Good Practices 8: October 2014

INCREASING CROPPING INTENSITY AND ACHIEVING FOOD SELF–SUFFICIENCY IN THE COASTAL ZONES OF BANGLADESH

An integrated approach focusing on training, block level demonstrations, farm level advisory support, financial support and field days ensured successful demonstration and promotion of new knowledge among farmers. Md. Sirajul Islam, Md. Mizanur Rahman, Salma G Shaon and Manoranjan, K Mondal from BRAC share their experiences with this approach here.

CONTEXT

The coastal zone of Bangladesh is home to some of the world's poorest and most food insecure people, and whose livelihoods depend primarily on agriculture. Key challenges to agricultural productivity include excessive flooding during the rainy season, soil salinity, lack of access to fresh water during the dry season, and severe cyclonic storms and tidal surges throughout the year. The coastal agriculture is dominated by single rainfed traditional *aman* rice, followed by pulses in few places. Most of the lands remain fallow in the dry season due to lack of good quality water and soil salinity. The cropping intensity and productivity of this region is much lower than other parts of the country. The devastating cyclones, SIDR (2007) and AILA (2009) that hit the south coast caused huge loss of lives and property including standing crops. These led to increase in prices of food threatened food availability in the coastal regions.

INTERVENTIONS

BRAC, one of the largest Non-Governmental Organization (NGO) in the World had its permanent presence all over the Bangladesh including the remote coastal zone. After the devastating cyclone SIDR and AILA, BRAC had implemented the project entitled "Crop Intensification for Achieving Food Self Sufficiency in the Coastal Regions of Bangladesh" to rehabilitate the cyclone affected farming communities of southern Bangladesh with the most appropriate and productive agricultural technologies to ensure their food security through the adoption of year-round cropping practices by utilizing available resources they have in and around their farms.

On the basis of availability of the water resources, BRAC identified 15 cropping patterns in participation with the farming communities and local agricultural extension providers of the Government of Bangladesh (GoB). This was followed by participatory demonstration of these cropping patterns in block approach (a contiguous area of 10-20 ha of 50-60 farmers' land) in 26 *upazilas* of the 7 coastal districts of the southern Bangladesh.

Hybrid rice (Alloran) at flowering stage in Satkhira district, Boro season 2011.

Key objectives of the project were:

- To increase yearly food production and food availability of the coastal farmers of Bangladesh through technological intervention and crop intensification.
- To ensure food security through increased crop production per unit of land, per unit of time and per unit of available coastal water resources.

The rehabilitation program was implemented by the Agriculture and Food Security Program (Box 1). BRAC adopted "system approach" rather than seasonal or crop specific approach for dissemination of appropriate improved agricultural technologies for the vulnerable coastal regions of Bangladesh.

Box 1: Agriculture and Food Security Programme (AFSP) of BRAC

BRAC AFSP has been working with the government of Bangladesh since its inception in achieving self-sufficiency in food production, to ensure food security and to reduce hunger and malnutrition through environmentally sustainable agricultural production. BRAC provides support to local farmers across the country through agricultural research and development, quality seed production, distribution and marketing, dissemination of proven agricultural technologies. BRAC has introduced high yielding and saline tolerant rice variety, maize, sunflower and other vegetable as new crop in areas with low to moderate salinity as part of the rehabilitation of cyclone SIDR and AILA victims. BRAC has demonstrated year round cropping system in the coastal regions where the traditional farmers practice is low yielding single rice crop in the *aman* season.

GOOD PRACTICES

Survey, selection of participants and group formation: For implementing this project, a benchmark survey was organized covering 18306 farmers. In each district 2-6 *upazilas* were chosen based on the severity of damage by the cyclones SIDR and AILA. In each *upazila*, 6-12 blocks having a land area of 10-

20 ha per block were selected for the rehabilitation program. The farmers in each block were treated as a group during the rehabilitation program. Initially 250 blocks were selected having about 3,373 ha of land that included 13,175 farmer participants. After one year, additional 272 blocks were selected having 15,131 farmer participants with a land area of about 4,157 ha to demonstrated the potentials of non-rice crops cultivation by utilizing residual soil moisture and limited fresh water stored in natural canals.

Development of training materials and training of trainers: Training materials for different crop production were developed highlighting the cultivation of rice and non-rice crops in the coastal regions of Bangladesh. Training materials covered aspects related to cultivation procedures, fertilizer and pesticide application focusing on integrated pest management, irrigation management highlighting the importance of the adoption of water saving technologies in rice cultivation. A three-day long training program on Crop Production and Management was organized in Barisal and Khulna. In total 164 BRAC staff received training to upgrade their knowledge and skill, who later acted as trainers of farmers.

Training farmers: Although the farmers have experience in rice cultivation, they mostly lack knowledge on modern agricultural technologies and effective and efficient use of inputs. BRAC staff provided practical training to farmers on different aspects on crop cultivation and utilization of available coastal water resources for crop intensification and diversification. The topics covered selection of good quality seeds and crop varieties, fertilizer application rate, timing and management of fertilizer, irrigation water application and water saving techniques, pest control and management for higher yield with less production cost.

Hybrid maize (Pacific 984) cultivation in Patuakhali district in the rabi season of 2011

They monitored the activities of the farmers of each block twice in a week and provided agronomical supports where and when necessary for increasing crop production. Moreover during supervision visits to farmers' fields twice a week, 124 field staff of BRAC discussed about various field problems and advised farmers on solving these. If in case the project staff failed to solve any crop related problem, they took the help from the local extension personnel of the Department of Agriculture Extension (DAE) and the researchers of the Bangladesh Rice Research Institute (BRRI) and Bangladesh Agricultural Research Institute (BARI). In most cases, environmental friendly integrated crop and pest management practices were followed to obtain higher productivity and income from crop cultivation

Financial and technical support: The farmers were provided partial financial assistance to grow crops where suitable growing conditions prevail to harness higher benefits from available land and water resources. They were provided with cash grants to grow hybrid and high yielding varieties of crops in different seasons by instalment to buy seeds, fertilizers and tillage services for land preparation, irrigation and for other intercultural operations. The farmers utilized these money to buy input

Hybrid sunflower (Hi-Sun 33) cultivation in Jhalokathi district in the rabi season of 2011

and services that required cash money and they utilized their own labour for crop cultivation.

Field Days: BRAC organized field days synchronizing with the crop harvest in *aus, aman, boro* and *rabi* seasons. BRAC has invited the neighboring farmers (both husband and wife) government administrators and policy makers, GO-NGO extension providers, local leaders, social workers and staff of mass media for wider dissemination of the new farming technologies. 73,048 farmers (male and female) attended different crop cutting sessions organised around field days. They had interactions with the project participating farmers and learned about the cultivation procedures, productivity and profitability of different rice and *rabi* crops grown in their locality. The neighboring farmers discussed about crop production, crop protection related issues and production technologies with the project participating farmers and they learned more about the benefits of different crops and cropping patterns. Most of the neighboring farmers showed their keen interest on *rabi* crops, as these *rabi* crops were cultivated for the first time in their localities. Besides, 9,774 personnel from both GO, NGO and civil society attended in different crop cutting sessions, who were engaged in providing extension services and in policy making activities.

Crop cutting session and field day during the project implementation

IMPACTS

The prime objective of the project was to increase the cropping intensity as a means of improving the food security of the cyclone affected farmer households. An evaluation study (Eusuf and associates, 2012) found that the cropping intensity increased from 178% before the project to 280% due to the project interventions. Several new crops and crop varieties have been introduced as part of project interventions. As a result, cropped area and yield increased thereby contributing to increased production and ensuring food security. Increase of production per unit area is up to 250% in case of hybrid rice compared with the common local rice variety. Yield per unit of cultivated land has increased about 1.4 times than before project intervention for the same variety. In case of varietal improvement, increase of yield and production is much higher (about 3.1 times) for Aus paddy.

Box 2: Remarks of a neighbouring farmer

"BRAC has taught us cropping three times in a year and altered our traditional belief of cultivation" – said Sobhan and Fazila Begum, (neighboring farmers who attended field days) of Nazirpur upazila, Pirojpur district.

Mohammad Sobhan Shek and his wife Fazila Begum are residing at Nazirpur upazila in Pirojpur district. They used to cultivate only *aman* rice and were unaware about the cultivation of *aus* and *rabi* crops. After BRAC's intervention, they along with their neighbours have cultivated three crops in a year. Initially they thought the BRAC was adopting a wrong approach and so they didn't pay adequate attention on their interventions in their area. But by observing triple cropping in large areas, they recognised that the crop production could be increased. They cultivated BR11 in *aman* season and harvested about 5.4 t/ha. In *aus* season, they cultivated hybrid rice 'Alloron' and harvested about 7.9 t/ha. They are amazed to see such high production from their land and expressed their utmost thanks to BRAC for their learning.

CONCLUSIONS

Increasing production, productivity and income from farm holdings is possible through increase in cropping intensity, shifting from local crop varieties to improved varieties and diversification. An integrated approach focusing on training, block level demonstrations, farm level advisory support, financial support and field days ensured successful demonstration and promotion of new knowledge among farmers. BRAC consider the experiences form this project "Crop Intensification for Achieving Food Self Sufficiency in the Coastal Regions of Bangladesh" as a model to replicate.

ACKNOWLEDGEMENT

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REFERENCE

Eusuf and Associates 2012. Evaluation report of Crop Intensification for Achieving Food Self Sufficiency in the coastal Regions of Bangladesh (7 Districts) Program – submitted to BRAC and European Union.

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