Bangladesh Journal of Extension Education *ISSN 1011-3916*
Volume 29, No. 1&2, 2017: 41-50 *Research Article*
Journal home page: http://www.bjeebd.com
Published by: Bangladesh Agricultural Extension Society (BAES)

Decentralized Agricultural Extension Services towards Improving Productivity, Food Security and Livelihood

Ratan Chandra Dey[1], M. Khaled Kamal[2] and M. Mustaque Ahmed[3]

[1]Director, Project Implementation Unit, NATP: Phase-II Project (NATP-2), [2]Director, Project Implementation Unit, NATP: Phase-I, and [3]Training and Communication Expert, Project Implementation Unit, NATP: Phase-I, Department of Agricultural Extension (DAE), Khamarbari, Farmgate, Dhaka-1215

Correspondence: Ratan Chandra Dey (ratanbtech@yahoo.co.uk)

Abstract

To increase national agricultural productivity and farm income of smallholders, the Government of Bangladesh (GOB) is implementing the "National Agricultural Technology Project" since 2007-08 through dissemination and adoption of improved technologies and improving farmers' access to markets. In achieving these, the Project adopted integrated (crop, livestock and fisheries) Decentralized Extension Services (DES) through "Group Approach".
In the process, the Crop Extension Component (Department of Agricultural Extension) formed and mobilized total 27,150 farmers' Common Interest Groups (CIGs) who served as interlocutors and "vehicles for technology transfer" at the community level. Bottom-up demand-led extension planning by the CIGs through identification of problems limiting production and productivity, preparing micro extension plans and implementing them with the project support has been the main focus of the DES. The extension activities included participatory implementation of a large number of CIG-proposed demonstrations incorporating a set of recommended component technologies having direct impact on increasing crop yields and providing support for organizing field days at demonstration sites, exposure visits and integrated District and Upazila Agriculture fairs. The DES support increased the yield of major crops by 5.31% - 21.19% and gross margin by 7.16% - 99.10% against farmers' current practices. About 99% CIG farmers and through them a large number of non-CIG farmers (CIG: Non-CIG Adoption Ratio of 1.00: 6.47) adopted the demonstrated technologies with a uptake rate of 2.57 technologies per CIG and 2.04 per non-CIG farmers. Independent Impact Assessment studies showed that the crop yields increased by 8.96-55.45% in different commodities as compared to baseline yield (2007-08) and 4.33-49.02% against farmers' contemporary practices indicating that DES support is directly contributing in attaining sustainable food security and mitigating deficit production of other major agricultural commodities. Likewise, the gross margin of crop production of CIG farmers, who directly received demonstration and training, increased between 17.32-85.06% against Control and 2.08-60.63 over non-CIG farmers. Enhanced crop yield increased the overall farm income by 24% in project area and 18% in non-project area with a net income increase of 37% and 8%, respectively. Besides, supporting technologies like AWD irrigation in Boro rice, sex-pheromone based IPM in vegetables and compost production and use has immensly contributed in environmental safeguard. Similarly, identification and supporting technlogies for women CIGs addressed gender equity and social safeguard issues. Development of CIG Bye-laws, their registration with the Department of Cooperatives, raising group savings and investment of group fund for acquisition of CIGs' community resources and income generating activities has contributed in sustainability of CIGs Farmers' Organization at the Grassroots. Establishment of Farmers' Information and Advice Centres (FIACs) and its functioning as permanent office for extension service delivery at Union Parishads, has widened the outreach of extension service providers and enhanced farmers' access to extension support services to a great extent.

Keywords: Decentralized extension services, Common Interest Group (CIG), NATP, DAE

Approach and Methodology

Project Implementation Unit (PIU), National Agricultural Technology Program - Phase II Project (NATP-2), Department of Agricultural Extension (DAE) adopted Decentralized Extension Services (DES) through the formation and mobilization of 27,150 'Common Interest Groups' (CIG) of farmers- (11,880 formed in 107 Upazila of NATP-1 and 15,270 in 163 Upazila in NATP-2) each with 20-30 members represented by at least 80% smallholder farmers. Of these, 18,241 are male and 8,909 female groups making a total of 695,700 direct beneficiaries. Farmers from ethnic and under privileged communities have also been included in the newly formed CIGs under NATP-2. The CIGs are mobilized and supported for their capacity development to adapt with the new extension approach and activities through knowledge and skill development so that the groups emerge as fully functional, viable and sustainable institution at the grassroots, as well as federate the CIGs to higher levels- Union Producers Organizations (UPOs) and Upazila Producer Organizations (UzPOs).

The DES relied entirely on bottom-up demand driven (location and clientele specific) planning of agricultural extension activities. In the process, the CIGs identify their problems to be addressed, prepare their own extension micro-plan (MEP) and implement them with project support each year within a stipulated time. The MEPs are then aggregated into Union Extension Plans (UEPs) and finally to Upazila Extension Plans UzEPs) along with budget estimate after approval of Upazila and District Extension Coordination Committees- UECC & DECCs). The UzEPs are directly funded through Upazila accounts under Annual Development Program budget.

Dissemination and adoption of improved packages of technologies by the target farmers has been emphasized to achieve the project development objectives (PDO) of increasing the productivity of major crops and thereby farm income of smallholder farmers and smallholder farmers' access to markets. Depending on location and clientele specific needs, a wide range of demand-led technologies are being proposed in the MEPs of the CIGs over the years. The major technology packages proposed included among rice yield gap minimization (RYGM), AWD irrigation in boro rice, modern production technologies of wheat, maize, pulses, oil seeds, spices, and high value vegetables. Among other technologies, quality seed production and preservation, fruit production and orchard management, pest and diseases management of major crops, compost production, as well as some minor crop production technologies. Accordingly, priority is given for supporting the proposed demonstrations incorporating a set of recommended component technologies having direct impact on increasing crop yields. Since inception (2007-08), 94,910 demonstrations including homestead vegetable gardening and validation trials have been supported. For scaling-up and quick dissemination of demonstrated technologies, 45,679 field days, 815 exposure visits, 150 District Agriculture fair and 720 Upazila Agriculture fairs have been organized.

To enhance farmers' knowledge and skills in adopting the demonstrated technologies, all CIG members are being trained on the technologies being demonstrated and a total of 894,030 person days (3.46 person days per CIG member) of training has been imparted during NATP-1 and 109,200 person days in NATP-2. Further, to enhance CIG group activities, CIG leaders are also being trained on Human Institution Development (HID) and Organization Development (OD) competencies, Micro Extension Plan (MEP) and Action Plan preparation skills, raising and managing group savings and undertaking income generating activities (IGAs) utilizing group fund as well as maintaining CIG's Bank Account and Members' Pass Book, etc. For smooth functioning, sustainability and legal status, CIG By-laws has been prepared in consultation with the Department of Cooperatives and adopted. So far, 8,069 (61%) CIGs have already been registered with the Department of Cooperatives.

To support CIG activities in DES, capacity building of DAE personnel became necessary on a wide range of technological and other issues. Accordingly, 27,571 person days of production

technology training was provided to SAAOs and 2,553 person days (TOT) to District and Upazila level officers, as well as, 3,750 SAAOs and 340 District and Upazila level officers were trained on Social Mobilization Process and Skills in collaboration with different NARS institutes and Horticulture Centres. It may be noted that the Extension-Research linkage activities has been successfully expanded beyond training of extension personnel. The NARS institutes provided critical inputs such as seeds of new varieties and foundation seeds of different crops for demonstrations, technical cooperation in implementing on-farm validation trials and participatory evaluation of new technologies, as well as extended physical facilities to organize Review Workshops, hosting Motivational Tours of CIG farmers, etc.

To be able to deliver the huge and diversified extension services the outreach of Extension Line Departments (DAE, DLS and DOF) has been extended to enhance the institutional efficiency through establishment of 1,621 Farmers' Information and Advisory Centres (FIACs) at Union Parishad Complexes in 270 Upazillas as "One-Stop-Service Centre" for delivering the demand-led extension and advisory services to the target beneficiaries. Meanwhile the FIACs have emerged as permanent office of Extension Line Departments and delivering services to all farmers. This has tremendously improved extension service delivery activities and increased the visibility of the extension personnel at the grassroots.

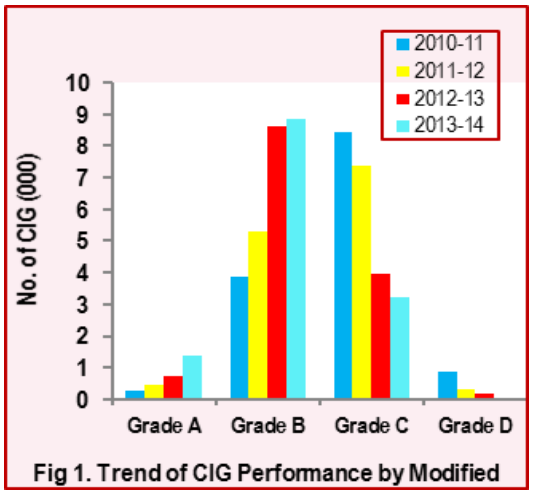

Fig 1. Trend of CIG Performance by Modified

Thus, the activities in implementing the demand-led decentralized Extension services covered the whole range of issues related to technology generation to technology dissemination and adoption to the benefit of the target farming community.

Outcome and Impacts

Outputs and impacts of decentralized extension has been viewed in terms of CIG activities, impacts on production and productivity, dissemination and adoption of technologies, addressing environmental and social safeguard issues, sustainability of CIGs, broadening the outreach of extension support activities and enhancement of farmers' access to extension support services.

1. CIG Activities

1.1 Performance of CIGs

The CIG activities are being continuously monitored and their performances were evaluated twice a year using the modified Balanced Score Card (BSC) involving 12 performance indicators. These are (i) CIG membership, (ii) number of CIG Executive Committee (EC) meeting, (iii) presence of EC members in the meeting, (iv) keeping meeting minutes with decision, (v) CIG group savings, (vi) documentation/preservation of registers, (vii) utilization of savings, (viii) MEP preparation and implementation, (ix) active participation in extension activities, (x) number of CIG members adopted demonstrated technologies, (xi) number of non-CIG farmers adopted promoted technologies, and (xii) clear idea of CIG responsibilities. Based on these performance indicators, all 13,450 CIGs of NATP-1 was evaluated and graded as A (Very Good), B (Good), C (Medium) and D (Poor) during 2013-14. It was observed that over the years, the CIG performance progressively improved as indicated in (Fig. 1).

1.2 Decentralized Extension Planning

Since starting of decentralized extension planning in 2009-10 in 120 Upazilas of NATP-1, the CIGs have successfully prepared and implemented 13,450 MEPs each year. The MEPs were eventually aggregated to 1345 Union Extension Plans (UEPs) by the Union Extension Facilitation Teams (UEFTs) and 120 Upazila Extension Plans (UzEPs) by Upazila Resource Teams each year. Presently this decentralization approach is continuing in NATP-2 and the cumulative number of MEPs, UEPs and UzEPs increased to 121550, 12155 and 1140, respectively. In extension planning process, the MEPs are prepared by the CIGs which are then aggregated into UEPs by the UEFT members. The UEPs are further consolidated into UzEPs by the URTs and approved by the respective DECCs. The PIU arrange to place required fund to the Upazila for timely implementation of the plans.

2. Dissemination of Technology through Demand-led Demonstration

Dissemination of improved technologies among the target farmers to increase the productivity of major crops and thereby increase farm income to maintain food security and sustainable family income, conducting demand-led demonstrations as proposed in CIG Micro Plans was supported. During NATP-1, the cumulative number of demonstrations including homestead vegetable gardening and validation trials stood at 55,102 (Table-1) and so far that in NATP-2 stood at 30,992.

Table 1: Demand-led demonstrations supported during NATP-1

	Type of demonstration	No. of demonstration conducted
1	Rice yield gap minimization technologies	11,194
2	AWD irrigation method for Boro rice	2,240
3	Wheat and maize production technologies	919
4	Modern oilseeds production technologies	1,151
5	Pulses production technologies	701
6	High value vegetables production technologies	3,285
7	Improved spices production technologies	587
8	Quality seed production and preservation (Rice, Wheat, Mustard, Brijal, TPS & Onion)	6,306
9	Other minor crop production technologies	765
10	Fruit Production and Orchard Management	5,204
11	Pest and disease management of crops	4,214
12	Compost production and soil management.	5,890
13	Ekti Bari Ekti Khamar	1,070
14	Homestead nursery	5
Total Field Demonstration		**43,531**
15	Homestead Vegetable Gardening (HVG)	11,408
16	Validation Trials	163
Total Demonstration		**55,102**

Since addressing farmers' demand driven location-specific problems and improvement of productivity was the main objective, a set of component technologies having direct impact on yield and productivity, such as new varieties, good quality seeds, timely sowing/planting, AEZ based recommended fertilization and soil health management (IPNS), recommended water and pest management (IPM), etc. were included in the demonstrations as focused technologies.

2.1 Performance of Major Technologies in Demonstration

2.2 As the main purpose of supporting such a large number of demonstrations were to increase crop yield and productivity and thereby farmers' income, the performance of demonstrations was evaluated accordingly. The yield and gross margin increases of different crops in demonstrations against farmer's practices of NATP-1 is presented in Table 2 (PIU-NATP-DAE, 2014).

Table 2: Yield and gross margin of crop in demonstration and farmer's practices (NATP-1)

Major crops demonstrated	Yield (t/ha)			Gross Margin ('000'Tk./ha)		
	Demo	Farmer	% Increase	Demo	Farmer	% Increase
HYV T. Aman Rice	5.49	4.58	19.87	24.62	15.54	58.43
HYV Boro Rice	6.74	5.60	20.36	22.24	11.17	99.10
HYV T. Aus Rice	4.72	4.31	9.51	20.32	13.95	45.66
AWD Irrigation in Boro Rice	6.54	6.21	5.31	25.15	9.85	155.33
HYV Wheat	3.55	2.95	20.34	26.22	14.65	78.98
Hybrid Maize	8.55	7.33	16.64	43.92	25.68	71.03
HYV Mustard	1.54	1.15	33.91	28.33	18.25	55.23
Lentil	1.43	1.18	21.19	38.09	29.42	29.47
Mungbean	1.37	1.15	19.13	43.39	31.70	36.88
Onion	9.40	8.57	9.68	131.23	122.46	7.16
Garlic	7.62	6.56	16.16	302.74	243.52	24.32
Cabbage	73.22	64.38	13.73	231.26	203.22	13.80
Cauliflower	17.47	15.30	14.18	109.28	87.90	24.32
Tomato	70.96	63.08	12.49	425.86	338.23	25.91
Summer Tomato	28.49	26.64	6.94	659.49	484.16	36.21
Summer Country Bean	5.15	4.94	4.25	88.84	70.87	25.36
Brinjal	61.84	56.27	9.90	384.89	320.37	20.14
Bottle Gourd	33.49	26.73	25.29	211.56	158.50	33.48
Cucumber	62.79	55.12	13.92	199.73	167.97	18.91
Bitter Gourd	23.00	19.93	15.40	119.06	69.53	71.24
Potato	22.11	18.94	16.74	110.58	74.49	48.45
Jujubi	10.30	7.91	30.21	269.84	174.69	54.47
Mango	8.99	8.55	5.15	224.19	217.51	3.07
Banana	37.09	29.76	24.63	222.19	166.86	33.16

2.2. Technology Adoption

To achieve the project objectives, NATP-1 targeted that at least 60 percent CIG farmers (161,400 out of 269,000) would adopt and each adopting CIG farmer would disseminate the technologies to four neighboring non-CIG farmers totaling 645,600.

Provision of adequate extension support, i.e., implementation of 55,102 demonstrations, providing 930,060 man days of training to CIG farmers, and organizing 43,634 field days, 695 batches of motivational tours, 725 integrated agricultural fairs at district and Upazila levels, the rate of adoption of demonstrated technologies exceeded the target values both in CIG and non-CIG farmers to a great extent (Table 3).

Table 3: Adoption status of demonstrated technologies and practices in NATP-1

Demonstration	No. of Adopter (Cumulative)			
	CIG	Non-CIG	Total	CIG:Non-CIG
RYGM	234686	1081599	1316285	4.61
AWD	45650	60848	106498	1.33
Wheat	15900	18765	34665	1.18
Maize	7110	12168	19278	1.71
Oilseed (Mustard)	12683	44586	57269	3.52
Modern lentil	7843	15016	22859	1.91
Modern mungbean	13813	18141	31954	1.31
Modern spices	3995	13336	17331	3.34
HVV	55960	85863	141823	1.53
S-Tomato	4105	4560	8665	1.11
S-Country Bean	3765	4875	8640	1.29
Fruit and orchard	30658	32104	62762	1.05
Compost	93788	137386	231174	1.46
IPM and sex pheromone	92669	130645	223314	1.41
Quality Seed Production	9096	9680	18776	1.06
Other minor crops	5207	8194	13401	1.57
HVG	50560	50681	101241	1.00
Total	687488	1728447	2415935	-
Net number of CIG adopter	267182	845530	1112712	-
Technology uptake ratio	2.57	2.04	2.17	-
CIG: Non-CIG Adoption	-	-	-	1:6.47

It was observed that 99% CIG farmers adopted demonstrated technologies with a technology uptake ratio of 2.57 per farmer. The non-CIG adopters on the other hand adopted 2.04 technologies each. When the number of non-CIG adopters is viewed against net number of CIG adopters, the CIG: Non-CIG Adoption Ratio achieved was as high as 1.00: 6.47. It appears that integrated support through multiple extension methods in Group Approach is highly effective in dissemination of modern crop production and associated technologies.

3 Overall Impact and Outcomes

The decentralized extension services, as adopted by DAE through NATP-1 has paved the way of involvement of target farmers' groups in identifying their own production problems, preparation of their own extension plans and implement them with the support of their extension service providers. This has adequately exhibited the potential to achieve the national goal of bringing the vast farming community in the national development stream through improving their knowledge and skills and thereby attaining sustainable food security, income generation and livelihood improvement. This approach has also taken the extension services at the door step of the farmers and participatory implementation of extension activities.

3.1 Impact on Production and Productivity and Profitability

Field evaluation by independent entity (PCU-NATP, 2014) showed significant increases in production of major agricultural commodities - often beyond the targeted values as shown in Table 4. It may be noted that the crop yields increased by 29.15% - 99.08% in different commodities as compared to baseline yield (2007-08) and 15.33% - 79.03% against current farmers' practices. This indicated that decentralized extension support might contribute greatly in attaining sustainable food security and mitigating deficit production of other agricultural commodities.

Table 4: Impact on the yield of some major crops (NATP-1)

Major crops demonstrated	Yield (t/ha)						
	Baseline	CIG	Non-CIG	Control	% Over baseline	% Over Control	% Over non-CIG
HYV T. Aman Paddy	3.33	4.60	4.30	3.90	41.48	30.24	24.88
HYV Boro Paddy	5.70	6.40	6.00	5.70	19.70	19.70	17.78
HYV T. Aus Paddy	3.21	4.78	4.03	3.73	46.39	34.36	29.43
AWD Irrigation in Boro	5.70	6.66	6.30	5.80	20.50	19.80	16.78
HYV Wheat	2.61	3.62	3.09	3.09	53.14	37.91	37.91
Maize	6.16	8.55	-	7.33	22.53	15.91	-
HYV Mustard	0.97	1.52	1.25	1.02	56.70	49.02	97.28
Lentil	0.92	1.43	-	1.27	55.43	12.59	-
Summer Tomato	20.57	37.90	33.40	29.60	8.96	4.33	3.40
Jujubi	8.16	12.40	9.50	8.80	18.62	16.01	13.74

3.2 Impact on Increasing Farm Income Due to Enhancement of Crop Productivity

The same study (PCU-NATP, 2014) showed that the gross margin of crop production of CIG farmers, who directly received demonstration and training support, increased between 17.32 - 85.06% while that of non-CIG farmers between 9.06 - 60.63% as compared to Control farmers (Table 5). Such income increases directly contributed in farmers' livelihood improvement, especially sanitation, health care and children's education.

In a separate Independent Monitoring and Evaluation study (PIU-NATP-DAE, 2014) revealed that the overall farm income in project area increased by 24% and in non-project area by 18% and the net income by 37% and 8%, respectively indicating that the net farm income increased by 29% due to decentralized extension intervention Table 6.

Table 5: Impact of enhanced crop productivity on farm income generation under NATP-1

Demonstrated Crops	Gross Margin (Tk./ha)			Percent Increase	
	CIG	Non-CIG	Control	Over Non-CIG	Over Control
HYV T. Aman Paddy	33842	27132	23127	24.73	46.33
HYV Boro Paddy	46263	34820	32344	32.86	43.03
HYV T. Aus Paddy	35620	30341	19554	17.40	82.16
AWD Irrigation in Boro	60959	46544	35366	30.97	72.37
HYV Wheat	36265	35526	23718	2.08	52.90
HYV Mustard	48312	30077	26106	60.63	85.06
Summer Tomato	698483	640430	595343	9.06	17.32
Brinjal	588295	443315	351490	32.70	67.37
Jujubi	278472	253685	203008	9.77	37.17

Table 6: Impact adoption of improved technologies on farm income

Annual On-farm Income (Tk./Farm)						
Parameter	Project Area			Non-project area		
	2007-08	2013-14	Increase	2007-08	2013-14	Increase
Income	95177	117827	22650 (24%)	95177	112170	16993 (18%)
Expenditure	67098	79413	12315 (18%)	67098	81860	14762 (22%)
Net Income	28079	38418	10335 (37%)	28079	30310	2231 (8%)

3.3 Sustainability of CIGs as Farmers' Organization at the Grassroots

Development of CIG Bye-laws, registration of CIGs with the Department of Cooperatives and opening and maintaining Bank Account has made operation of CIGs as rural organization transparent on the basis of equity. Meanwhile, 90% CIGs have a savings policy where they deposit monthly fixed subscription to the treasurer of the Executive Committee (Table 7). Monthly subscriptions are recorded in individual pass books of CIG farmers that are kept by the owners. Most of the CIGs are involved in savings deposit. On an average, savings deposit of an old CIG is around BDT 150000.00 and new CIG BDT 30000.00. Most of the CIGs have opened bank account to deposit their monthly savings. Subscription of savings deposit ranges from BDT 50.00 to BDT 200.00 per CIG member per month.

Table 7: Status of CIGs savings deposit & banking activities under NATP-1 and NATP-2

Category of CIGs	Savings Deposit	Bank Account Opened
Male	16273 (89%)	16338 (90%)
Female	8221 (92%)	7674 (86%)
Total	24494 (90%)	24012 (88%)

Due to continued facilitation and support, the CIGs have made commendable progress in raising group savings. They invested group savings for acquisition of community resources such as power tiller, power pump, sprayer, rickshaw-van, etc. for shared use and earning income through renting of these equipment. Investing in Income Generating Activities (IGAs) such as dairy cattle rearing, seed preservation, land mortgage for seed and high value crop production, etc. has opened-up new avenues of income earning and reducing dependence on money lenders for production credits. However, for further cementing the progress, facilitation and support activities needs to be continued for a longer period of time until they can function as an institution independently and emerge as sustainable organizations.

3.4 Enhancement of Farmers Access to Extension Support Services

To extend the outreach of Extension Line Departments (DAE, DLS and DOF) to deliver the huge and diversified extension services, 732 Farmers' Information and Advice Centres (FIACs) were established in NATP-1 and 967 more FIACs are being established in 270 Upazillas as "One-Stop-Service Centre" for delivering the demand-led extension and advisory services to the target beneficiaries in the rural areas. Meanwhile the FIACs have emerged as permanent office of Extension Service delivery at Union level that tremendously impacted extension activities and increased the visibility of the extension personnel at the grassroots.

FIACs maintains basic agricultural statistics of the union and information materials, i.e., maps showing location of CIGs, charts of on-going demonstration activities, relevant printed materials, documents like MEPs, UEPs, etc. It also maintains register of visiting farmer's and their problems, advice given and other relevant information. During 2009-10 to 2013-14, a total of 1586055 farmers were served through prescription pads from FIACs. To improve the service delivery capacity, the FIACs were enriched through the supply of small equipment i.e., Grain Moisture Meter, Foot pump, Seed and Pest Museum and various published materials. To promote e-agriculture services, 100 selected FIACs are providing Internet based services on pilot basis. Thus, FIACs are gradually emerging as rural hub of agricultural information and services for the farmers and has substantially increased farmers' access to extension support and services.

3.5 Promotion of Environmental Safeguard

To promote environmental safeguard, the technologies and practices such as preparation and use of pit and quick compost to improve soil health and reduce the use of chemical fertilizers and use of sex-pheromone based IPM to control

brinjal shoot and fruit borer and cucurbit fruit fly to reduce environmental pollution and degradation in addition to reducing the cost of production. Compost preparation from household wastes is also contributing immensely in improving sanitation in rural households and use of IPM practices progressively increasing the availability of safe vegetables in the market. The benefits accrued from these initiatives in NATP-1 are presented in Table 8.

Table 8: Outputs/ outcomes of Environmental Safeguard Activities in NATP-1

Technology Promoted	**Adoption**	**Impact**
AWD irrigation in Boro rice, Sex-pheromone based IPM in vegetables, Compost production and soil management	106498	• 22116 ha covered under AWD; • 34% reduction of water use in Boro rice; • Tk. 4370 reduction of irrigation cost; • Increased STW command area and reduced power cost;
Sex-pheromone based IPM in vegetables	221314	• Production cost reduced by Tk. 10-15 thousand/ha • Pesticide use reduced by 3800 MT (9.26%) in 2012-13 • Availability of safe vegetable increased • Awarness created for consumption of safe vegetables
Compost production and soil management	231174	• 850923 MT organic manure used • 11062 MT urea use reduced • Household sanitation improved

3.6 Promotion of Social Safeguard and Gender Equity

Social safeguard issues are addressed in NATP-DAE activities through formation and mobilization of 8145 CIGs of women farmers which constitutes 30% of total CIGs formed and being mobilized. To promote equitable opportunities to both male and female farmers, women CIG's needs and need-based technologies were identified and supported. The outputs and outcomes during NATP-1 are presented in Table 9.

Table 9: Outputs/outcomes of social safeguard activities

Activities/Indicators		Status	Impact
1. No. of female CIGs		4,035	i. Gender equity established in extension service delivery; ii. Female farmers are now more organized and capable to raise their voice; iii. Female farmers are gradually being economically and socially empowerd; iv. Awareness created in family nutrition
2. Total female-members in CIGs (all)		80,700	
3. Number of female CIG started group savings		2068	
4. Amount of savings of female CIGs (Tk.)		15423870	
5. Amount of savings reinvested in IGAs (Tk.)		2456550	
6. Female farmers trained (no.)		183,600	
7. Women based technology identified	i. Homestead Vegetable Gardening; ii. Seed processing & preservation; iii. Cattle/Goat/ Poultry Rearing; iv. Compost Production. vi. High Value Vegetable Production; iv. Homestead Fruit Tree & Orchard Management.		

3.7 Entrepreneurship Development

To promote local level seed entrepreneurship for augmenting availability of quality seeds at farm level, the CIGs were trained on seed production, processing and preservation technologies and were supported to be involved in seed production and trading. Several CIGs took up seed production as commercial venture using their group savings with commendable success. It may be expected that some of these CIGs would initiate SME venture in seed production and marketing given adequate support through AIF-2 window of NATP-2. Besides, many CIG farmers adopted compost and vermicompost making as commercial venture across NATP operational area.

Conclusion

As evident in NATP experience, adoption of DES through farmer group approach has accelerated overall agriculture, hence rural development through increased productivity of agricultural commodities and farmers' income contributing to food security and livelihood improvement to vast majority of rural dwellers directly and/or indirectly dependent on agriculture. The approach has positively impacted on environmental and social safeguards alongside development of viable and sustainable farmers' organization at the grassroots contributing in rapid dissemination and adoption of technologies in one hand and gradual commercialization of agriculture on the other.

Based on the outcomes and impacts of NATP: Phase-1 (2007-88 to 2013-14), the GOB has expanded the coverage of DES from 120 Upazilas in 25 districts during NATP: Phase-1 to 270 Upazilas in 57 districts in NATP: Phase-2 (October 2015-September 2021). It is expected that eventually all Upazilas will be brought under decentralized extension services for sustainable agriculture and rural development to achieve the Sustainable Development Goals, to which the Government of the Peoples' Republic of Bangladesh is committed.

References

DPP, NATP. 2013. Development Project Proposal for National Agricultural Technology Project (3rd Revised), Project Coordination Unit, National Agricultural Project- Phase-1, AIC Building, BARC Complex, Farmgate, Dhaka- 1215.

DPP, NATP-2. 2016. Development Project Proposal for National Agricultural Technology Program- Phase-II Project. Project Management Unit, AIC Building, BARC Complex, Farmgate, Dhaka- 1215.

PCU-NATP. 2014. Ann. Rep. 2013-14. Project Coordination Unit, National Agricultural Project- Phase-1, AIC Building, BARC Complex, Farmgate, Dhaka- 1215.

PCU-NATP. 2014. Impact Assessment of National Agricultural Technology Project: Phase-I. Project Coordination Unit, National Agricultural Project- Phase-1, AIC Building, BARC Complex, Farmgate, Dhaka- 1215. 456p.

PIU-NATP-DAE. 2014. Ann. Rep. 2013-14. Project Implementation Unit, National Agricultural Technology Project- Phase-1, Department of Agricultural Extension, Khamarbari, Farmgate, Dhaka- 1215. 78p.

PIU-NATP-DAE. 2014. Impact Assessment Report of National Agricultural Technology Project (NATP)-Phase-I, DAE. Project Implementation Unit, National Agricultural Technology Project-Phase-1, Department of Agricultural Extension, Khamarbari, Farmgate, Dhaka-1215. 57p

PIU-NATP-DAE. 2014. Ann. Rep. 2013-14. Project Implementation Unit, National Agricultural Technology Project- Phase-1, Department of Agricultural Extension, Khamarbari, Farmgate, Dhaka- 1215. 78p.