher in Narail district (Tk.12,013/ha) than Gopalganj district (Tk.5,767/ha) on full cost basis. On the other hand, average net-return was calculated only about 13% higher in Narail district (Tk.53,451/ha) than Gopalganj district (Tk.47,205/ha) on cash cost basis (Table.12).

(m) Lessons Learned

1. Project on delivery of zinc rice in Bangladesh of BRRI dhan64 during 2016 Boro season in eight districts within SW and NE regions was implemented through using community based cluster approaches. Project activities were implemented through group approach using free-lance social workers (farmers) as community coordinators for each community based informal farmers group. Accordingly, AAS's devoted two field staffs in collaboration with trained and motivated community coordinators were very much successful to implement the project activities as effective and cost-effective manner in the project areas. Moreover, project was used community based cluster approach in the established demo clusters in eight involved districts to establish 1,770 most useful demo plots of BRRI dhan64 and BRRI dhan62 during

2016 Boro season for its large scale dissemination within and outside of the project communities in 17 upazilas of the eight involved districts within SW and NE regions.

2. Achieved average grain yield (5.16 t/ha) of BRRI dhan64 was not found encouraging in comparison with the yield of the existing HYVs of rice (rice hybrids, BRRI dhan29 etc.) among the farmers in Gopalganj and Narail districts.

3. Grain of BRRI dhan64 is bold and thus its acceptability was found as discouraging in the project districts in general and such frustrating acceptability was found more in Narail district than Gopalganj district.

4. Large number of farmers (1,229) participated at 6 field days in three involved districts and such achievement with large number of farmers participation at 6 field days was possible due to implementation of 6 field days at 6 communities in collaboration with the involved community coordinators and using other community based approaches and strategies along with social values and respect. Accordingly, the field days implementation approaches were bottom-up and demand-led for the involved communities in the project areas.

5. News on seed distribution, farmers' training events and field days of BRRI dhan64 during 2016 Boro season was published in 10 newspapers to disseminate the accomplishment of BRRI dhan64 and BRRI dhan62 in large scale in SW region of the country was possible due to our established practical relationship with local reporters of various newspapers in three districts. Performance of BRRI dhan64 was telecasted through BTV Mati-O-Manos program and it was possible due to our established useful relationship with BTV.

6. In cost and return analysis with the successful farmers, the gross return was found as low per hectare basis in consideration of total production cost on full cost basis along the very low net-return on full cost basis. This might be due to low price of paddy after harvesting the crop in the project areas and accordingly, farmers are found as frustrated to continue the rice cultivation in SW region.

(ii) 2016 T.Aman Season

1. Project area and targeted household

The approved project on the delivery of zinc rice in Bangladesh was implemented on BRRI dhan62 and BRRI dhan72 during 2016 T.Aman season with 2,750 farm households at 171 villages in 13 upazilas of Gopalganj district (Tungipara, Gopalganj Sadar and Kashiani upazilas), Narail district (Narail Sadar, Lohagara and Kalia upazilas), Habiganj district (Chunarughat, Madhabpur, Habiganj Sadar and Bahubal upazilas) and Moulvibazar district (Moulvibazar Sadar, Rajnagar and Sreemangal upazilas) under NE and SW regions.

2. Project implementation summary

(a) Village selection

At the beginning of the project cycle, the project staff of AAS selected the potential 65 villages for full and minikit demonstration of BRRI dhan62 and BRRI dhan72 in 11 upazilas of the four districts (Habiganj, Moulvibazar, Narail and Jessore districts) under NE and SW regions in

collaboration with the selected community coordinators by the 2nd week of June 2016. District-wise number of villages of four districts under NE and SW regions is provided in Table.11.

(b) Farmers selection

The project staff selected total of 725 farmers for demonstration (125 full demo and 600 minikit demo farmers) on BRRI dhan62 and BRRI dhan72 at 65 villages in 11 upazilas of four involved districts (Habiganj, Moulvibazar, Narail and Jessore districts) under NE and SW regions in collaboration with the selected community coordinators by the end of June 2016 before distribution of seeds. Out of total of 725 demo plots, 700 demo plots were BRRI dhan62 and 25 demo plots were BRRI dhan72. Out of a total of 725 demo farmers, of which 566 were male farmers and 159 were female farmers in four districts under NE and SW regions (Table.13).

Table.13: Upazila-wise number of village and union, selected demo farmer and plot under seed distribution of four districts under SW and NE regions

District	Upazila (No.)	Union (No.)	Village (No.)	Farmer (No.)			Demo (No.)		Minikit Dhan62 (No.)	Total (No.)
				Male	Female	Total	BRRI Dhan62	BRRI Dhan72		
I. North East (NE) Region										
Habiganj	4	8	13	91	8	99	25	0	74	99
Moulvibazar	3	7	17	137	14	151	25	0	126	151
NE Total	**7**	**15**	**30**	**228**	**22**	**250**	**50**	**0**	**200**	**250**
II. South West (SW) Region										
Gopalganj	3	8	12	142	83	225	25	0	200	225
Narail	1	4	23	196	54	250	25	25	200	250
SW Total	**4**	**12**	**35**	**338**	**137**	**475**	**50**	**25**	**400**	**475**
Grand Total	**11**	**27**	**65**	**566**	**159**	**725**	**100**	**25**	**600**	**725**

(c) Establishment of demonstration plots

Out of a total of 635 established demo plots (111 full demo and 524 minikit demo plots) in two regions, of which 250 demo plots established in NE region and 385 demo plots established in SW region with BRRI dhan62 and BRRI dhan72. Of the total 111 established full demo plots, 90 full demo plots were established with BRRI dhan62 (Habiganj, Moulvibazar, Narail and Jessore districts) and 21 full demo plots were established with BRRI dhan72 (Narail district). Of the total 524 minikit demo plots with BRRI dhan62, 324 minikit demo plots established in SW region and 200 minikit demo plots established in NE region. Among the four districts, the highest number of minikit demo plots were established in Gopalganj district (164) followed by Narail district (160), Moulvibazar district (126) and Habiganj district (74) during 2016 T. Aman (Table.14).

Table.14: Upazila-wise number of village and union, demo farmer and established demo plot for BRRI dhan62 and BRRI dhan72 in four districts of SW and NE regions

District	Upazila (No.)	Union (No.)	Village (No.)	Farmer (No.)			Full demo (No.)		Minikit Dhan62 (No.)	Total (No.)
				Male	Female	Total	BRRI Dhan62	BRRI Dhan72		
I. North East (NE) Region										
Habiganj	4	8	13	91	8	99	25	0	74	99
Moulvibazar	3	7	17	137	14	151	25	0	126	151
NE Total	**7**	**15**	**30**	**228**	**22**	**250**	**50**	**0**	**200**	**250**
II. South West (SW) Region										
Gopalganj	3	8	12	110	73	183	19	0	164	183
Narail	1	4	23	165	37	202	21	21	160	202
SW Total	**4**	**12**	**35**	**275**	**110**	**385**	**40**	**21**	**324**	**385**
Grand Total	**11**	**27**	**65**	**503**	**132**	**635**	**90**	**21**	**524**	**635**

(d) Establishment of demo plots of free seed distribution

Out of a total of 2,025 established demo plots of free seed distribution at 159 villages in 50 unions under 13 upazilas within four districts of two regions, of which the higher number of free seed distribution demo plots were established in SW region (1,025 plots) than NE region (1,000 plots). Among the four involved districts, the highest number of free seed distribution plots established in Moulvibazar district (714 plots) followed Narail district (625 plots), Gopalganj district (400 plots) and Habiganj district (268 plots) during 2016 T. Aman season (Table.15.).

Table.15: Upazila-wise number of village and union, demo farmer and established demo plots under free seed distribution of four districts under SW and NE regions

District	Upazila (No.)	Union (No.)	Village (No.)	Farmer & plot (No.)		
				Male	Female	Total
I. North East (NE) Region						
Habiganj	4	8	19	266	20	268
Moulvibazar	3	8	41	663	51	714
NE Total	**7**	**16**	**60**	**929**	**71**	**1000**
II. South West (SW) Region						
Gopalganj	3	10	16	300	100	400
Narail	3	24	83	499	126	625
SW Total	**6**	**34**	**99**	**799**	**226**	**1025**
Grand Total	**13**	**50**	**159**	**1728**	**297**	**2025**

(e) Imparting farmers' participatory training

A day long training was conducted for 125 full demo farmers in Gopalganj, Narail, Habiganj and Moulvibazar districts in SW and NE regions at five training events on BRRI dhan62 and BRRI dhan72 during 2016 T.Aman season in collaboration with DAE and BRRI regional station, Gopalganj under the guidance of HarvestPlus Bangladesh. Farmers' participatory training was imparted on varietal characteristics, seed production and processing technologies, own use, exchange, sale of seed and the importance of zinc nutrition for BRRI dhan62 and BRRI dhan72 during T.Aman season.

Out of a total of trained 125 full demo farmers, of which 100 farmers were involved for BRRI dhan62 and 25 farmers were involved for BRRI dhan72. Total of 125 farmers were participated at five training events, of which higher number of farmers participated in Narail district (50 farmers) and the lower number of farmers participated in Gopalganj, Habiganj and Moulvibazar districts (25 farmers for each district). Out of a total of 125 participated farmers, of which 100 farmers participants were male (80%) and 25 farmer participants were female (20%).

In case of total 25 female farmers participants, of which the highest number of female farmers were participated in Narail district (17) followed by Gopalganj district (7), least in Moulvibazar district (1) and none in Habiganj district. On the other hand, total of 100 male farmers participants, of which the highest number of male farmers were participated in Narail district (33) followed by Habiganj district (25), Moulvibazar district (24) and Gopalganj district (18).

Out of a total of 29 resource persons contributed in the five training events in four districts, of which the highest number of resource persons were contributed in Narail districts (11) followed by Gopalganj district (10) and least in Moulvibazar and Habiganj districts (4). Number of trained farmers (male and female), number of resource persons and training events in Narail, Gopalganj, Habiganj and Moulvibazar districts during 2016 T.Aman season are provide in Table.16.

Table.16: District-wise number of trained farmers (male and female), training events and resource persons in Narail, Gopalganj, Moulvibazar and Habiganj districts during 2016 T.Aman season

District	Trained farmer (No.)			Resource Persons (No.)	Events (No.)
	Male	Female	Total		
Narail	33	17	50	11	2
Gopalganj	18	7	25	10	1
Moulvibazar	24	1	25	4	1
Habiganj	25	0	25	4	1
Total	**100**	**25**	**125**	**29**	**5**

(f) Organize field day

Total of eight field days implemented at 8 communities in Narail, Gopalganj, Moulvibazar and Habiganj districts, out of which the highest number of field days was conducted in Narail district (3 field days) followed by Gopalganj/Habiganj districts (2 field days each) and the lowest

number of field days was conducted in Moulvibazar district (1) during the harvesting of BRRI dhan72 and BRRI dhan62. Of the total eight implemented field days, five field days were implemented at full demonstration clusters and three field days were implemented at minikit and free seed demonstration clusters in Narail, Gopalganj, Moulvibazar and Habiganj districts. Out of a total of eight implemented field days in four involved districts, of which seven field days were implemented for BRRI dhan62 and only one field day was implemented for BRRI dhan72.

Total of 1,263 farmers attended at eight field days in Narail, Gopalganj, Moulvibazar and Habiganj districts, of which 664 farmers were male (53%) and 599 farmers were female (47%). Among the four involved districts, the highest number of farmers participated at field days in Narail district (500) followed by Gopalganj district (390), Habiganj district (248) and Moulvibazar district (125). Out of total of 599 female farmers attended at eight field days, of which the highest number of female farmers attended in the field days in Narail district (259) followed by Gopalganj district (235), Habiganj district (95) and Moulvibazar district (10). Of the total 664 male farmers attended at eight field days, of which the highest number of male farmers attended in the field days in Narail district (241) followed by Gopalganj district (155), Habiganj district (153) and Moulvibazar district (125).

Total of 52 resource persons contributed in eight field days' events, of which the highest number of resource persons contributed in Narail district (24) followed by Gopalganj district (13), Habiganj district (10) and Moulvibazar district (5) from DAE (DD, DTO, UAO, SAAO), BRRI (SSO), BARI (SSO), UP (members), press media etc. (Table.17)

Table.17: District-wise number of field day(s), farmers attended (male & female) and number of resource persons contributed in eight field days in Narail, Gopalganj, Moulvibazar and Habiganj districts during 2016 T.Aman season

District	Farmers participants (No.)			Resource Persons (No.)	Field day Events (No.)
	Male	Female	Total		
Narail	241	259	500	24	3
Gopalganj	155	235	390	13	2
Moulvibazar	115	10	125	5	1
Habiganj	153	95	248	10	2
Total	**664**	**599**	**1263**	**52**	**8**

(g) Administer courtyard meeting

Total of 11 courtyard meetings (Uthan Boithaks) were implemented at 11 communities in four districts (Gopalganj, Narail, Habiganj and Moulvibazar districts) under SW and NE regions, of which the higher number of courtyard meetings was implemented in Narail, Gopalganj and Moulvibazar districts (3 field day events each district) than Habiganj district (2 field day events). Of the total 11 implemented courtyard meetings, of which six courtyard meetings were implemented in SW region and five courtyard meetings were implemented in NE region.

Out of a total of 536 farmers attended at 11 courtyard meetings in the four involved districts of SW and NE regions, of which 326 were female farmers (61%) and 210 were male farmers (39%). Out of a total of 536 participants at 11 courtyard meetings in two regions, of which 52% farmers attended in SW region (302) and 44% farmers attended in NE region (210). Among the four involved districts, the highest number of farmers participated at courtyard meetings in Gopalganj district (152) followed by Narail district (150), Moulvibazar district (142) and Habiganj districts (92). Among the four involved districts, the highest number of female farmers attended at the courtyard meetings in Gopalganj district (102) followed by Moulvibazar district (93), Narail district (77) and Habiganj district (54).

Total of 20 resource persons contributed in 11 courtyard meetings in four districts, of which six resource persons contributed in each of Gopalganj and Moulvibazar districts and four resource persons contributed in each of Narail and Habiganj districts. Number of participants (male and female), number of resource persons and courtyard meeting events in Narail, Gopalganj, Habiganj and Moulvibazar districts during 2016 T.Aman season are provided in Table.18.

Table.18: District-wise number of farmers attended in 11 courtyard meetings (male & female), number of courtyard meetings and number of resource persons contributed in Narail, Gopalganj, Moulvibazar and Habiganj districts during 2016 T.Aman season

District	Participants (No.)			Resource Persons (No.)	Events (No.)
	Male	Female	Total		
Narail	73	77	150	4	3
Gopalganj	50	102	152	6	3
Moulvibazar	49	93	142	6	3
Habiganj	38	54	92	4	2
Total	**210**	**326**	**536**	**20**	**11**

C. Cost and Return Economic Analysis

(i) Crops cultivated on the Dyke of Shrimp Enclosure

1. Background

Out of a total of 275,274 ha shrimp enclosure (Gher or Pond), of which about 36,000 ha dyke area (more than 80,000 ha for creeping crops) is available for cultivation of large number of suitable high value short duration crops (most of them are vegetables) throughout the year in southern regions of Bangladesh. Shrimp farmers in southern regions have been cultivating such high value crops on the dyke of shrimp farms (enclosure/pond/gher) from the later part of nineties (1997-1999) as short duration and profitable crops with high market demand. Less fertilizer needs to apply on the fertile soil for suitable crops cultivation on the dyke of shrimp enclosure. Less pest attack and disease infection are reported for dyke cropping in southern regions. Most of the involved dyke crop varieties are hybrids. However, dyke cropping with high value hybrid crop varieties is found as enormous prospective with high productivity and profitability in the southern regions of the country. To gather information from the farmers on

yield, cost and return, and price, of those targeted crops during summer and winter seasons, AAS collected the relevant primary data from 137 shrimp farm owners for cost and return analysis for the 11 existing dyke crops in 5 upazilas of Gopalganj district (Sadar and Tungipara upazilas), Bagerhat district (Chitolmari upazila) and Khulna district (Rupsha and Dumuria upazilas) in the southern regions of the country during 1 February-31 March 2016.

2. Purpose

Large number of high value crops are grown on the dyke of shrimp enclosure in the southern regions of Bangladesh, the latest information from farmers on yield, cost and return, and price of those targeted crops during winter and summer seasons should be available for the benefit of extensionists, fish farmers, project staff, traders, policymakers, exporters and relevant other users.

3. Major findings

Major findings on land use status of nine fish farmers, cost and return analysis of eleven dyke crops and crop ranking are explained below:

(a). Land use status

Average about 73.24%, 26.75% and 12.78% of the total pond area was observed under total water body area, total dyke area and total cultivable dyke area of the shrimp enclosure, respectively in Gopalganj, Bagerhat and Khulna districts.

(b). Early winter tomato

Average about 38.05 t/ha of fresh tomatoes yield was observed for hybrid early winter tomatoes production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid early winter tomato was calculated Tk.654,660/ha (ranked as 1) in counter to the average total cost of Tk.333,949/ha and Tk 190,168/ha on full cost basis and cash cost basis, respectively, for early winter tomatoes production. The average net-return was calculated Tk.320,711/ha (ranked as 1) on full cost basis and Tk.464,492/ha (ranked as 1) on cash cost basis for early winter tomatoes production. Average about Tk.17.29/kg sale price of tomatoes was observed at farm house for 2015-16 early winter tomatoes.

(c). Cucumber

Average about 26.64 t/ha of cucumber yield was observed for hybrid Cucumber production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Cucumber was calculated Tk.413,937/ha (ranked as 3) in contrast to average total cost of Tk261,042/ha and Tk.158,059/ha on full cost basis and cash cost basis, respectively, for Cucumber production. The average net-return was calculated Tk.152,895/ha (ranked as 2) on full cost basis and Tk.255,878 /ha (ranked as 3) on cash cost basis for Cucumber production. Average about Tk.15.64/kg sale price of Cucumber was observed at farm house for 2015 summer cucumber.

(d). Bitter gourd

Average about 15.33 t/ha of Bitter gourd yield was observed for hybrid Bitter gourd production on the dyke of Shrimp enclosure in two districts. Among the 11 involved crops, average gross-return of hybrid Bitter gourd was calculated Tk.351,418/ha (ranked as 6) against to the average total cost of Tk.255,738/ha and Tk.155,754/ha on full cost basis and cash cost basis, respectively, for hybrid Bitter gourd production. The average net-return was calculated Tk.95,680/ha (ranked as 6) on full cost basis and Tk. 195,664/ha (ranked as 5) on cash cost basis for Bitter gourd production. Average about Tk.23.17/kg sale price of Bitter gourd was observed at farm house for 2015 summer Bitter gourd.

(e). Bottle gourd

Average about 14,092 fruits/ha of Bottle gourd yield was observed for hybrid Bottle gourd production on the dyke of Shrimp enclosure in two districts. Among the 11 involved crops, average gross-return of hybrid Bottle gourd was calculated Tk.340,754/ha (ranked as 7) in contrast to the average total cost of Tk.253,150/ha and Tk.164,261/ha on full cost basis and cash cost basis, respectively, for hybrid Bottle gourd production. The average net-return was calculated Tk.87,605/ha (ranked as 7) on full cost basis and Tk.176,493/ha (ranked as 6) on cash cost basis for Bottle gourd production. Average about Tk.24.35/Bottle gourd was observed at farm house for 2015 summer Bottle gourd.

(f). Ash gourd

Average about 15,344 fruits/ha of Ash gourd yield was observed for hybrid Ash gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Ash gourd was calculated Tk.306,255/ha (ranked as 9) counter to the average total cost of Tk.238,308/ha and Tk.154,725/ha on full cost basis and cash cost basis, respectively, for hybrid Ash gourd production. The average net-return was calculated Tk.67,947/ha (ranked as 9) on full cost basis and Tk.151,530/ha (ranked as 10) on cash cost basis for Ash gourd production. Average about Tk.20.00/Ash gourd was observed at farm house for 2015 summer Ash gourd.

(g). Snake gourd

Average about 26.44 t/ha of Snake gourd yield was observed for hybrid Snake gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Snake gourd was calculated Tk.356,616/ha (ranked as 4) in counter to the average total cost of Tk.249,887/ha and Tk.157,579/ha on full cost basis and cash cost basis, respectively, for hybrid Snake gourd production. The average net-return was calculated Tk. 106,728/ha (ranked as 4) on full cost basis and Tk.199,037/ha (ranked as 4) on cash cost basis for Snake gourd production. Average about Tk.13.89/Kg sale price of Snake gourd was observed at farm house for 2015 summer Snake gourd.

(h). Sweet gourd

Average about 15.06 t/ha of Sweet gourd yield was observed for hybrid Sweet gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-

return of hybrid Sweet gourd was calculated Tk.247,971(ranked as 11) in counter to the average total cost of Tk.182,518/ha and Tk.126,633/ha on full cost basis and cash cost basis, respective, for hybrid Sweet gourd production. The average net-return was calculated Tk.65,453/ha (ranked as 10) on full cost basis and Tk. 121,338/ha (ranked as 11) on cash cost basis for Sweet gourd production. Average about Tk.16.75/kg sale price of Sweet gourd was observed at farm house for2015 summer Sweet gourd.

(i). Country bean

Average about 24.64 t/ha of Country bean yield was observed for Country bean production on the dyke of Shrimp enclosure in Khulna district. Among the 11 involved crops, average gross-return of Country bean was calculated Tk.576,271/ha (ranked as 2) in contrast to the average total cost of Tk.434,975/ha and Tk.309,519/ha on full cost basis and cash cost basis, respectively, for Country bean production. The average net-return was calculated Tk.141,296/ha (ranked as 3) on full cost basis and Tk.266,752/ha (ranked as 2) on cash cost basis for Country Bean production. Average about Tk.23.56/kg sale price of Country bean was observed at farm house for 2015-16 winter Country bean.

(j). Cauliflower

Average about 39.6 t/ha of Cauliflower yield was observed for hybrid cauliflower production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of hybrid cauliflower was calculated Tk.355,680/ha (ranked as 5) in contrast to the average total cost of Tk.297,825/ha and Tk.202,468/ha on full cost basis and cash cost basis, respectively, for Cauliflower production. The average net-return was calculated Tk.57,855/ha (ranked as 11) on full cost basis and Tk. 153,212/ha (ranked as 8) on cash cost basis for cauliflower production. Average about Tk.9.00/kg sale price of Cauliflower was observed at farm house for 2015-16winterCauliflower.

(k). String bean

Average about 14.29 t/ha of String bean yield was observed for String bean production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of String bean was calculated Tk.324,824/ha (ranked as 8) in counter to the average total cost of Tk.225,149/ha and Tk.148,767/ha on full cost basis and cash cost basis, respectively, for String bean production. The average net-return was calculated Tk.99,674/ha (ranked as 5) on full cost basis Tk.176,057/ha (ranked as 7) on cash cost basis for String Bean production. Average about Tk.22.88/kg sale price of String bean was observed at farm house for 2015 summer String bean.

(l). Ridge gourd

Average about 16.50 t/ha of Ridge gourd yield was observed for hybrid Ridge gourd production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of hybrid Ridge gourd was calculated Tk.292,508/ha (ranked as 10) in counter to the average total cost of Tk.208,579/ha and Tk.139,494/ha on full cost basis and cash cost basis, respectively, for hybrid Ridge gourd production. The average net-return was calculated Tk.83,929/ha (ranked as 8) on full cost basis and Tk.153,014/ha (ranked as 9) on cash cost basis for Ridge gourd production. Average about Tk.17.75/kg sale price of Ridge gourd was observed at farm house for 2015 summer Ridge gourd.

(m). Crop ranking

Through administered the ranking on the involved 11 crops, top four crops were determined as very high value cash crops and they are Tomato, Cucumber, Country Bean and Snake gourd based on net-return under full cost and cash cost basis and gross-return in Gopalganj, Bagerhat and Khulna districts during 2015 summer and 2015-16 winter seasons.

(ii) Crops cultivated under Sorjan System

1. Background

The sorjan cropping system is an intensive method of growing crops on alternate raised beds (ridges) and deep sinks (deep furrows). The sorjan farming system is a traditional farming system developed in central Java, Indonesia in the beginning of 20th century, which is widely used in submerged, salinity affected areas and tidal swamps. It is usually practiced in swampy or flooded areas where raised beds allow for growing dry land crops while rice or aquatic crops or fish may be concurrently grown in the sinks. Various high-valued dry land crops can be planted on the raised beds, simultaneously with low land rice or aquatic crops or fish can be grown in the sinks in the sorjan system. This is possible because of improved drainage on the raised beds and water impoundment in the sinks. Currently, about 5,000 farmers are involved for sorjan farming system on about 4,000 acres of land with about 20 high value crops cultivation on the raised bed of the system during summer and winter seasons in Charfassion upazila of Bhola district within south central coastal region of the country. To gather information from farmers on yield, cost and return, and price, of those targeted crops during summer and winter seasons, AAS collected the relevant primary data from 39 sorjan farmers for cost and return analysis for the selected 10 existing sorjan crops in Charfassion upazila of Bhola district within south central coastal region of the country during 7-20 April 2016.

2. Purpose

Large number of high value crops are grown on the raised beds of sorjan system in Charfassion upazila of Bhola district, the latest information from farmers on yield, cost and return, and price of those targeted crops during winter and summer seasons should be available for the benefit of extensionists, specialists, project staff, traders, policy makers, exporters and relevant other users.

3. Study area

Total of five villages (Uttar Madras, Aslampur, Char Afzal, Shiba and Uttar Shiba) were selected under four unions (Jinnaghar, Aslampur, Char Madras and Abdullahpur) in Charfassion upazila of Bhola district by the study team for conducting the study on cost and return analysis for dry land sorjan crops. Field data was collected from 39 successful sorjan farmers at five villages in Charfassion upazila of Bhola district. Bhola district is among USAID's Feed the Future (FTF) 20 working districts in southern regions of Bangladesh. The study area (Charfassion upazila) is illustrated in **Figure.3**

4. Major findings

(a). Land use status

Average about 43.68 decimals land per sorjan system was observed in Charfassion upazila of Bhola district. Out of a total of 43.68 decimals land per sorjan system, of which average about 57.21% area (24.38 decimals) was observed under raised bed and 42.79% area (19.10 decimals) was observed under deep furrow (sink).

(b). Early winter tomato

Average about 27.55t/ha of fresh tomatoes yield was observed for hybrid early winter tomatoes production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015-16 early winter season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid early winter tomato was calculated Tk.331, 604/ha (rank as 4) in counter to the average total cost of Tk.225, 636/ha and Tk.128, 148/ha on full cost basis and cash cost basis, respectively, for early winter tomatoes production. The average net-return was calculated Tk. 105,968/ha (rank as 3) on full cost basis and Tk.203, 456/ha (rank as 3) on cash cost basis for early winter tomatoes production. Average about Tk.12.25/kg sale price of tomatoes was observed at farm house for 2015-16 early winter tomatoes in Charfassion upazila of Bhola district.

(c). Cucumber

Average about 25.32t/ha Cucumber yield was observed for hybrid cucumber production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid cucumber was calculated Tk.304,603/ha (rank as 5) in contrast to the average total cost of Tk.238,361/ha and Tk.155,537/ha on full cost basis and cash cost basis, respectively, for hybrid cucumber production. The average net-return was calculated Tk.66,242/ha (rank as 6) on full cost basis and Tk.149,066/ha (rank as 6) on cash cost basis for cucumber production. Average about Tk.12.10/kg sale price was observed at farm house for cucumber during 2015 summer season in Charfassion upazila of Bhola district.

(d). Bitter gourd

Average about 18.00t/ha Bitter gourd yield was observed for hybrid bitter gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid bitter gourd production was calculated Tk.380,081/ha (rank as 2) against to the average total cost of Tk.254,638/ha and Tk.152,742/ha on full cost basis and cash cost basis, respectively, for hybrid bitter gourd production. The average net-return was calculated Tk.125,442/ha (rank as 2) on full cost basis and Tk.227,338/ha (rank as 2) on cash cost basis for hybrid bitter gourd production. Average about Tk. 21.50/kg sale price was observed at farm house for 2015 summer bitter gourd in Charfassion upazila of Bhola district.

(e). Bottle gourd

Average about 9,900 Bottle gourd fruits yield per hectare was observed for hybrid bottle gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid bottle gourd production was calculated Tk.263,991/ha (rank as 7) in contrast to the average total cost of Tk.221,676/ha and Tk.147,142/ha on full cost basis and cash cost basis, respectively, for hybrid bottle gourd production. The average net-return was calculated Tk.42,315/ha (rank as 9) on full cost basis and Tk.116,849/ha (rank as 10) on cash cost basis for hybrid bottle gourd production. Average about Tk.27.00/fruit sale price was observed at farm house for bottle gourd during 2015 summer season in Charfassion upazila of Bhola district.

(f). Ash gourd

Average about 13,125 Ash gourd fruits yield per hectare was observed for hybrid ash gourd production on the raised bed of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid ash gourd production was calculated Tk.261,970/ha(rank as 8) in counter to the average total cost of Tk.217,647/ha and Tk.141,751/ha on full cost basis and cash cost basis, respectively, for hybrid ash gourd production. The average net-return was calculated Tk.44,322/ha (rank as 8) on full cost basis and Tk.120,219/ha (rank as 8) on cash cost basis for hybrid ash gourd production. Average about Tk.20.00/fruit sale price was observed at farm house for 2015 summer ash gourd in Charfassion upazila of Bhola district.

(g). Snake gourd

Average about 17.36t/ha Snake gourd yield was observed for hybrid snake gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid snake gourd production was calculated Tk.291,872/ha (rank as 6) in counter to the average total cost of Tk.219,350/ha and Tk.140,535/ha on full cost basis and cash cost basis, respectively, for hybrid snake gourd production. The average net-return was calculated Tk.72,521/ha (rank as 4) on full cost basis and Tk.151,337/ha (rank as 5) on cash cost basis for hybrid snake gourd production. Average about Tk.17.00/kg sale price was observed at farm house for snake gourd during 2015 summer season in Charfassion upazila of Bhola district.

(h). Sweet gourd

Average about 27.70t/ha Sweet gourd yield was observed for hybrid sweet gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid sweet gourd production was calculated Tk.393,703/ha (rank as 1) in counter to the average total cost of Tk.256,063/ha and Tk.162,652/ha on full cost basis and cash cost basis, respectively, for hybrid sweet gourd production. The average net-return was calculated Tk.137,640/ha (rank as 1) on full cost basis and Tk.231,051/ha (rank as 1) on cash cost basis for hybrid Sweet gourd production. Average about Tk.14.33/kg sale price was observed at farm house for 2015 summer sweet gourd in Charfassion upazila of Bhola district.

(i). Country Bean

Average about 15.63t/ha Country Bean yield was observed for country bean production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015-16 winter season. Among the 10 involved sorjan vegetable crops, average gross-return of country bean production was calculated Tk.347, 484/ha (rank as 3) in contrast to the average total cost of Tk.286, 548/ha and Tk.180, 487/ha on full cost basis and cash cost basis, respectively, for country bean production. The average net-return was calculated Tk.60,936/ha (rank as 7) on full cost basis and Tk.166,997/ha (rank as 4) on cash cost basis for Country Bean production. Average about Tk.15.63/kg sale price was observed at farm house for country bean during 2015-16 winter season in Charfassion upazila of Bhola district.

(j). Ridge gourd

Average about 14.83 t/ha Ridge gourd yield was observed for hybrid ridge gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid ridge gourd was calculated Tk.244,655/ha (rank as 10) in contrast to the average total cost of Tk.205,219/ha and Tk.125,430/ha on full cost basis and cash cost basis, respectively, for hybrid ridge gourd production. The average net-return was calculated Tk.39,436/ha (rank as 10) on full cost basis and Tk.119,225/ha (rank as 9) on cash cost basis for hybrid ridge gourd production. Average about Tk.16.67/kg sale price was observed at farm house for 2015 summer ridge gourd in Charfassion upazila of Bhola district.

(k). Sponge gourd

Average about 12.00t/ha Sponge gourd yield was observed for hybrid sponge gourd production on the raised beds of sorjan system in Charfassion upazila of Bhola district during 2015 summer season. Among the 10 involved sorjan vegetable crops, average gross-return of hybrid sponge gourd was calculated Tk.259,874/ha (rank as 9)in contrast to the average total cost of Tk.190,558/ha and Tk.119,851/ha on full cost basis and cash cost basis, respectively, for hybrid sponge gourd production. The average net-return was calculated Tk.69,316/ha (rank as 5) on full cost basis and Tk.140,023/ha (rank as 7) on cash cost basis for hybrid sponge gourd production. Average about Tk.12.00/kg sale price was observed at farm house for Sponge gourd during 2015 summer season in Charfassion upazila of Bhola district.

D. Modern Food Storage Facilities Project (MFSP)

Development Project Design and Services Ltd (DPDS) and Agricultural Advisory Society (AAS) have been implementing Package SD4: Service provider for the distribution of household silos and related services in collaboration with Modern Food Storage Facilities Project (MFSP) under the supervision of Directorate General of Food of Ministry of Food, Government of Peoples Republic of Bangladesh since 1 July 2016. Modern Food Storage Facilities Project (MFSP) has approved for five years by the Directorate General of Food, Ministry of Food of the Government of the people’s Republic of Bangladesh.

Project Background

Bangladesh currently ranks as one of the world's foremost disaster prone country. The situation is aggravated, all the more by its being the most densely populated country in the world. Every year, natural calamities upset people's lives in some parts of the country. The extreme natural events are termed disasters when they adversely affect the whole environment, including human beings, their shelters, or the resources essential for their livelihood. The geographical setting of Bangladesh makes the country vulnerable to natural disasters (MoEF,2005).The Mountains and hills bordering almost three-fourths of the country, along with the funnel shaped Bay of Bengal in the south, have made the country a meeting place of life-giving monsoon rains, but also make it subjected to the catastrophic ravages of natural disasters. Its physiographic setting and river morphology also contribute to recurring disasters. The major disasters that are concerned here are the occurrences of flood, cyclone and storm surge, flash flood, drought, tornado, riverbank erosion, and landslide. Among these disasters, cyclone is considered as the major and most devastating disaster to the human habitation of this country.

The unique natural setting of Bangladesh and the characteristics of tropical monsoon climate in South Asian subcontinent are greatly responsible for the cyclone hazards in the country. The Bangladesh coast is the most hazardous coast in the world in terms of the number of people who suffer from various types of cyclone and cyclonic surges every year. When the annual cyclones roar in, hundreds and sometimes thousands of people are swept away. Of the 508 cyclones that have originated in the Bay of Bengal in the last 100 years, 17 percent have hit Bangladesh, of these; nearly 53 percent have claimed more than five thousand lives.

Historically, the country has been hit by a major cyclone and/or widespread flooding once every three years on average. Growing climate variability and natural disaster risks in Bangladesh are anticipated to lead to more intense and frequent cyclones, floods, and droughts, as well as a sea level rise and associated salinity intrusion in coastal areas. This is expected to increase pressure on the government to respond to the food and nutrition security needs of affected populations with food distribution programs, both for short-term relief interventions as well as for longer-term recovery assistance.

The food-based Social Safety Net (SSN) programs under the Public Food Distribution System (PFDS) and the disaster relief and recovery programs under the National Disaster Management Plan (NDMP) are at the core of the government's food security strategy. Grain stocks for public food distribution and strategic grain reserves currently rely on a network of some 670 central and local storage depots ("godowns") with a total effective capacity of 1.5 to 1.6 million tons. Most of these conventional godowns are old and poorly maintained, leading to considerable physical losses of grain as well as in the nutritional value of the grain stored.

To respond to the above challenges, GoB seeks to improve its capacity to respond to short and longer-term post-disaster food and nutrition security needs by enhancing its network of food grain storage facilities and building **modern food storage facilities**; at the same time, it aims to improve the efficacy and accountability of the public food grain system.

Project Objectives

Modern Food Storage Facilities Project (MFSP) is aimed to increase the food grains and seed preserve available households to meet their post-disaster needs also improve the efficiency of grain storage management.

There are three specific components to achieve the broader objective of the project. Under the component A and its sub-component A2 there are several specific objectives of the assignment for the provision of household storage facilities (household silos) particular in the disaster-prone areas of the country for about 500,000 households.

Scope of Work

The consultants' service for this assignment is to assist the government of Bangladesh in distributing household silos. This distribution will be followed by a market assessment and a selection procedure for the households in the disaster prone areas of Bangladesh. Consultants will be responsible for sensitization campaigning. One of the major scope of work involves with prepare and maintain the beneficiary database for the selected households. For the purpose of attending the objective of the project the consultant's scope of work includes the followings:

I. Carrying out a market assessment in the disaster-prone areas designated by the PMU in order to determine the appropriate level of beneficiaries' contribution taking into consideration their financial means, willingness to pay, and the price of comparable products on the market.

II. Conducting sensitization campaigns in project areas about: (a) the usefulness of the household silos for emergency seeds and grain storage; (b) compare and contrast the advantages and disadvantages of the various containers currently available on the market (used chemical storage drums, inferior lid closure, nonfood grade plastics, etc).

III. A beneficiary database will be prepared in consulting with the Local elected representative, community leaders and elites.

IV. Conducting TOT of the selected officials from DAE, Upazila Food Officials and Field Organizer engaged by the selected Firm or NGO.

V. Conducting training to beneficiaries on proper handling to maintain the water-proof features of the Household Silos and safe seed & grain preservation.

VI. Carrying out assessment of the logistics needed for the distribution of the Household Silos from the storage of Upazila Food Godown to the beneficiaries.

VII. Distributing the Household Silos to the selected beneficiaries and collecting the beneficiaries co-pay; and depositing the same to the project account through Electronic Fund Transfer (EFT).

VIII. To ensure quality of household silos before distribution by service provider; a third party Quality Assurance Organization (QAO) will engage by PMU-MFSP with assistance of HH Silo Distribution Service Provider to ensure quality.

IX. Monitoring the use of the Household Silos by beneficiaries, as well as reporting on the technical condition of the bins in order to draw lessons for enhancements in future design as needed.

Geographical Coverage

The project will implement in three flood affected regions in Bangladesh; covering 19 districts and 63 upazilas are shown below:

Region– 1: South and South-West Region - There are nine districts and thirty upazilas included in this region, included districts and upazilas of this region are given in the table below:

SL. No.	Name of District	Name of Upazilas
01	Bagerhat	Mongla, Morelganj, Rampal & Sarankhola
02	Khulna	Daccope, Dumuria, Rupsha & Koyra
03	Satkhira	Assasuni, Shyamnagar & Kaliganj
04	Barisal	Bakerganj & Gournadi
05	Pirojpur	Bhandaria & Mathbaria
06	Jhalokathi	Jhalokati Sadar, Kathalia & Nalchity
07	Barguna	Barguna Sadar, Amtali, Betagi & Pathorghata
08	Patuakhali	Patuakhali Sadar, Bauphal, Dumki, Galachipa & Kalapara
09	Bhola	Bhola Sadar, Burhanuddin, & Char Fesson

Region – 2: North-West Region – There are four districts and nine upazilas included in this region, included districts and upazilas of this region are given in the table below:

SL. No.	Name of District	Name of Upazilas
01	Sirajganj	Sirajganj Sadar, Belhuchi & Kazipur
02	Bagura	Dhunat & Sarikandi
03	Gaibandha	Phulchari & Sughatta
04	Kurigram	Chilmari & Raomari

Region -3: North-East Region – There are six districts and twenty-four upazilas included in this region, included districts and upazilas are given in the table below:

SL. No.	Name of District	Name of Upazilas
01	Brahmanbaria	Nasir Nagar, Bancharampur, Nabinagar, Sarail & Ashuganj
02	Comilla	Homna & Daudkandi
03	Habiganj	Baniachong, Lakhai & Ajmiriganj
04	Sunamganj	Derail, Tahirpur, Dharampasha & Sullah
05	Krishorganj	Kuliarchar, Astagram, Bajitpur, Itna, Karimganj, Nikli & Mithamain
06	Netrokona	Khalaijuri, Mohanganj & Kalmakanda

Project Progress

I. Market assessment

Carried out a market assessment in the project upazilas within the disaster-prone areas in order to determine the appropriate level of beneficiaries' contribution taking into consideration, their financial means, willingness to pay and price comparable products on the market at the beginning of the project cycle.

II. Sensitization and Awareness Campaign

The sensitization and awareness campaign aimed at improving the knowledge of the beneficiaries from service providers (DPDS and AAS) about food grade plastic household silos proper utilization and its advantage in the household level.

The sensitization and awareness campaign offered to the beneficiaries an opportunity to get to know the necessities of grain and seed preservation, concepts of food grade plastic households silo, techniques of grains and seed preservation at household silo, demerits of used insecticides/dyeing plastic drums use for grains preservation. At the same time, awareness raised on the importance of the household silos for emergency, seed and grains storage to the Peoples of the project area. Objectives of sensitization and awareness campaign are: (ii) To draw attention of the people of the project area about household silo distribution; (ii) To improve beneficiaries knowledge on food grade plastic household silo; (iii) Advantages/merits of food grade plastic household silo; and (iv) Disadvantages/demerits of exiting devices.

The occasion of sensitization and awareness campaign was organized by the service providers (DPDS and AAS) in eleven unions (Basauda, Binaykati; Dhansiri, Gobha Ramchandrapur, Koya, Natullabad, Kirtipasha, Nabagram, Ponabalia, Sekherhat and Jhalukati Paurasava) under Jhalukati Sadar upazila of Jhalukati district of Phase-I of south and south-west region during November-December 2016.

Sensitization and awareness campaign material were prepared into Bengali language as appropriate for using of beneficiaries. On the occasion of each of the places, a colorful visible poster on food grade plastic silo were displayed at the most visible points of upazila administration campus, road corners and important public places to increase awareness about the merits of food grade plastic silo targeted at farmers. A leaflet was produced for awareness purposes targeted at project beneficiaries. Poster and leaflet have been distributing during target farmers selection through participatory method like FGD. DPDS/AAS's consultant conducted awareness campaigning at different places in eleven unions under Jhalukati sadar upazila of Jhalukati district through using different methods and they are miking, distribution of leaflets, hanging poster and administering video show.

III. Training of Trainers (TOT)

The training of transfer (TOT) course aimed at improving the knowledge of officers from government agencies on distribution of food grade plastic household silo at subsidized cost, who in turn are involved in target beneficiary selection, finalization and train the farmers about proper utilization of the silo distribution. This is a positive attempt made by MFSP and DPDS-AAS for the training of the field officers of DAE and Department of Food (DOF). As the DAE field level officers are the stakeholders to implement silo distribution with a well-defined process among the target households.

The training course offered to officials of DAE, DOF and field organizers of DPDs-AAS service provider an opportunity to get to know the necessities of grains and seed preservation, concepts of food grade plastic households silo, techniques of grain and seed preservation at household silo, demerits of used insecticides/dying plastic drums use for grains preservation. At the same time, awareness raised on the importance of the households silos for emergence seed and grains storage among the participants. Simultaneously, guest speakers from government organizations and local government are well informed in a harmonized way for better policy

making on union wise distribution of number of silos, convenient distribution strategy, and complain mitigation in case of identified defect of supplied silos.

The training was organized by DPDS-AAS in close cooperation with concerned Deputy Director and upazila Agriculture Office of the DAE as well as District controller of Food, Upazila food controller and officer in charge of local supply Depot/Upazila Food Inspector. The TOT course conducted in 30 upazilas from 30 October 2016 to 29 December 2016. Major topics cover during each of the TOT session were: (i) MFSP background, objectives and interventions, (ii) Necessities of grains and seed preservation; concepts of food grade plastic household silo; harmful effects of reusing dying/pesticides carrying plastic containers using for grain storage by households techniques of food grain and seed preservation in household silo; (iii) Efficient use of silos during disaster period; (iv) Target beneficiary selection criteria, fill-up of data form along with necessary information.

Training and information materials were prepared into Bengali language as appropriate for use by officers from project stakeholders, all categories of farmers and local government representatives. Training folder for TOT participants and guest speakers were equipped with TOT module, leaflet, poster, primary form for target household selection, writing pad and ball pen. Training manual was finalized with incorporation of suggestions provided by the project Director Office, MFSP. Accordingly to the needs, designed training course and then prepared training module and information materials. The training course was designed for the SAAOs of the DAE and Food Inspector of DOF and invited upazila and district level officers from project stakeholders DAE and DOF as guest speakers in charge of distribution process implementation of silos. Guest speakers included Deputy Director, DAE of the concern district, District Controller of Food of the concern district, Upazila Parished Chairman, Upazila Nirbati Officer, Upazila Agriculture Officer, Upazila Controller of Food who expressed high interest and necessity for proper distribution of silos among the target beneficiaries to enhance poor people food security. This training gave an opportunity for the MFSP stakeholders to sit together to develop harmonized efforts on the distribution of silos and follow up its effective use.

The training course conducted for with the participants of selected officers from 30 upazilas of south and south west region. There were 724 training of which 648 SAAOs, 30 OCLSD/Food Inspector and 15 field Organizers Participatory in the TOT sessions 152 guest speakers like AD, DD, Upazila parishad chairman, Upazila Vice-Chairman, UNO, UAO, AEO, DC Food, UC Food took part in the training sessions. The training sessions were facilitated by Team leader, Training Specialist, Regional Coordinator, who was supported by M&E specialist, Data Entry Manager on logistics and financial aspects. In partnership, training sessions were held in the DDAE's training room in the sadar upazilas, upazila parishad conference room/auditorium and in upazila DAE training rooms according to suitability and availability. DAE officers were very much generous and cordial to provide their support to organize and implement the training. Through training, the participants and guest speakers were understand their roles and responsibilities regarding distribution of food grade plastic made household silos. They are now in a position to facilitate the selection of target beneficiary as per defined criteria, create awareness, payment of subsidized cost of silo, and provide training to the selected farmers on proper use of silos at the time of distribution.

E. Introduction of Hybrid Napus Mustard

Mustard plant belongs to *Brassica* genus and *cruciferae* family. Globally, majority of edible mustard oil is produced from three species of mustard and they are *Brassica compestris*,

Brassica juncea and *Brassica napus*. In Bangladesh, edible mustard oil is produced from *Brassica compestris* and *Brassica juncea*. Majority of mustard oil is produced from *Brassica compestris (>75%) and about 52% erucic acid content in it.* On the other hand, majority of mustard oil is produced from *Brassica napus* in Europe and Canada and they are long day plant (minimum 13-14 hrs day length requirement) and free from erucic acid and glucosinolates. But our day length is between 10.5-11 hrs during our winter season. We can't change the day length, but the plant breeder can change the long day plant requirement into short day plant requirement through using plant breeding science. Accordingly, Ex-BARI scientist Dr. Wahiduzzaman has changed such plant type through using species introgression method. He developed napus mustard hybrids (same as canola) and those are suitable for cultivation under Bangladesh climatic condition. Such napus mustard hybrids are high yielding (2-3 t/ha), free from glucosinolates and erucic acid content. Thus, oil of napus mustard hybrid varieties are human health hazard free than *Brassica compestris* and *Brassica juncea*. Its cake can be used as safe poultry feed and fish feed. The napus mustard is resistance to diseases and bad weather.

According to DAE, total of 7.1 lac MT mustard grain was produced on 5.51 lac hectare of land (1.28 MT/ha) during 2016-17 winter season in the country. Our per capita oil consumption is about 7-8 gm per day (30-40 gm/head/day in developed countries). On the basis of 10 gm/head/day oil consumption, our country edible oil requirement is about 10 lac MT. We can meet-up only about 25% of the total edible oil requirement (3.0 lac MT) from our oil seed production in the country. As a result, we spend about 15,000 crores Taka to import 6.0 lac MT of edible oil per year.

To reduce the import of edible oil, country needs to increase the oil seed production in general and safe mustard and mustard oil production in particular. Accordingly, AAS was undertaken the initiative to introduce the hybrid napus mustard in the country through field trial and demonstration during 2015-16 winter season and 2016-17 winter season with progressive mustard growers in collaboration with Dr. Wahiduzzan. Out of a total of 23 established trial plots during 2015-16 winter season in three districts, of which the highest number of trial plots was established in Jessore district (16 trial plots) followed by Jhenaidah district (4 trial plots) and Magura district (3 trial plots). Average about 1.41 t/ha mustard grain yield was observed with the ranged grain yield between 0.7 t/ha to 2.86 t/ha during 2015-16 winter season in three districts. Average growth duration was observed about 80 days during 2015-16 winter season. Milling outturn was found as much as 33% with traditional milling.

Average about 11,300 seeds per plant along with average about 426 pods per plant and 27 seeds per pod were observed during 2015-16 winter season. Average about 47 branches were observed per plant. Average plant height was observed about 120 cm. Flowering starts from 21 days after sowing of seeds of hybrid napus mustard during 2015-16 winter season.

Of the total 11 established trial plots during 2016-17 winter season in four districts, of which the highest number of trial plots was established in Natore district (4 trial plots) followed by Jhenaidah/Sirajganj districts (3 trial plots) and least in Chuadanga district (1 trial plot). Average about 1.37 t/ha mustard grain yield was observed with the ranged grain yield between 0.8 t/ha to 2.03 t/ha during 2016-17 winter season in four districts. Average growth duration was observed about 84 days during 2016-17 winter season.

F. Bulk Vegetable Seed Production and Marketing

Mostly private seed companies and large seed dealers procure bad quality OP vegetables seed as bulk from Bepari/seed dealers/seed farmers in the country in general and Meherpur and Chuadanga districts in particular. Accordingly, AAS was developed an approach on the bulk OP vegetables seed production and marketing to seed companies and seed dealers in the country during 2008-9. As per MOU between AAS and Krishi Seba have been working with trained seed farmers to produce the selected OP vegetables seed on demand driven basis in Meherpur and Chuadanga districts and business based better understanding with selected seed buyers in the country from 2012.

However, Krishi Seba was produced OP vegetables seed with 85 trained seed farmers and sold 43.5 MT of produced seed of 7 type of OP vegetables to 5 seed companies (Including Mollika Seed Company) and 21 seed dealers across the country during 2016. Out of a total of 43.5 MT of OP 7 type of vegetables seed, of which the highest quantity of seed produced for Red Amaranth (30 MT) followed by Indian Spinach/Swamp Cabbage (5 MT), String bean (2 MT), Pumpkin/Snake gourd/Bottle gourd (0.5 MT). Similarly, out of a total of Tk. 5,830,000 seed sale value, the highest seed sale value was observed for Red Amaranth (Tk.2,850,000) followed by Indian Spinach (Tk. 1,500,000), Swamp Cabbage (Tk.700,000), String Bean (Tk. 360,000), Snake gourd (Tk. 165,000), Pumpkin (Tk. 135,000) and Bottle gourd (Tk.120,000). Seed sold sale volume and value of seven type of OP vegetables are provided in Table.19.

Krishi Seba was undertaken the initiative as a facilitator on the bulk seed production and marketing of OP vegetables as a non-profit based quality seed supply in the market. On the other hand, AAS was undertaken the initiative on the bulk seed production and marketing of OP vegetables to validate the earlier developed approach for its long term sustainability to ensure the quality seed supply on one end and to offer better profit for the seed farmers on the other end of the equation.

Table.19: Seed sale volume and value of seven OP vegetables during 2016.

Crop	Seed Sold (MT)	Price (Tk./Kg)	Sale Volue (Tk.)
Red Amaranth (Lal Shak)	30	95	2,850,000
Indian Spinach	5	300	1,500,000
Swamp Cabbage (Kolmi Shak)	5	140	700,000
Pumpkin	0.5	270	135,000
Snake Gourd	0.5	330	165,000
String Bean	2	180	360,000
Bottle Gourd	0.5	240	120,000
Total	**43.5**	**-**	**5,830,000**

G. Rice hybrids demonstration

The farmers participatory field demonstration was conducted with 15 farmers on the selected five rice hybrids at 3 villages in Jhenaidah, Magura and Jessore districts during 2015-16 Boro season. The purpose of the farmers' participatory rice hybrids field demonstration was to popularize the latest released rice hybrids among the farmers in Jhenaidah, Magura and Jessore districts. Five rice hybrids were selected for the field demonstration (Mukti-1, Rupali-7, Nabin, Durbar and Subarno-3) during 2015-16 Boro season. Selected five rice hybrids, their country origin, seed supplier and released year are provided in Table.20.

Table.20: Country origin, seed supplier and released year of 5 rice hybrids.

Rice hybrid	Country Origin	Seed Supplier	Released year
Meghna	China	BRAC	2011
Rupali-7	China	BRAC	2011
Nabin	China	Ispahani Seed	2011
Durbar	China	Ispahani Seed	2011
Subarno	China	Supreme Seed	2011

Total of 1 kg seed was provided for each demo farmer for one selected rice hybrid variety at 3 selected communities in Jhenaidah, Magura and Jessore districts. Each selected farmer transplanted the seedlings of the involved rice hybrid variety along with a control of modern rice variety. Cluster demonstration with five farmers at each community was established at 3 communities with 15 trial farmers in Jhenaidah, Magura and Jessore districts during 2015-16 Boro season. Germination test of seed of the selected five rice hybrids was conducted by AAS after procurement and before distribution of seed among the 15 trained farmers. The post established rice hybrids field demonstration plots were monitored by the field Agronomist of AAS. Farmers demand-led 3 field days were conducted at 3 communities in three working districts before harvesting the crop.

H. Strengthening FARMSEED approach

It is well accepted that seed is the single most important input for any plant-based agricultural production system. Seed quality determines the upper limits of crop yield potential and therefore the productivity of all other inputs is constrained by the quality of the seed ingredient. Accordingly, improved seed can frequently make a substantial, incremental contribution to overall agricultural productivity, doing so at relatively little incremental cost. A farmer's risk declines substantially if the genetic and physical purity of the seed is maintained. There is evidence that using quality rice seed alone can increase rice yield as much as 20% irrespective of the management practices. In contrast with formal seed systems, which operate at national

level, informal seed systems operate mainly at the community level. Informal seed systems are typically quite flexible, involving variety of exchange mechanisms, which facilitate the distribution of seeds between participating households (e.g. cash/barter). Informal seed systems can be regarded as traditional in that they normally involve long-standing, well-established practices and links between seed products and consumers. Little improvement of informal seed system can ensure the availability of quality seed in the hands of farmers, especially resource poor farmers at the community level and FARMSEED (Farmer-to- farmer seed exchange system) is an example. Thus, AAS has developed FARMSEED approach, which is the combination of formal and informal seed system and fully sustainable to ensure quality seed supply of the demanded crops among the farmers in general and rice in specific.

Accordingly, AAS was undertaken initiative for dissemination of latest rice varieties (BRRI dhan62 and BRRI dhan63) through seed production and distribution using FARMSEED approach in Jessore and Narail districts during 2015-16 Boro season in collaboration with trained seed farmers and community coordinators. Total of 22,000 kg paddy produced for distribution among the motivated farmers through using FARMSEED approach, of which 8,000 kg seeds of BRRI dhan62 and 14,000 kg seeds of BRRI dhan63 during 2015-16 Boro season. Out of 22,000 kg produced paddy, of which about 2,500 kg used as seed by the community farmers. On the other hand total of 10 trained onion seed farmers were undertaken initiative for seed production of Shuksagor and Teherpuri varieties of onion under technical guidance from AAS field staff in collaboration with Krishi Seba in Meherpur district during 2015-16 winter season. All the involved commercial onion seed farmers sold their produced and stored onion seed of Shuksagor and Taherpuri varieties during sowing of 2016-17 winter season for bulb onion cultivation.

I. Operating fish hatchery

AAS has been operating its fish hatchery at Alampur, Kushtia with trained fishermen on contractual agreement since 2000. Under such sub-contract system a total of 205 Kg quality hatchlings of the five different carps (Ruhu, Catla, Mrigal, Silver Carp & Bata) was produced and sold among the resource poor fish farmers and fishermen in Kushtia district during the reporting period of the Annual report 2016 (Table.21).

Table.21: Hatchlings production of five carps during 2014

SL	Carp type	Hatchlings (Kg)
1	Rohu	35
2	Mrigal	30
3	Catla	20
4	Silver Carp	40
5	Bata	80
Total		**205**

J. Year round sweet corn production and marketing

AAS was undertaken an initiative for piloting year round sweet corn production and marketing with a commercial progressive farmer (Humayun Kabir) in sadar upazila of Jessore district using

hybrid sweet corn varieties from 2014. Such year round sweet corn production and marketing was a commercial approach on the basis of self-initiative from a trained and motivated commercially progressive farmer. He planted sweet corn seed on 2 decimals of land within 1st week of each month of 2016 on his own land and using his own resources. He managed to sell his produced fresh sweet corn cob on average Tk.15/ cob in Jessore town.

K. Uptake of high value crop varieties

AAS, from its earliest days, has focused most of its resources and energy on promoting high value crop production strategy in Bangladesh. The overall fertility of the land, the small plot size and cultivation intensity; the easy availability of supplemental irrigation supplies all are in favor of increased cultivation of high value cash crops in Bangladesh. Accordingly, wherever appropriate, AAS introduces new, high value cash crops and accompanying production packages. The high value crop uptake process is participatory and is demand-led by the involved farmers. AAS has been continuing to introduce new varieties of high value cash crops with appropriate production packages in all of its project areas. AAS has demonstrated about 25 different new cash crop varieties from private seed companies during the reporting period in two working zones.

L. Building capacity of partners

AAS has presented a series of agricultural training programmes for the benefit of more than 2500 staff of AAS and its partner organizations (NGOs & CBOs) along with relevant public & private sector organizations since its founding in 1989.

About 100 staff of AAS partner organizations (NGOs & CBOs) along with relevant public and private sector organizations received training from AAS during this reporting period. Chief executives and staff of partner organizations (POs), public and private sector organizations attended in various workshop, seminar, meeting, and field days etc on the relevant issues

during this reporting period. Partner organizations participated in various trials, demonstrations, and studies during this reporting cycle.

M. Developing skill and capacity of partner farmers

AAS has been using participatory training and motivational approaches to develop the skills and capacities of its partner farmers since its founding in 1989. AAS conducted series of training and motivational activities including video show under different projects to develop the skill and capacity of more than 50,000 farmers in its three working zones in the country during this reporting period. AAS provided practical training and orientation on several issues including video show, vegetable seed production etc to more than 50,000 farmers including resource poor farmers (RPFs); 30% of who were resource poor female farmers.

N. Formation of farmer groups

Since inception of AAS, total more than 1350 farmer groups have been formed with more than 45000 partner farmers in more than 150 upazilas in more than 45 districts under 3 working zones up to December 2016. These are all informal agricultural production/seed production groups and committed to create their own wealth by using AAS's strategies on agriculture throughout the year. Total of 100 farmer groups with partner farmers were formed in 3 working zones during January-December 2016. Each farmer group has received various training courses and motivational activities (including Video shows) since it formed at each community. The zone-wise total number of farmer groups formed and their total number of member farmers during the reporting period is provided in Table.22.

Table.22: Zone-wise total number of farmer groups and their member farmers

Zone	**# of farmers group**	**# of Partner farmers**
North	5	125
South	45	1125
East	50	1250
Total	**100**	**2500**

VI. Organizational Particulars, Strength and Strategy

Year of Establishment: 1989

Chief Executive: Md. Harun-Ar-Rashid, Ph.D

Contact Person: Md. Harun-Ar-Rashid, Ph.D

Mailing Address

Head Office		
Agricultural Advisory Society (AAS) House # 13/14 (1st Floor), Salimullah Road, Block-D, Mohammadpur Dhaka-1207, Bangladesh Tel: 880-02-58152151, Cell: 01712094218, 01747403310 E-mail: harunaas@gmail.com Skype ID: harun.ar.rashid10 Web: www.aas-bd.org		
Zonal Office	**Area Office**	
Northwest		
Agricultural Advisory Society (AAS) Ashutospur, Dipchar, Sadar, Pabna	Agricultural Advisory Society (AAS) College Road, Tarash Sirajganj	Agricultural Advisory Society (AAS) Niloy, Koigari, Gohail Road, Bogra-5800
	Agricultural Advisory Society (AAS) Rangpur Road, Bangali Pur Saidpur, Nilphamari	-
Southwest		
Agricultural Advisory Society (AAS) Sheikh Hati, Bablatola, Sadar, Jessore	Agricultural Advisory Society (AAS) Adarsha Para, Sadar, Jhenaidah	Agricultural Advisory Society (AAS) Krishi Seba, Tarminal Road , Sadar, Chuadanga
	Agricultural Advisory Society (AAS) Harta, Wazirpur Barisal	-
Northeast		
Agricultural Advisory Society (AAS) Siraj Nagar (Fakir Bari) P.O: Narain Chara-3211 Srimangal, Moulvibazar	Agricultural Advisory Society (AAS) Motkhola Road, Pakundia Bazar Pakundia, Kishoreganj	Agricultural Advisory Society (AAS) College Road, Sadar Jamalpur
	Agricultural Advisory Society (AAS) Hatia Shadan, Noakahli Housing Estate House No. 12, Road No. 5, Noakahli	-

Legal Status

AAS's Registration information:

Organization / Authority	Registration's #	Date
i) NGO Affairs Bureau	No. 1015	Date: 4.3.1996/31.5.2007/04.03.2011/ 04..03.2016 (renewed)
ii) Society Registration, Joint Stock Companies	No. 1379 (13) 91	Date: 5.2.1991
iii) Seed Wing, Ministry of Agriculture	SPMI/0432/2000	Date: 3.1.2000 & 19.10.2016 (Renewed)

Partnership Status with Forum

Sl. No.	Status	Forum	Address
1	Apex NGO (AAS)	AAS partner NGOs Network (100 partners NGOs)	House # 13/14 (1st Floor), Salimullah Road, Block-D Mohammadpur, Dhaka-1207 Phone: 880-2-58152151 Email: harunaas@gmail.com www.aas-bd.org
2	Member	Bangladesh Seed Association (BSA)	145, Siddique Bazar (1st floor), Dhaka-1000 Phone: 880-2-9569677, 7112986 Fax: 880-2-956977, 9566196 E-mail: bsma@agnionline.com
3	Member/ Chairman	Bio-Village Forum (BVF) (50 members NGO forum)	House # 1/6, Block - G, Lalmatia, Dhaka-1207 Phone: 880-2-58152151, Fax: 880-2-8117781 E-mail: harunaas@gmail.com Web: www.aas-bd.org
4	Member	Bangladesh Rice Foundation (BRF)	Flat No. B-1 (1st floor), House No. 7/5, Block-C, Lalmatia Dhaka-1207 E-mail: bsiddiqui04@yahoo.com
5	Member	Bangladesh Paribesh Andolon (BAPA)	9/12, Block-D, Lalmatia, Dhaka-1207 Tel: 8128024, 8113469 E-mail: bapa2000@gmail.com

Operational Areas

Working areas and involved PNGOs:

District	Name of Upazila	Union (No.)	Village (No.)	PNGOs (No.)
Zone-I: Southwest				
Satkhira	Kolarua, Sadar, Tala (3)	6	15	7
Khulna	Fultola, Daulatpur, Sadar, Dumuria, Boitaghata, Dacop, Paikgacha (7)	13	30	6
Bagerhat	Sadar, Chitolmari, Fokirhat, Mollahat (4)	8	20	5
Pirojpur	Nazirpur, Nesarabad (2)	2	5	1
Chuadanga	Sadar, Damurhuda, Jibonnogar, Alamdanga (4)	16	40	2
Meherpur	Sadar, Gangi, Mujibnagar (3)	6	15	1
Jhenaidah	Sadar, Kaligonj, Horinakunda, Mohespur, Kotchadpur, Shailokupa (6)	25	50	2
Jessore	Sadar, Bagherpara, Jhekorogacha, Monirampur, Kashobpur (5)	15	35	3
Magura	Sadar, Salikha (2)	12	28	1
Kushtia	Sadar, Mirpur, Kumarkhali, Khoksha (4)	6	12	1
Faridpur	Sadar, Boalmari, Bhanga, Modhukhali, Charbhadrasan, saltha, Nagarkanda, Sadarpur (8)	18	40	4
Rajbari	Sadar, Baliakandi, Goalanda, Pangsha (4)	13	30	2
Gopalganj	Sadar, Tungipara, Kotalipara, Kasiani, Maksudpur (5)	20	50	3
Madaripur	Kalkini, Shibchar (2)	4	10	1
Barisal	Wazirpur, Banaripara, Babuganj, Agailjhara, Gournadi (5)	14	30	5
Patuakhali	Sadar, Kalapara (2)	3	8	4
Bhola	Sadar, Charfesson, Lalmohan, Borhanuddin (4)	15	40	2
Zone-II: Northwest				
Dinajpur	Phulbari, Parbotipur, Nowabganj (3)	6	14	3
Gaibandha	Polashbari, Gobindaganj (2)	2	5	2
Rangpur	Pirgonj, Bodorganj, Mithapukur (3)	3	8	3
Thakurgoan	Sadar, Pirgonj (2)	2	4	2
Sirajgonj	Tarash, Shahzadpur, Ullapara (3)	5	14	6
Natore	Sadar, Gurudashpur, Boraigram, Lalpur (4)	17	39	9
Pabna	Sadar, Atgharia, Ishurdi (3)	7	15	4
Rajshahi	Putia, Bagmara (2)	5	13	2
Bogra	Sadar, Shibhanj (2)	2	4	2
Zone-III: Northeast				
Moulvibazar	Srimangal, Sadar, Kamolganj, Rajnagar (4)	16	40	4
Habiganj	Madhobpur, Chunarughat, Sadar, Bahubal, Chunarughat (5)	18	45	3
Kishoregonj	Pakundia, Kotiadi (2)	4	8	5
Jamalpur	Sadar (1)	1	2	1
Tangail	Kalihati, Sadar (2)	4	4	1
Brahmanbaria	Sarail, Ashuganj, Sadar (3)	6	6	2
Netrakona	Purbadhala (1)	2	4	1
33	**112**	**296**	**683**	**100**

Bankers

1. Arab Bangladesh Bank Limited, Dhanmondi Branch, Dhaka
2. Agrani Bank, Farmgate Branch, Dhaka
3. Islami Bank Bangladesh Ltd., Dhanmondi Branch, Dhaka

The AAS Executive Committee (EC)

Name of Persons	Designation	Years of Term of Office	Occupation
Md. Harun- Ar-Rashid	President	1991- till today	ED, AAS
Mr. Bazlur Rahman	Vice-President	September 2009- till today	Free Lance Consultant
Ziaur Rahman	General Secretary	1995- till today	Proprietor, Brothers Polymar & Modern Pipe Industry
Mr. Khandoker Anisur Rahman	Assistant General Secretary	2004- till today	ED, PRISM Foundation
Mazibur Rahman	Treasurer	2010- till today	Proprietor, Jamalpur Seed
Md. Robiul Islam	Member	2010- till today	National Consultant, UNICEF Bangladesh
Abdul Mannan Sarker	Member	1995- till today	Free Lance Consultant

The AAS Advisory Board

Name of Persons	Designation	Years of Term of Office	Occupation
Dr. Humayun Kabir	Director	2014-till today	Free Lance Consultant
Dr. Wahiduz Zaman	Director	2015-till today	Free Lance Plant Breeder
Md. Harun- Ar- Rashid	Director	1991- till today	Executive Director, AAS
Dr. Goya Nath Sarkar	Director	2015-till today	Free Lance Consultant
Dr. Tariful Islam	Director	2015-till today	Free Lance Consultant

AAS Partner NGO Network

AAS has historically implemented its rural based, agricultural productivity enhancing projects through its large network of rural based Partner Organizations (NGOs/CBOs). AAS has been strengthening and expanding its "partner NGO network" all over the country since 1989. At the beginning, a total of 23 national and international NGOs were involved with AAS partner NGO network during 1989-90 and more than 200 NGOs were involved during later part of 1990s. At present about 100 NGOs directly and indirectly are involved with AAS partner NGO network. Moreover, 20 NGOs are involved for implementing AAS developed intensified crop management strategies and other high value added agricultural activities with their client resource poor farmers in 3 working zones. The capacity of 20 partner NGOs and more than 100 CBOs have built during 2016 in three working zones of the country.

One of AAS's great strengths is that it is able to work through a large network of experienced grassroots partner organizations (NGOs & CBOs). Trained CBOs, rural youth groups, women groups, and local NGOs representing diverse rural constituencies are all part of the AAS-Partnership Network. Accordingly, AAS gains strength from its network partners. On the other hand, AAS maintains close and collegial relationships with a large number of well-funded and staffed public sector and international organizations that have solid agri-technical credentials. These include IRRI, CIMMYT, BRRI, BARI, BARC, BADC, DAE, FAO, CABI, Rutgers University, RDC, JOBS, GROS, IFPRI, RDA, MEAS, AI, AA, CIAT, HarvestPlus, IFDC, Walmart Foundation, UC'D and others with whom AAS maintains and sustains long-term collaborative relationships.

Staff strength

Besides its permanent staff, AAS employs personnel as per the requirements of its individual projects. Moreover, AAS also utilizes personnel on a voluntary basis as part time. The personnel of AAS are posted at district, upazila, union and village levels to work in close contact with its client farmers, the resource poor in particular.

AAS has a total of 45 staff, of which 18 is permanent full time and enlisted 27 part time and seasonal staff for implementing its program activities in more than 30 districts. Out of 45 staff, 25 staff is technical staff, specialized in Agriculture, Irrigation and water management, Environment, Seed technology, Food & Nutrition security, Aquaculture, Business Management, Value chain, Supply chain and Poultry farming, Study, M&E etc. AAS personnel are all experienced, highly qualified professionals in their own field, who contribute to the success of its projects and the development of Bangladesh's agricultural capacity. The AAS staff is fully committed to building the skill and technical capacity of poor farmers; to create wealth for them in order to improve their livelihoods. Our dedicated staffs play a key role in this.

List of staff (Full time & Part time)

Sl. No.	Name	Designation	Qualification	Full Time	Part Time
1	Md. Harun-Ar-Rashid	Executive Director	Ph.D	✓	
2	Mrs. Azima Sultana	Admin. Officer	M.A.	✓	
3	Mr. Ziaur Rahman	Finance Manager	M.Com (A/C)	✓	
4	Dr. M. Nasir Uddin	Consultant, Seed	Ph.D		✓
5	Dr. Tariful Islam	Consultant, Environment	Ph.D		✓
6	Dr. Humayun Kabir	Advisor, Climate Change	Ph.D		✓
7	Dr. Jalal Uddin Iqbal	Advisor-Health	MBBS		✓
8	Kbd. Rakibul Islam	Zonal Coordinator	B.Sc. Ag (Hons)	✓	
9	K.M. Alauddin	Zonal Coordinator &Fishery Specialist	M.Sc (Fishery)	✓	
10	Deb Kumar Nath	Irrigation Specialist	MS (Agri. Engineer)		✓

Sl. No.	Name	Designation	Qualification	Full Time	Part Time
11	Md. Mohafez Ali	Director (Admin) & Food Security Specialist	M.Sc.Ag		✓
12	Khandaker Aminul Kabir	Zonal Coordinator & Nutrition Specialist	M.Sc (Chemistry)	✓	
13	Sayema Sabina	Computer Engineer	Dipoloma in Electronic Eng.		✓
14	Alok Kumar Biswas	Entomologist	MS (Entomologist)		✓
15	Shahedur Rahman Syem	Horticulturist (Nursery)	MS (Ag)		✓
16	Dr. AHM Asadur Rahman	Plant Pathologist	Ph.D		✓
17	Mostafa Kamal	Field Officer (Seed)	Diploma (Ag)		✓
18	Nurun Nabi	Area Coordinator	BS		✓
19	Md. Shahinur	Field Coordinator)	H.S.C	✓	
20	Aminul Islam	Horticulturist	MS (Ag)		✓
21	Md. Rezaul Islam	Field Coordinator	BS	✓	
22	Md. Sajidul Islam	Area Coordinator	MSS (Sociology)		✓
23	Md. Sohagh Parvez	Area Coordinator	MSS		✓
24	Md. Nazrul Islam	Area Coordinator	Diploma in Agricultural		✓
25	Md. Moinuddin Ahamed	Area Coordinator	H.S.C	✓	
26	Subrota Kumar Ghosh	Field Coordinator	H.S.C	✓	
27	Md. Anowar Hossain	Field Coordinator	H.S.C	✓	
28	Md. Abdus Salam Monju	Field Coordinator	H.S.C	✓	
29	Md. Aqeeb Imtaz Harun	Computer Engineer	Computer Science		✓
30	Md. Ibrahim Hossain	Computer Operator	H.S.C	✓	
31	Md. Mosharaf Hossain	Field Coordinator	H.S.C	✓	
32	Md. Elias Hossain	Field Coordinator	H.S.C	✓	
33	Shaiful Islam (1)	Area Coordinator	H.S.C	✓	
34	Shaiful Islam (2)	Legal Officer	MA		✓
35	Md. Imamul Hossain	Area Coordinator	BBA	✓	
36	Md. Rafiqul Islam	Field Coordinator	H.S.C	✓	
37	Md. Nazrul Islam	Enumerator	Diploma (Ag)		✓
38	Md. Arshadul Haque	Supervisor	BA		✓
39	Shahjahan Akanda Saju	Enumerator	BA		✓
40	Md. Firoz	Enumerator	BA		✓
41	Md. Hasan	Team Coordinator	MSS		✓
42	Md. Mokbul Hossain	Team Leader	BA		✓
43	Md. Awlad Hossain Ahmmad	Enumerator	BA		✓
44	Md. Shahidul Islam	Enumerator	BA		✓
45	Md. Rofiqul Islam	Enumerator	BSS		✓
Total				**18**	**27**

Financial status, experience and management

The financial transactions are maintained following the international accounting standards and rules of the government of Bangladesh. An annual audit is conducted at the close of every calendar year by the reputed audit firm as per approval from general committee.

The internal audit team periodically checks the financial transactions and justifies the utilization of fund and report to the Executive Director. The accounts and finance personnel control the fund utilization according to the budget and physical output. The external audit team of registered audit firm usually checks the books of accounts and records and report to the CEO. The Executive Committee, the General Committee and the Advisory Board of AAS approve the financial Audit report.

Management of AAS

The Executive Committee headed by the president of the society does the project Activities of AAS and policy planning. The Executive Committee is elected/approved by the General Committee. The Executive Director of AAS implements the projects and programs through AAS staff and its partner organizations in the working areas. The Executive Director carries out the activities of AAS with the assistance of a group of professionals appointed by him and approved by the Executive Committee. The Executive Director is accountable to the Executive Committee, General Committee and Advisory board of the AAS. The hierarchy is strictly maintained according to the organogram of the organization. The plan of activities is implemented according to the guideline of the organization through the field personnel and assures the best quality of outputs.

VII. AAS Publications

AAS has published its various document in several forms during the period of this Annual report, the major publications are enlisted below:

1. Cost and Return Economic Analysis for Eleven Crops on the Dyke of Shrimp Enclosure, 31 July 2016
2. Inception Report: Modern Food Storage Facilities Project (MFSFP) of DG Food, Ministry of Food/DPDS/AAS as Disaster Management Specialist, July 2016
3. Cost and Return Economic Analysis for Ten Vegetable Crops Cultivated under Sorjan System, 1 October 2016
4. Annual Progress Report: Delivery of High Zinc Rice in Bangladesh on BRRI dhan64, BRRI dhan62 and BRRI dhan72 during 2016 Boro and 2016 T.Aman season (January 2016 – December 2016), December 2016
5. Final Technical Report: Conducting Video Show on Healthy Rice Seedlings Production during 2016 Boro season
6. Final Report: Household Survey on Rice Production during 2016 Aman Season
7. Final Report: Household Survey on Rice Production during 2016 Aus Season
8. Final Report: Household Survey on Rice Production during 2016 Boro Season

VIII. AAS's Resources

SL #	Item	No
1	Head Office (Rented)	1
2	Zonal Office (Rented & collaborative with PNGOs)	3
3	Area Office (Rented & collaborative with PNGOs)	9
4	Training Center (Rented)	2
5	Fish Hatchery (rented)	1
6	Computers (Sets)	4
7	Laptop	1
8	Multimedia	1
9	AC	2
10	IPS	3
11	Motor Cycles	3
12	By Cycles	1
13	Tables (All)	10
14	Chairs (All)	30
15	Moisture Meter (All)	2
16	Digital Camera	1
17	Generator	1
18	Fans (All)	10
19	Telephone	1
20	Steel Almirah etc	10
21	Balance Normal	2
22	Sealing Machine	1

Figure.2: Location map of eight districts of Faridpur and Jessore hubs

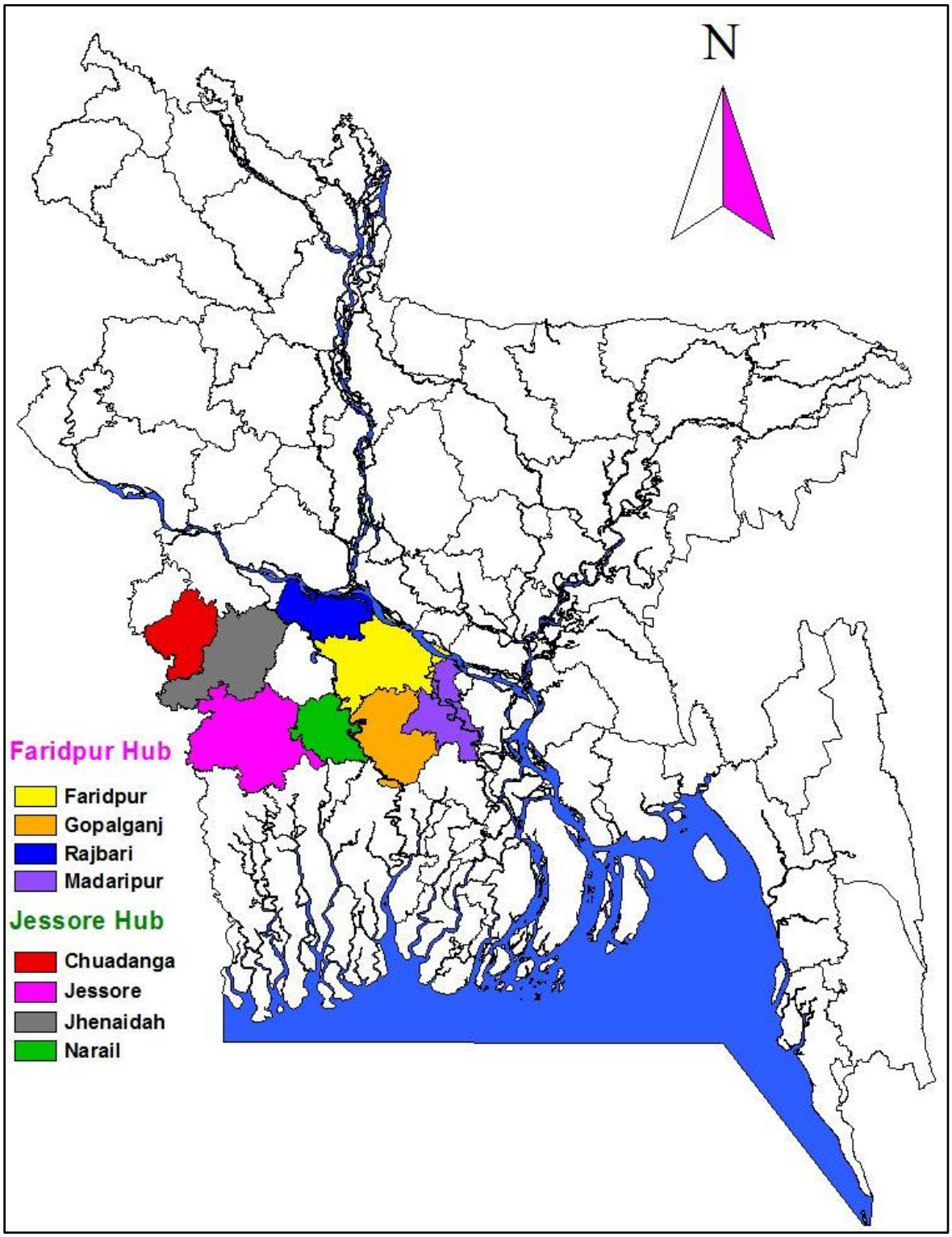


Figure.3 Location map of Charfassion upazila of Bhola district

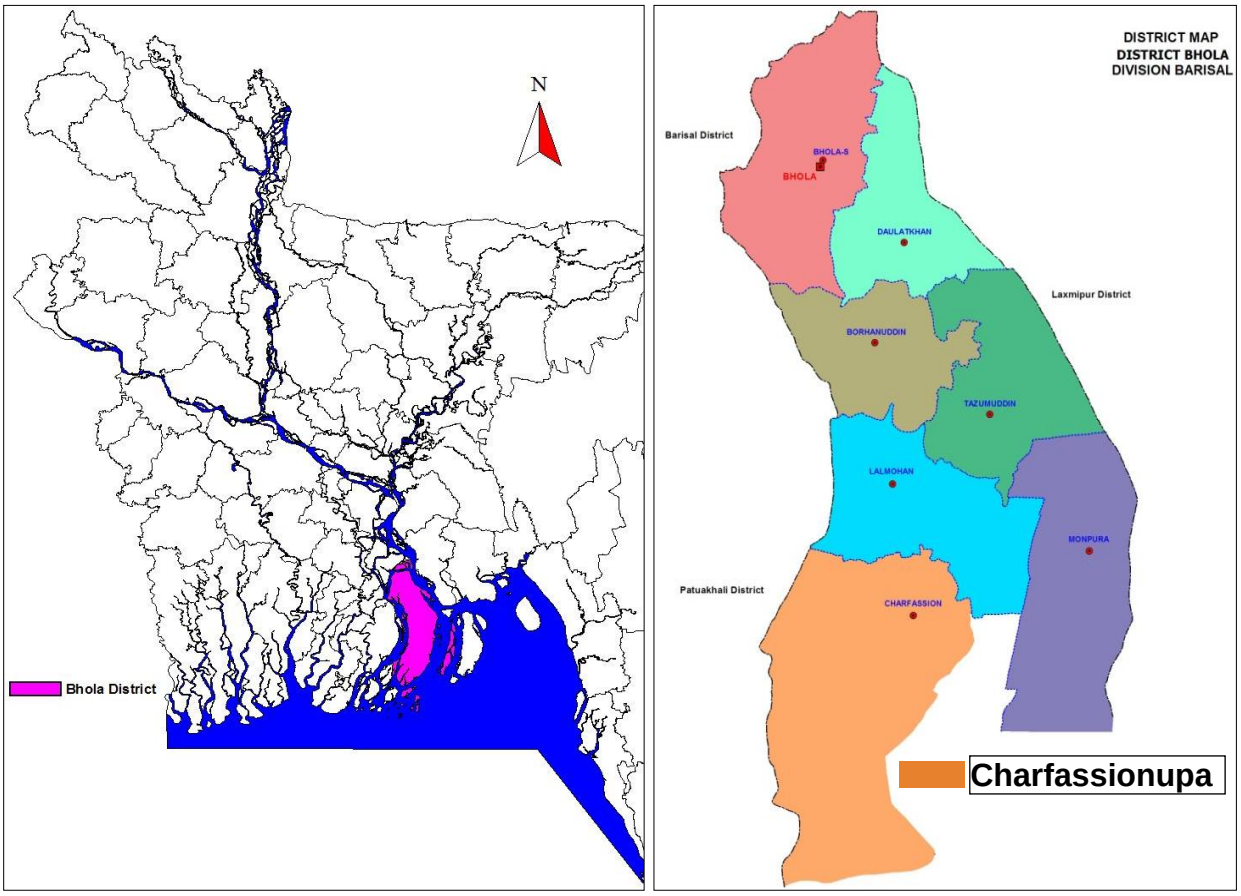
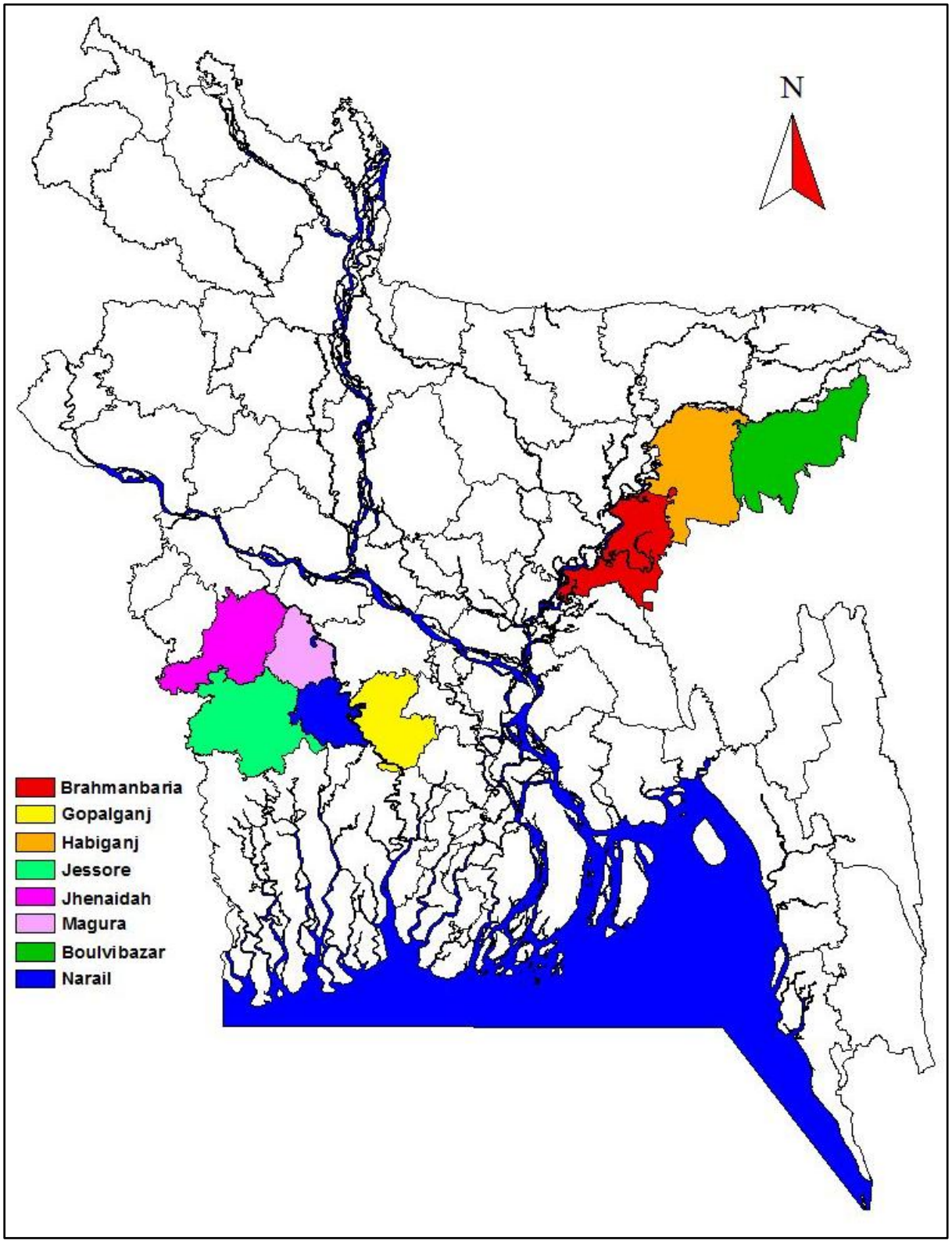
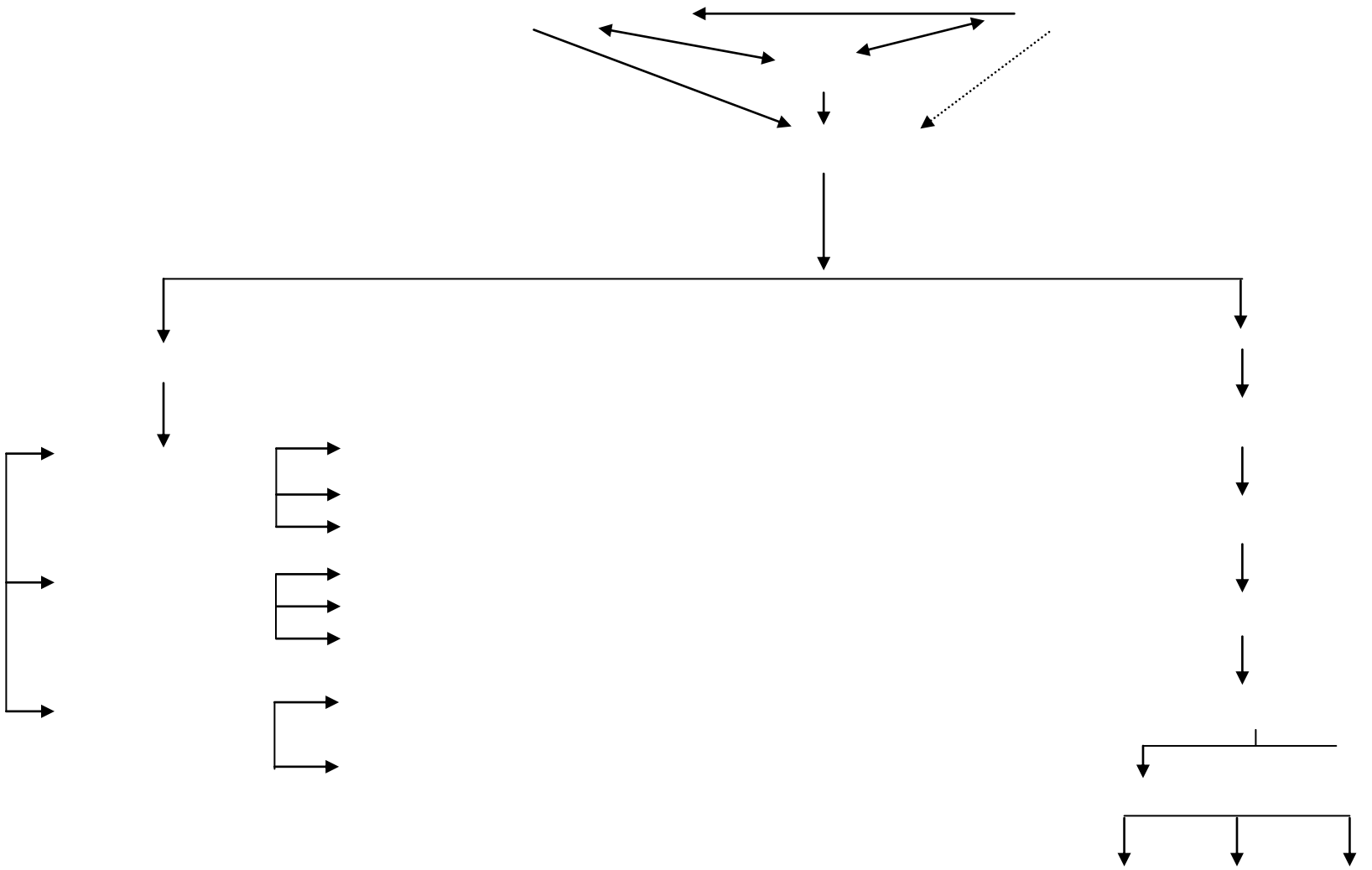


Figure.4: Districts Location Map



IX ORGANOGRAM OF AAS



Executive Committee **General Committee**

X. Advisory Board

Executive Director

Director (Logistics/ Finance)

Finance Manager
- FOs
- Aud.Os
- Fin. Staffs

Admin Manager
- AO
- Adm. Staffs
- SS

M&E Coordinator
- M&E Officers
- Field Staffs

Director (Program)

ZC (North)/ PC

ZC (South)/ PC

ZC (East)/ PC

ZC (West)/ PC

Area Coordinators

FCs Logistic Volunteers
S. staffs