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Impact of Community-led Action Research on Production Decisions and Food Adjustment Strategies in a Grain-Producing Village in Northwest Bangladesh

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ABSTRACT

The purpose of the paper is to describe the impact of community-led action research on food security and poverty alleviation on the production decisions and food adjustment strategies of farmers in a grain-producing village in northwest Bangladesh. The study used a mixed method approach with 80 respondents for the quantitative part (survey), which are distributed equally between gono-gobeshona participants and non-participant groups, and 30 for the qualitative part (10 in-depth interviews, 4 key informant interviews, 4 focus groups, and 10 case studies). Survey responses were analyzed using SPSS software and content analysis framework was used for qualitative data. The findings show that far more households who participated in the from the gono-gobeshona make joint decisions (by both husband and wife) in various aspects of production than non-participants. Women as authority figures were higher in number among the participants than the non-participants and more households in the non-participant group considered the husband as the authority figure. Finally, the community-led action research process met sustainability features and was inclusive across social positions.

Keywords: gono-gobeshona, gendered decision, food adjustment, participatory action research

JEL Classification: Z1

INTRODUCTION

The community-led action research (locally known as *gono-gobeshona* [*gono* =popular, *gobeshona*=research] and in academic literature more popularly known as participatory action research [PAR]) is conceived as a cyclical process of researching and acting under a common platform—a self-help group. The main goal of the process is to make farmers independent and key drivers of change. By analyzing production decisions, the researchers aimed to identify the instrumental figure in decision making on various aspects of production. Moreover, food adjustment, which includes diverse measures taken by the farmers during the food crisis period, were also examined.

Food security data (BBS 2010) show a vulnerable picture of unequal food distribution despite Bangladesh being an agriculture-based country. Seven percent of the households lack food on a regular basis while 30 percent lack food occasionally (WFP 2012). Among the diverse categories of farmers, more than two-thirds of the landless and agriculture-dependent households face extreme food crisis four months in a year (WFP 2012). In terms of geographic division, high poverty headcount rates exist in northwestern agricultural regions (BBS 2005).

Various studies (Zug 2006; Mazumder, Ullah, and Wencong 2012; Rahman 2005) show that the existing food crisis in the region is usually minimized by food and non-food coping strategies. The food coping strategies include borrowing paddy with high return in advance, buying food at prices a bit higher than the regular price on credit, early sale of rice at a relatively low price before yield, receiving relief, and reducing diet and nutritional intake. Non-food coping strategies include finding extra work even with relatively lower wages than usual, migrating, minimizing household expenses, selling assets (e.g., livestock and

trees), borrowing money at high interest rates, and early sale of labor before the season.

Many experts and institutions argue that the emerging food crisis can be solved by updated technology adoption (Dontsop-Nguezet 2011; Rahman et al. 2008; Zug 2006; USAID 2011; FAO 2010; FAO 2011). Surprisingly, intervention data across cultures and societies show a great disparity in adoption rate as well as gender exclusion in technology adoption (US Department of State 2011; FAO 2010; FAO 2011). As a result, such initiatives to curb the food crisis do not bring significant effect.

By reviewing several studies, Ragasa (2012) demonstrated the relatively weaker participation and engagement of women farmers and stakeholders in priority-setting and decision making. Kumar (1987) found that failure to incorporate women's roles in implementing technological change led to three interrelated consequences: loss of adoptive efficiency, reduction of women's bargaining position, and lower technology adoption rates. FAO (2010, 2011) also points out that women producers all over the world who are constrained with technology adoption experienced low levels of productivity. If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent.

Over the years, agriculture extension has been supply-driven and follows a linear model of technology transfer: researcher–extension–farmer (Akinngbe and Ajayi 2010). This has little or no provision for addressing farmers' actual needs; consequently failing to alleviate poverty (Akinngbe and Ajayi 2010). On the other hand, demand-driven and participatory approaches are assumed to be relatively better in terms of identifying real need. The approach invokes farmers' participation, and that greater participation will reap greater benefits. However, Rathgeber (2011) argues that participatory approaches often involve

critical problem analysis; giving feedback to policy makers and extension workers might not be truly inclusive and, thus, does not ensure cooperative action.

Another form of participatory approach is participatory action research (PAR) by which a community identifies their actual needs and translates these needs into action. Alternatively, community-led action research approach values people's potentials and is sensitive toward their actual need. This facilitates people's freedom to make their own choices and decisions on particular technologies and encourages acquisition and use of new knowledge. Thus, the approach considers the individual as the main driver of change in contrast to other participatory approaches that depend on the researcher and extension worker, who may be outsiders.

However, there is a serious dearth of information about the benefits of community-led action research. Rathgeber (2011) also shows that there has been little systematic analysis of the impacts of participatory methods for gender-sensitive technology adoption versus alternative approaches to adoption.

The foregoing contexts are our motivations for addressing the following specific objectives: to describe the process of the community-led action research analyze the changes in production decision making and food adjustment measures. The findings would lessen the knowledge gap with regard to the process and impact of community-led action research approach. Finally, this would generate policy recommendations and may be a model for other agrarian societies with relatively similar sociocultural conditions.

METHODS

Using a mixed method approach, the study was conducted in Laxmichap village, Sadar upazilla, Nilphamary district in northwestern Bangladesh. It is one of the villages in the region most affected by *monga* (seasonal hunger). Research Initiative Bangladesh (RIB) is one of the nongovernment organizations (NGOs) working to alleviate poverty in the locality. So far, RIB had reached a total of 44 farming households during the study period. As this study aimed to show the difference in production decision and food adjustment between program participants and non-participants, sample respondents were drawn from both groups.

Using random sampling, 80 respondents¹ (40 program participants and 40 non-participants, for ease of comparison) were included in the survey. For the in-depth interviews and focus group discussions, 30 respondents were purposively selected (gender, class, and status as selection criteria) from the 80 respondents of the survey. Simple random sampling technique was used to identify survey respondents.

A total of 80 households were surveyed using a structured questionnaire, which covered diverse issues, such as who would make the decision on diverse aspects of production and how often coping mechanisms were adapted. The survey, which sometimes used probing to elicit a meaningful answer, was conducted at the respondent's convenient schedule.

On the other hand, in-depth interviews using a checklist were conducted with 30 individuals. The checklist included issues such as the process and activities in the community-led research, the sociocultural contexts of decision

¹ Here we used at least 45 households (a 95 percent confidence level with 5 percent margin of error) as target program participants, which was a scientifically representative sample determined using an online sampling computation tool (<http://www.raosoft.com/samplesize.html>)

making, and challenges met. The interviewees represented staff, program participants, and non-participants of both genders. The interviews were conducted in a manner that respondents would feel empowered to disclose information. A total of eight key informant interviews were conducted with community resource persons in both participant and non-participant groups to understand participants' motivation for joining the project, their sociocultural contexts, and intervention flaws.

Four FGDs were done with six to seven participants with relatively homogenous features that included at least one male and one female from both the participant and non-participant groups. Each of the FGD participants was encouraged to share their views on particular issues during the session. The FGD checklist covered decision making, sociocultural contexts, and challenges met. Finally, for issues which required in-depth investigation, a total of 10 case studies were conducted.

The same interview questions were asked using the multiple tools and techniques of data collection to ensure data validation. After verification of the data, qualitative information were analyzed manually using content analysis framework and the survey responses were analyzed using SPSS 15.1 software.

RESULTS

Community-led Action Research Process

Since 2006, the farmers of Laxmichap village had been doing participatory action research (locally known as gono-gobeshona) to accelerate food security and poverty alleviation. Research Initiative Bangladesh (RIB), a national NGO, provides technical assistance in developing the gono-gobeshona group and its function. They promoted the group through meetings both at the individual and group levels. The promotion strategies include

informal chatting and discussion in various public spots, such as tea stalls, grocery shops, and gathering places outside and within homes. At the gathering spots, the staff introduced themselves to the farmers and went on to talk about contemporary issues in the country and the socioeconomic changes that farmers wanted to see in their own village. The participants were encouraged to discuss their present social conditions or problems, their reasons, and possible solutions. As a consequence of the discussion, many of the participants found value in the gono-gobeshona.

The gono-gobeshona group was developed in a participatory manner. The participants who found value in the group gradually diffused the idea to other villagers. Then the interested farmers came together to form groups in various areas of the village. Group size (which varied based on the consensus), membership criteria (which included a person's desire, availability, diverse land holding status, and geographical proximity), and norms and rules (which included how to identify meeting agenda, how to interact with each other in the meeting, and how to implement decisions taken in the meeting) were set in consultations with members and the RIB staff. As soon as the group was developed, the members in each group selected a leader with consensus from either gender. Then, all the group leaders nominated a member, who is called an RIB animator, to act as liaison with the RIB, other groups, and other agencies. Each gono-gobeshona leader was responsible for gathering his group members twice a month in the afternoon (when work pressure is relatively less) for an open discussion on various social issues. All the members encourage each other to attend the meeting by sharing the meeting date, time, and venue. To maintain the dynamics of the group, they upheld the traditional social network composed of kin and neighbors.

The gono-gobeshona functioned through a

cyclical process (Figure 1). During the meeting, the leader adds concerns or issues in addition to the fixed meeting agenda to be discussed. The agenda is then discussed, covering the nature and extent of the problem, possible reasons, and solutions. After friendly discussion and critical reflection on the agenda, the group comes up with decisions together. As soon as the meeting is accomplished, the group leader informs the RIB animators about the meeting minutes verbally. Members then implement the decisions either individually or in groups by mobilizing their own resources. When necessary, the group sought technical support from RIB and other agencies. The need for training and other resources was assessed by the group leaders and the RIB animator together. RIB support, so far, have included providing training on updated technologies and agriculture inputs (e.g., seeds, tools, and fertilizers and

pesticides). Finally, farmers, along with their group and RIB animators, carefully monitored various stages of the production cycle on a regular basis. Experiences during the field visits were shared during group meetings for critical discussion, the proposed solutions were then utilized to improve production.

In the initial stage of the gono-gobeshona, farmers started producing Lac² with technical assistance from the RIB. Later on, they shifted to agricultural crop production. After being a collaborative partner of the Cereal System Initiative South Asia (CSISA) project in 2011, RIB provided more technical support including subsidies particularly on rice, wheat, and fish production. During the time of the study, one of the main components of gono-gobeshona was agricultural production.

Gono-gobeshana Activities

Figure 1. Gono-gobeshana process



² Lac is the scarlet resinous secretion of a number of species of insects of the genera *Metatarchardia*, *Laccifer*, *Tachordiella*, *Austrotachardia*, *Afrotachardina*, and *Tachardina* of the superfamily Coccoidea, of which the most commonly cultivated species is *Kerria lacca*.

Farmers undertook several activities under the gono-gobeshona framework: capacity building; behavior change session; demonstration plot development and experimentation; information and input sharing network; and risk management through paddy bank, seed bank, and land bank; and social awareness session.

Capacity building

Capacity building comprised of training farmers on how to improve agricultural production and field visits. The leaders of the groups and RIB management jointly identified training needs on up-to-date technologies and developed the content of the proposed training activities. The trainings covered diverse topics, such as seed management, transplantation, plant care, nutrition management, harvesting, and disaster risk mitigation. The trainings had 30–50 (ensuring that both males and females were represented, as well as couples) participants. The gono-gobeshona group selected training participants by assessing one's motivation, hands-on farming experience, and interpersonal communication skills. The three to four-hour long training sessions, which usually followed a lecture-based approach, were conducted in venues identified in consultation with participants. The training ended with a field visit and discussions about the field experience.

Behavior change sessions

Behavior change sessions consisted of one-on-one and group sessions. The gono-gobeshona group identified misconceptions on new rice technologies prevailing among its members and among males and females. The group leader and the RIB animator, either alone or together, arranged a daily one-on-one and weekly group sessions with those who had misconceptions. The group leader requested the animator to be present during the meeting as the animator was thought to be relatively

knowledgeable on new technologies. As part of the behavior change session, the group together with the animator sometimes visited the fields. The session covered a wide range of issues, such as crop succession, rice technology, and alternative solutions for family and social problems, among others.

Demonstration plot development and experimentation

Experimentation involved creating demonstration plots supported by the RIB. Specifically, the participants experimented on the suitability of rice varieties in relation to land elevation, soil type, and climatic condition. Again, they tried to measure the effects of changes in water level and amount of fertilizers and pesticides on crops. Despite using the same technology, there were inconsistencies in results because of the disparity in technical knowledge. The result of the experiments were immediately shared in their respective groups. Moreover, some of the participants also developed demonstration plots for new rice technology in the roadsides, managing the plot by combining modern and traditional knowledge. The RIB offered farm inputs (e.g., seeds, fertilizer, pesticides, and ploughing machines), either for free or at subsidized prices. To further promote the program, the RIB provided new technologies, such as early-maturing varieties and direct-seeded rice technologies (e.g., lithao [a Philippine farm implement used for making small parallel furrows] and drum seeder) for free. The RIB animator also imparted knowledge on how to manage the demonstration plots. The gono-gobeshona group played an advisory role, although the plot owner was basically the main actor. Other farmers beyond the gono-gobeshona group were also encouraged to observe the crop management in each stage of the production cycle. The groups and the RIB officials committed to support potential new technology adopters.

Information and input sharing network

Both male and female participants, with technical support from the RIB, arranged a yearly village fair, which included a cultural evening, to exchange agricultural knowledge. The gono-gobeshona group, NGOs, and the government agriculture office disseminated information about updated technologies by establishing stalls in the fair. In addition, participants also delivered lessons learned through cultural performances, such as songs and dramatizations.

Agriculture inputs were reciprocally shared within the gono-gobeshona network, which reinforced declining traditional reciprocal relationships. This decline, occurred gradually over many years because of NGO intervention and expansion of modernity agents such as media, modern markets, and education. As a consequence, kin and neighbors have reduced reciprocal exchange of agriculture inputs. However, the development and function of the gono-gobeshona group reinforced this traditional relationship.

On their own, farmers had difficulty claiming services from the government and NGOs. However, the gono-gobeshona group united them and made them aware of their rights, thus, empowering the participant(s), individually or jointly, to negotiate support from various agricultural institutions and personnel.

Risk management through paddy bank, seed bank, and land bank

To manage production risks and seasonal food crises, the participants decided to develop community storage to address the declining quality of home seeds that were traditionally produced and stored. During extreme food crisis periods, farmers consume their stored seeds. Furthermore, there was limited access to seeds from external sources, such as market, the government, NGOs, and other commercial sellers. Among the difficulties identified were

high cost, inadequate supply, uncertainty about seed quality, and unavailability of desired varieties. As a result, seed banks were built by the participants in cooperation with the community and technical support from the RIB. Furthermore, the success of the seed banks encouraged many farmers to also build paddy banks to cope with monga. Likewise, to address landlessness and small farm size, RIB developed a land bank in cooperation with the gono-gobeshona group. The land bank leases land for one or more years and the groups were responsible for distributing the land to the needy farmers, whether participants and non-participants of gono-gobeshona. Thus, the poor and landless would be able to lease or buy land using income from production.

The constitution and operational guidelines for the seed, paddy, and land banks were developed through participatory discussions among the gono-gobeshona participants. Among the strengths of the constitution was that it allowed women and marginal farmers to be members of the executive committee and they also had equal access to the banks.

Social awareness

Finally, another important agenda of the gono-gobeshona meeting was social and political awareness, particularly on human rights issues. In the meetings, the RIB personnel informed participants about the Universal Declaration of Human Rights. Among the diverse rights issues that were discussed were unfair distribution of government subsidies by the union council, rights of women in the household, and abuse and violence against women. Moreover, they were also taught and encouraged to resist any sort of discrimination in society. One of the many successes of the gono-gobeshona movement was that union council leaders were forced to include in the master list the unlisted elderly who qualified for pension and food support.

Impact of Gono-Gobeshana

Production decisions

When it comes to production decisions, Figure 2 shows that participants of the gono-gobeshona group are better off than non-participants in terms of making decisions jointly (both husband and wife make the decision), having the wife as an authority figure, and the decline of the husband's role in various production activities. More gono-gobeshona participants made decisions jointly compared to non-participants. Compared to the wife, the husband was more often the authority figure in both groups. Interestingly, however, fewer husbands from the participant group were identified as authority figures than in the non-participant group.

One of the key informants, a 26 year old woman from the gono-gobeshona group, said:

My husband has now been consulting with me for any decision about the household and agriculture activities. However, the scenario was totally reverse before we joined group.

Among the participants, jointly making decisions varied depending on the aspect of production. Most gono-gobeshona participants (87.5%) consulted jointly about the use of land bank and the least (50%) about buying farm inputs. More than half (65%) of the non-participants made joint decisions on borrowing land and buying farm inputs (40%). Thus, respondents buying farm inputs was the factor which respondents least often decided jointly.

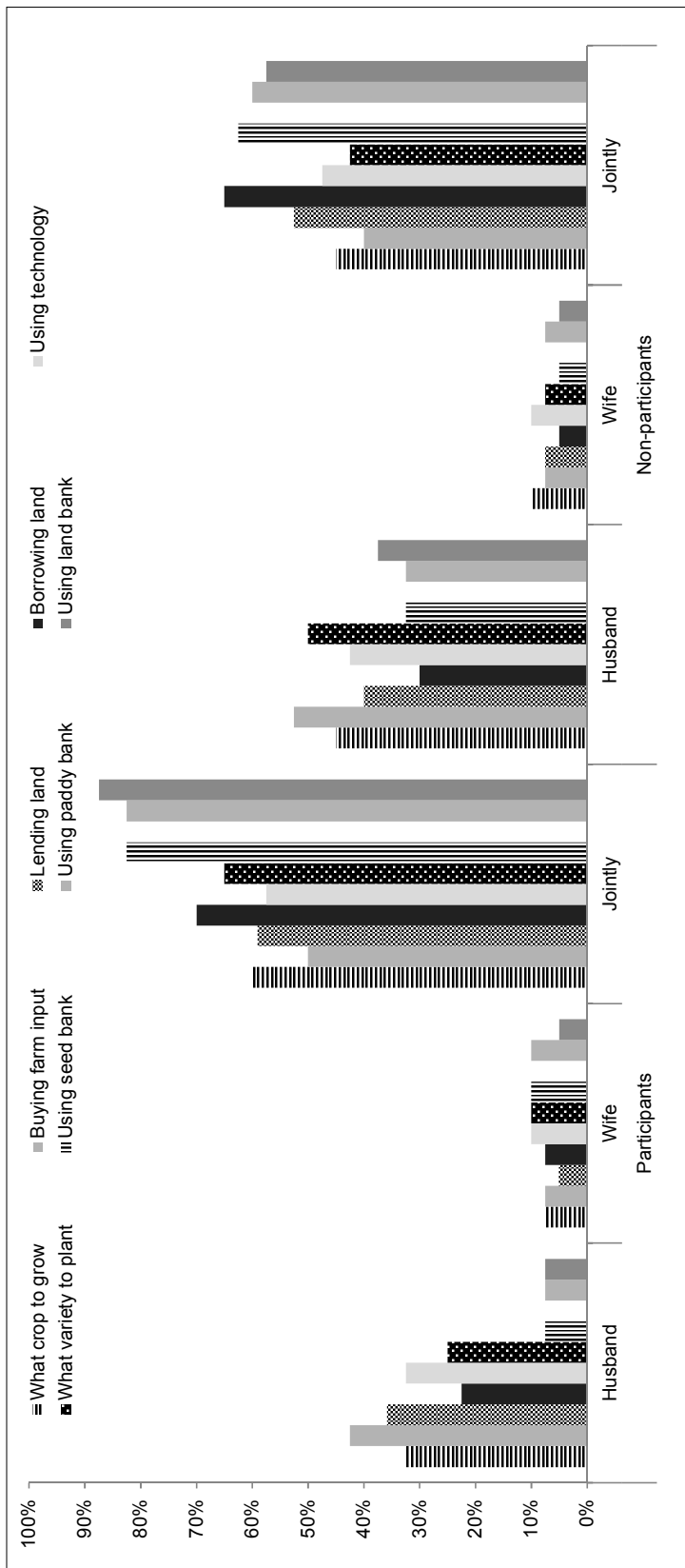
The husband's role in decision making in all aspects of production was less critical in the participants' group compared to the non-participants. Many husbands from both groups decided alone in buying farm input, but interestingly, husbands from the participants had less authority than non-participants.

Wives from the participant group were authority figures in most aspects of the production process, compared to non-participants. On the other hand, the wives from the non-participant group played more contributory roles. An equal percentage (10%) of wives from both groups decided on the use of technology.

The gono-gobeshona activities were instrumental in influencing decision making although there may be other reasons such as micro-credit programs, local government efforts, self-endeavor in coping with poverty, increasing mobility, and so on. However, the gono-gobeshona activities helped to make its members independent by encouraging them to identify roots of the problems and to find solutions through their own efforts. Participants also became more confident by realizing the value of staying in the group, which was institutionalized through regular activities and mobilization of others.

Women participants became aware about their rights and knowledgeable about technical aspects of agricultural production. The gono-gobeshona meetings allowed participants to play an active role in the discussion sessions. At the same time, they were also called to solve problems by joining hands with the men. Their contribution was not confined to disseminating information to their husbands but also in actively engaging in field activities. Being a member of the gono-gobeshona was a sign of recognition of women's role in production. By doing the same roles that men play in gono-gobeshona, women felt empowered. Meanwhile, male participants became sensitized in seeing the equal participation of women.

Figure 2. Production decisions at household level



Food Adjustment Measures

One of the significant aspects of RIB's intervention was to promote early maturing varieties (EMVs) to tackle seasonal hunger. Across participants and non-participants, almost all respondents opined that the introduction of EMVs was beneficial. In general, the respondents who had been producing EMVs in the last three years experienced substantial economic improvement at the household level. Almost half (47.5%) of the participants experienced the substantial impact of producing EMVs while only a fourth (25%) of the non-participants did. Non-participants identified several reasons for problems in production, which include knowledge gap and unavailability of quality seeds.

Food adjustment was basically undertaken during the seasonal crisis period. As shown in Table 1, fewer gono-gobeshona participants took food adjustment measures than non-participants. To cope, about 42.5 percent of the participants sometimes consumed less expensive food, while more non-participants often (40%) did. About a third of the participants (35%) never borrowed food but non-participants (87.5%) did sometimes, often, or daily. More non-participants bought food on credit

(77.5%) and relied on wild food (87.5%) than participants (62.5% and 80%, respectively). Similarly, more non-participants (80%) reduced the amount of food consumed during meals than participants (67.5%). Finally, almost an equal number of non-participants (47.5%) and participants (40%) went through a day without food; although 60 percent of participants and 52.5 percent of non-participants never had to use this food adjustment measure.

One of the reasons for these results might be that many poor farmers joined the gono-gobeshana.

Challenges

The participants also described some constraints of the gono-gobeshona approach. First, the intervention did not have any structured participatory monitoring and evaluation mechanism to measure overall progress. So, corrective measures were rarely undertaken. Second, some members of the group alleged domination and bias in their leader. During the crisis period, the extremely needy were sometimes excluded from the share of rice from the rice bank. In fact, the amount of rice stored in the bank was inadequate, but fair distribution could at least fulfill the main objective of

Table 1. Food adjustment measures used by respondents

Food Adjustment Strategy	Participants				Non-participants			
	Never	Sometimes	Often	Daily	Never	Sometimes	Often	Daily
Less expensive food	27.50	42.50	25	5	17.50	22.50	40	20
Borrowed food	35	32.50	27.50	5	12.50	30	40	17.50
Bought food on credit	37.50	35	25	2.50	22.50	30	35	12.50
Wild food	20	35	35	10	12.50	32.50	42.50	12.50
Reduced food amount	32.50	42.50	15	10	20	47.50	22.50	10
Went through a day without eating	60	22.50	12.50	5	52.50	25	17.50	5

Case Study of a Program Participant

*45 years old, wife of agricultural laborer,
lives in Hori Mondir, Poschim Para, Laxmichap*

My family size is large, consisting of five members, maintaining 0.61 acres of land in the highland area. We struggle every day for our existence. We cultivate tobacco and rice during the *boro* and *aman* seasons on that small piece of land. Aman rice cultivation is difficult often because of the uncertainty of rainfall and unavailability of surface water. Boro rice is also not cost effective. In terms of total production, we could only meet half of the year's need. As a result, my husband and teenaged children have to work as wage laborers. We could not maintain the family expenses well and my husband was forced to abandon my only son's schooling to cut down on the family's expenses.

During the past crisis days, a researcher from the Research Initiatives Bangladesh spoke about the value of *gono-gobeshona* (farmer-led action research). Initially, I was confused. I shared the information with my husband but he did not give much importance. As my husband was reluctant about it, I thought about the idea critically and finally joined Hori Mondir Para, a *gono-gobeshona* group for women. When I shared a key part of the discussion to my husband, he listened to everything. I informed him about the early maturing seeds, direct seeding, and its implementation process but he refused to accept my suggestion. He went for the traditional variety and had the same result as in the past. That aman season, some of my friends adopted the technology and found it beneficial. Soon after this, my husband joined the *gono-gobeshona* group for men and participated in the fortnightly meetings.

In the following aman season we cultivated BRR1 *Dhan33* rice, a short-duration rice variety, on 0.24 acre of land following the traditional transplanting method. Although we wanted to use the one-pass power-tiller-operated seeder (PTOS), we could not do so due to the heavy rainfall during the sowing period. We harvested 400 kilograms of rice from the plot and sold it for a total amount of BDT 8,000 (USD 100). The cost of production was only BDT 3,200 (about USD 40). After harvesting rice, we planted cabbage and earned BDT 8,000 (USD 100) with a production cost of only BDT 4,000 (USD 50). We then produced maize and earned BDT 5,200 (USD 65) with a production cost of only BDT 2,500 (about USD 31.3). For that year, we earned a net BDT 10,500 (about USD 131.25) from 0.24 acres. The next year, we adopted the rice–wheat–jute cropping pattern and found it beneficial. Following these crop succession we had solvency within two years and could offer adequate food to our children. From our earnings, my husband put up a bicycle workshop and we were able buy additional 0.04 acre of land.

Now, my husband and I jointly make decisions on production and other household matters. Interestingly, I received recognition from my husband and neighbors, and could now exercise more power in my family and I am even called to settle informal judiciary matters for my neighbors.

I think, gono-gobeshona teaches us how to work collectively in the family.

the bank. Third, many could not adequately learn from the training because of the lecture-based training approach. Often, the training participants were not able to participate equally in the training session but the trainer often ignored the issue. Although the gono-gobeshona group addressed this issue to the management, their concern was not acted upon. The number of trainings were also too few to cover the large number of expected participants. Fourth, technologies such as EMVs did not consider share croppers' and contract farmers' limited freedom who could not negotiate adequately with the land owners because the required land for contract farming and share cropping was higher than the available land. The existence of the land bank ameliorated the problem for only a few because of its small size. Finally, a national issue (i.e., unfair pricing of crops and agriculture inputs) was left unaddressed by the gono-gobeshona group because of its limited organizational capacity.

DISCUSSION

The farmer-led action research, was found to be very promising. The results showed that gono-gobeshona encouraged more husbands and wives to make decisions jointly. It should be noted that wives of gono-gobeshona households were at least informed about what their husbands wanted to do. They consider this an improvement as their husband did not usually inform them in the past, much less accommodated their voices in decision making. Many contemporary studies, however, still show women's lack of participation in production and technology adoption decisions (US Department of State 2011; Rahman and Routray 1998).

Rathgeber (2011) argues that women's traditional knowledge was often based on years of observation and experimentation in the field. It should be seen as a starting point for the introduction of new technologies. The

gono-gobeshona approach not only addresses the women from the very beginning of the group formation but also ensures women's participation in every aspect of learning and dissemination of technologies. Again, critical discussion covers diverse areas from agricultural production to social, familial, and human rights issues. Surely, the production decision was not an isolated aspect, but embedded with other aspects of life. So, knowledge on updated technologies and social awareness enhance negotiation power while making decisions. Similarly, Zepeda and Castillo (1997) found that farm technology decisions cannot be viewed as isolated decisions but as part of an overall household strategy as most farms are family businesses.

Women's successful participation in technology adoption and in production decisions has positive outcomes in scaling up production (US Department of State 2011), raising women's self-confidence (Rathgeber 2011), and enhancing well-being. The Agriculture Empowerment Index (USAID 2011) clearly shows that women participants are empowered because of the holistic approach of gono-gobeshona. Their decision-making role in production and their leadership role in the community are increased.

In terms of coping with seasonal hunger, fewer gono-gobeshona households employed food adjustment measures. This indicates an improvement in participants' household food status being augmented by their own production and an increase in working opportunity.

Zug (2006) found that seasonal hunger forced households to take various food coping mechanisms in the same region. Alternative income-generating activities are inadequate to reduce their vulnerability. However, participants of gono-gobeshona coped with seasonal hunger with minor technical support from RIB by improving food production and taking off-farm jobs during the seasonal crisis period.

Gono-gobeshona speeds up the adoption of EMVs and other technologies that lead to an increase in cropping intensity and a reduction in production cost. Rahman et al. (2008) shows that the overall experience of farmers who produce BRR1 *Dhan33*, are very positive. In another study, Majid et al (2010) found that early harvest provides early food supply, generates employment during mona period, and increases cropping intensity.

Finally, the gono-gobeshona process meets the features of sustainability. The gono-gobeshona group is developed by utilizing traditional social bonds such as kinship, peer network, and friendship. Rathgeber (2011) shows that in India, the uptake of groundnut production technology is accelerated through the kinship and formal networks, farmers' groups, and self-help groups. The self-help gono-gobeshona groups not only research on the problem but also translate their ideas into action. The group represents a symbol of unity and cooperative action. Rathgeber (2011) also argues that farmers' groups are effective in disseminating technologies, building a sense of shared purpose, and enabling cooperative action in sustainable natural resources management and development.

Both males and females across social positions have equal access to the group operations. Everyone is welcome to be a member and everyone has the chance to be a leader of the group. Everyone is encouraged to participate in joint activities. Reciprocal network exists in relation to agriculture inputs. Critical reflection in group meetings reduces one's misconception about technologies. It is found that old beliefs (Chi and Yamada 2002) and perception regarding technology (Kshirsagar, 2002), often affects technology adoption. Rathgeber (2011) further argues that gender-sensitive participatory methods can be important mechanisms for introducing new technologies to women, but they are not

sufficient to guarantee self-sustained adoption of new technologies. However, the gono-gobeshona approach, assumed to be inclusive, creates a possibility of self-sustained adoption of new technology.

CONCLUSION

The gono-gobeshona approach does matter in terms of production decisions and food adjustment measures. Compared to non-participants, more program participants make joint household decisions in various aspects of production. Wives from the participant group are also considered authority figures. Moreover, food status at the household is improved more among the participant group than the non-participant group. Finally, because of initiative and participatory activities the gono-gobeshona approach was considered sustainable. Farmers across social positions have equal access to the self-help action research group and participate in its functions. Women, equally with men, engage in all gono-gobeshona activities including technology adoption. Thus, by minimizing some flaws of the approach, such as power differentials among groups, it could be replicated for agriculture technology adoption in general. The government may consider this approach in its agriculture policies and plans.

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