

Gender Roles in Development of Small-Scale Shrimp Farming and Recent Challenges in the Coastal Region of Bangladesh

MD. NURUZZAMAN*

National Expert, Social Compliance and Gender, Better Work and Standards Program (BEST) - Better Fisheries Quality (BFQ) Component, UNIDO, Bangladesh.

Abstract

In coastal areas of Bangladesh, small-scale shrimp farming is important because of its potential to generate employment and income. Export earnings from the shrimp sector constitute the second largest source of foreign exchange earnings, contributing about US\$487 million in 2009/10. However, recent challenges in the shrimp sector include its inability to respond quickly to evolving market demands such as food quality standards stipulated by importing countries. A post-project evaluation of the United Nations Industrial Development Organization (UNIDO)-implemented Bangladesh Quality Support Program (BQSP) was conducted to strengthen the capacity of the Department of Fisheries (DOF) in Good Aquaculture Practice (GAP) as well as to introduce inspection methods for shrimp and seafood products in line with international market demands. Observations made from this exercise suggest that involving female farmers and farming couples is a useful entry point to develop the fisheries sector and overcome many challenges. This paper presents the results of gender-focused training for female farmers and farming couples in GAP held in three coastal districts of south-western Bangladesh. It also sheds light on factors affecting the success of gender-focused GAP training in a conservative society.

Introduction

In Bangladesh today, more women participate in economic activities than ever before. Apart from domestic chores, Bangladeshi women work in offices, commerce and agriculture including fish and shrimp farming. As a result of urbanisation, the evolution of the ready-made garment (RMG) sector and development of other rural non-farm activities, the labour force in the broad agriculture sector fell from 59.7 % in 2003-04 to 48.1 % in 2005-06. At the same time, while the agriculture sector in Bangladesh was downsizing its personnel, the aquaculture sector was absorbing more people than ever before. One consequence of all these shifts was the higher proportion of women in

* Corresponding author. E-mail address: nuruzzaman07@gmail.com

the active labour force. Female workers now constitute one fourth of all those employed (BBS, 2009).

Unlike the agricultural sector where women tend to be more visible, women in aquaculture are not very conspicuous. Globally, at least half of the population involved in small-scale fisheries and aquaculture may be women, including those actively engaged in fish processing, distribution and marketing (FAO, 2009). The lack of statistics on women in aquaculture and fisheries was pointed out by Meryl Williams at the Ninth Asian Fisheries and Aquaculture Forum in April 2011. She remarked that women constitute 24 percent of the workers in aquaculture in India, 33 percent in China and 80 percent in Vietnam (Williams, 2011). However for Bangladesh, no known survey of women involved in aquaculture has been undertaken, although the role of women is significant from a gender development point of view. In shrimp production, women and children from poor and middle income families play a significant role in several steps. The utilisation of household labour is very important for small and marginal farmers as it reduces labour costs and helps maximise profits.

Unlike the traditional agriculture and livestock sector in Bangladesh where women play a significant role, actively involving women directly in aquaculture is still a work in progress. In the case of shrimp farming, the Department of Fisheries (DOF) estimated that in 2010 there were over 200,000 farms covering approximately 0.2 million ha in coastal districts of Bangladesh. Wherever small-scale shrimp farming is conducted, women are engaged in a wide array of tasks. They repair dykes and plant crops on them, clean ponds, select and buy larvae for stocking, acclimatize and release the fry, collect feed and disperse it, monitor growth and guard small-scale shrimp ponds located near their homes. As they participate more in fish farming activities, women have a greater sense of ownership. Women also participate further along the shrimp-value chain in post-harvest shrimp processing activities that employ more than 30,000 women. However, the seasonality of shrimp farming tasks makes the livelihoods of women in this industry quite precarious. Vulnerable women fight against poverty constantly since they are often deprived of a fair wage and other labour rights. As Kamaluddin pointed out, over 68 % of the households in Bangladesh do not own their land (Kamaluddin, 2002). Small-scale aquaculture communities tend to be poor and vulnerable due to this landlessness.

Though not well accounted for, the involvement of women in the shrimp farming industry is changing. In the past, the roles of women in shrimp farming meant supplying labour for dyke construction and repair, clearing weeds out of ponds and, in some cases, serving as a maid cooking in a farm shed for permanent workers/guards. However, these tasks were often marred by incidents of abuse, torture and discrimination against women working at shrimp farms in remote locations (BCAS, 2001). Women's traditional roles changed when they became involved in small-scale shrimp production and earned independent incomes. The supplemental earning enabled them to meet some of their families' immediate practical needs (Halim, S. et al. 2001).

The change in women's roles was largely consequent on land use changes. A new land tenure system adopted by the farming community during the late 1990s led to fragmentation of large-scale farms into smaller ones. Simultaneously this allowed easier access of women and children to productive economic activities such as fish farming. Small-holdings enabled freer access for local land holders to develop small-scale farms for Golda shrimp (*Macrobrachium rosenbergii*) and Bagda (black tiger shrimp, *Penaeus monodon*) aquaculture (Nuruzzaman et al. 2001). In 2010, a DOF survey indicated that the farm sizes of over 65 % of farms in Khulna district were reduced to 0.01-0.5 ha for Golda shrimp; and over 30 % of farms in Bagerhat district also were split up. By 2009 over 68 % of the Bagerhat farms were from 0.01 to 1.0 ha. In both cases the small-scale farms were owned by individual households. This comprehensive agrarian restructuring of the coastal districts allowed for the construction of new dykes and digging of canals for fish-shrimp refuse, while keeping a portion of the land free from flooding and tidal inundation for rice. Farmers benefitted from their land by producing rice, shrimp, finfish and dyke crops such as fruit and vegetables. Small-scale integrated farms that produce both crops and fish have proven to be resilient to sudden shocks and crises. These farms make a significant contribution to food security, poverty alleviation and natural resource management in Bangladesh.

Recent challenges and interventions in shrimp farming

Starting from the mid-1970s, the export of shrimp and frozen foods from Bangladesh rose steadily; it peaked in 1995 with a value of over US\$322 million. The increase in exports was partly due to the three-fold expansion of the shrimp farming area, from about 40,000 ha in 1975 to 146,000 ha in 1995. However, since then, both production and exports dropped sharply for several consecutive years, and only in 2000 started to rise again. Analysts pegged these fluctuations to the global economic recession. Simultaneously, the European Union (EU) and the United States of America Food and Drug Administration (USFDA) imposed stringent new market standards on food safety and product quality for shrimp and frozen foods exported from Bangladesh. As a consequence, some shrimp consignments were rejected due to the presence of banned antibiotics and other contaminants deemed hazardous to human health. In the wake of the rejection of over 50 shrimp consignments in 2009, Bangladesh banned the export of fresh water shrimp to the EU market for six months. This incident adversely affected the image of Bangladesh in the international export market and resulted in a serious economic setback for those concerned.

In order to regulate the export commodities including shrimp and frozen foods and to mitigate the shortcomings and inadequacies of the export sector, Bangladesh made several interventions to improve the quality of its fisheries produce. An improved laboratory testing system to create traceability of hazardous substances was strictly implemented.

The EU, as the most important development partner and largest importer of frozen foods from Bangladesh, has been associated with the institutional development of the fisheries sector. One priority is to promote and diversify its exports. The EU is helping to increase the quality, efficiency and productivity of Bangladesh's fisheries sector. To this end, the EU is providing technical assistance in the areas of better compliance with international standards, quality control and capacity strengthening in order to compete in the world market. These interventions are meant to achieve stable economic development, as well as alleviate poverty.

From 2006 to 2010, a number of training and awareness programmes on Hazard Analysis and Critical Control Points (HACCP) and Good Aquaculture Practice (GAP) under the EU-funded and UNIDO-implemented Bangladesh Quality Support Program (BQSP) were conducted in three coastal districts. Over 15,000 stakeholders participated. However, in most cases only male farmers attended. If a few women were present, it was assumed they were intentionally invited for only cosmetic purposes to impress the organizers. Unfortunately, women who are actually engaged in aquaculture were not given the chance to upgrade their knowledge and skills.

Gender-focused interventions

During field investigations by the Women in Development (WID) component of the BQSP, it was learned that women were keen to participate in training, but they required *in situ* demonstrations rather than classroom lectures such as those usually held at the district and/or Upazila headquarters. Indeed, during focus group discussions (FGD), farming women expressed their belief that they were just as capable as men in maximizing profits and reducing losses in shrimp farming. They insisted they could face the challenges of food safety and product quality if provided with additional skills and knowledge. The organizers realized that training women could be a useful entry point to mitigate some of the challenges facing the shrimp industry in Bangladesh. In turn, this could help reduce poverty and encourage socio-economic development for the poor and marginal farm households. They perceived that training could motivate rural women to utilize untapped household labour in productive ways. Consequently, a training manual entitled 'Women in Small-scale Golda Shrimp Farming' was prepared by the WID component. With the help of seven experienced extension specialists from the DOF and an international gender consultant, the manual was developed during a week-long course formulation workshop. It was written in concise, short sentences. The rigorous exercise engaged an artist to design the layout of the manual. It is envisioned that this manual will be upgraded through subsequent pilot workshops.

Materials and Methods

Two groups of gender-focused GAP training

Field investigations and research findings revealed that contamination of shrimp and deterioration of product quality started on the farm through improper feeding practices, exposure to hazardous habitats and faulty post-harvest handling. The involvement of women in feed preparation and feeding allows room to ensure food safety and better compliance with international hygienic standards. Through hands-on, practical demonstrations and extension programmes, the BQSP trained small groups at the village level in five pilot Upazilas (Tables 1 and 2). The DOF invited farming couples and female farmers to participate, *in situ*, in practical aspects of small-scale shrimp farming including food safety and quality control. Ample use of the gender-focused training manual was made with a view to improving it for future courses.

Table 1. List of farming couple groups undertaking Good Aquaculture Practice (GAP) Training.

District	Upazila	Village	# Groups	# Participants
Khulna	Phultola	Putiabandha	3	66
		Piprail	1	20
		Daokona	1	21
		Chatiani	1	21
		Jamira	1	21
		Dhopakhola	1	21
		Damodor	1	20
		Garakhola	3	77
		Baniapukur	1	24
		Choyghoria	1	27
	Dumuria	Rajibpur	1	24
		Ghonaborodanga	1	30
		Komolpur	1	28
		Hasankhali	1	30
	Batiaghata	Char Shailmari	1	28
		Hogladanga	1	30
Jessore	Avoy Nagar	Payra	1	30
Total		17 Villages	21	518

Table 2. List of female farmer groups undertaking Good Aquaculture Practice (GAP) Training.

District	Upazila	Village	# Groups	# Participants
Bagerhat	Rampal	Vorshapur	2	51
		Dholdaha	1	21
		Gobindapur	1	21
		Maniknagar	2	46
		Ronshen	2	47
		Mollikerber	1	21
		Madardia	1	26
		Boro Shonnasi	1	25
		Ujalkur	2	55
		Shibnagar	1	30
		Sunatunia	2	42
		Kodomdi	2	48
		Bamondohor	2	50
		Hogoldanga	1	21
		Boronobabpur	1	23
		Ramdevpur	1	27
	Avoy Nagar	Damukhali	1	31
Total		17 Villages	24	585

Evaluation

In March 2010, a post-project evaluation assessed the effectiveness of the local demonstrations (BQSP, 2010). It considered the knowledge, skills and attitudinal changes that took place among the participants and evaluated the immediate benefits accrued by the trainees in terms of higher production and profit in comparison with their pre-training situation.

Assisted by an international gender consultant, the DOF Extension Officers chose four village groups randomly: two villages in Bagerhat district and two in Khulna district. To ascertain the effectiveness of the technical assistance, the evaluators employed structured questionnaires, held focus group discussions, conducted personal interviews and visited a few farms. The team met 46 female farmers in Bagerhat district and 50 wives in Khulna district to discuss different technical aspects of small-scale shrimp farming.

Results and Discussion

The overall majority of women and men who had received training in shrimp production informed the team that their profit increased after taking the course. The Golda shrimp farmers experienced reduced mortality of larvae and believed this was due to the correct bottom-cleaning procedures. Also, appropriate feeding methods made a difference. The post-project evaluation likewise revealed better compliance with GAP.

'Women Only' Training. Assessment of the impacts of the training was based on three trainee groups of women comprising 30 farmers in each group in two villages in Bagerhat district. Two 'women only' groups had two training courses. The third group had only one training session. One of the groups had two courses, both held during the harvest season. Thirty-three women out of 90 reported increased profits after taking the courses; three women remarked that the profits were less than before; and one woman said it was the same as previously. Nine women were 'newcomers' who had just become interested in Golda shrimp farming, partly due to the training. Forty-six women did not report on changes in productivity, most likely because they did not have the baseline data to make an assessment. In some cases, women reported that after the training they assumed sole responsibility for one pond if their family had more than one. Some women claimed they made a higher profit than their husbands did.

Another positive result of the training revealed in the personal interviews was that 72% (33 out of 46) of the shrimp farmers began keeping records of their expenses and income. In most cases it was the woman who maintained the books after taking a 'women only' course, while the man did the book keeping after the 'farming couple' course. Another outcome was that husbands started to listen to their wives more and showed them greater respect after the course. As a consequence they were given more responsible jobs. Husbands began to appreciate how their wives could contribute to the economy of the family. During the 'women only' course in Bagerhat district, it was noted that five husbands of the trainee-wives were listening very carefully in the back of the room. Therefore, it was assumed that they also benefitted from the course materials. Thirty-two trainees remembered the major topics discussed, 60% took written notes, 21 women reported that they read the training material often after the training while 10 of them shared the course material with other family members including son, daughter, brother, father, father-in-law and niece. When asked, the wives observed that their husbands had approved that they receive training in Golda shrimp farming and were prepared to listen to their advice afterwards.

'Farming Couple' Training. The findings were based on interviewing three trainee groups of couples in Phultola Upazila. Comparing pre-training and post-training profits, 21 couples reported an increase after taking the course. Five couples claimed their income was less than before; and one couple said there was no difference at all. Six couples had only begun Golda shrimp production after taking the course so they could not judge its impact. None of the couples interviewed received more than one training session. After the 'farming couples' course, both husbands and wives remarked

that they shared the responsibilities to a greater extent than before. The husbands realized that women's routine work, such as preparing the feed and distributing it, was as important as the tasks men did.

Personal interviews revealed that the majority (86%) of trained couples remembered major topics discussed, 40% of husband noted major points, 65% of couples started record keeping and 40% could show materials given during training. Talking to the wives separately revealed that husbands tended to dominate in discussion and practical training. The evaluation found less change in the knowledge, skills and attitudes (KSA) among the wives.

During the evaluation the DOF Master Trainer arranged practical exercises for 'farming couples' *in situ* along the banks of a small-scale shrimp farm. At the beginning when the trainees' participation was limited, there was little benefit. However, the course improved substantially with additional demonstrations and visual displays of various ingredients used in shrimp farming. The participants were involved in demonstrations on how to check that the fertilizer is of good standard, how to acclimatize the larvae before putting them in the pond, checking the health of the larvae, how to handle them and which feed to use. The training manual now functions as an integral tool during such 'hands-on' sessions.

The DOF trainers who were involved in preparing the shrimp farming manual have been transferred to other geographical locations, so there will be an additional spin-off effect. The good results of the pilot training sessions need to be conveyed to other Upazilas. The manual outlines all important issues pertinent to small-scale shrimp farming and is a basic tool describing the steps to be used by both trainers and farmers. When the revised manual is printed it is recommend that additional DOF shrimp farming trainers be instructed on how to use it successfully.

After evaluating the effectiveness of the courses, an overall assessment was made. The overall assessment concluded that the main issues applicable to Golda shrimp farming had been learned well and were retained by the trainees a year after the course. This was the first time in Bangladesh that female farmers/farmer couples had been trained *in situ* on gender focused training on Golda aquaculture. Given that Golda is a high value crop, many farmers were keen to take the opportunity to access the training to help improve their profits.

Seven groups of women had received two training courses; eleven groups of women received only one training session, while the twenty-one groups of 'farming couples' each received more than one training session. Initially, DOF had recommended that shrimp farming husbands and wives should be trained separately.

During candid interviews with trainees, it was revealed that a few participants were not farmers at all but had taken the opportunity to join and were accepted on the courses. Although the problem of non-farmers attending training sessions has decreased, due attention still needs to be paid to the qualifications of attendees as the courses are expensive and useful training opportunities for

genuine shrimp farmers are lost when non-farmers sit in for the sake of free meals and training materials.

The most efficient courses were those where sessions had been carried out twice, once during the preparation for shrimp farming and the other during the harvesting season. This did lead to some groups being trained twice during the same season on the same subjects and this should be avoided in future by keeping a ledger of who has been trained when. Likewise, a forward planning schedule should be prepared indicating who will be trained when (BQSP, 2010).

Conclusion

The objectives of assisting women involved in small-scale shrimp farming in Bangladesh were to enhance their technical capabilities and to increase their incomes from aquaculture. In addition, the women's positions in their households were strengthened due to the fact that their efforts helped generate their families' profits. Female shrimp farmers of the selected groups within the three pilot Upazillas were trained in effective shrimp farming methods. The activities involved DOF extension officers in preparing the manual, training of separate groups of shrimp 'farming couples' and 'female only' farmers.

'Women only' training courses had the disadvantage that if the husbands were not trained in shrimp farming techniques, the wives sometimes had difficulty in convincing their husbands about changing the method of farming shrimps according to the new information acquired. 'Farming couples' training courses had the drawback that the husbands tended to dominate the discussions and their wives were reluctant to come forward, especially during hands-on exercises. In addition, women did not take notes as this was done by their spouses. These indicators of social behaviour reflect a conservative society, one aspect of which is the limited literacy and accountancy skills of Bangladeshi women.

When the trainees assessed the courses, they suggested it was preferable to train both the husband and wife within each family, but separately in order to ensure that both genders achieve as much as possible from the experience. Most wives emphasised that they preferred 'women only' courses and their husbands agreed that separate courses would be more effective to transfer technical aspects of shrimp farming. Both the trained women and farming couples are passing on their new information to other shrimp farmers in their respective communities. Several of the women are now actively helping their neighbours with technical aspects of aquaculture. Such women in aquaculture are more 'visible' than ever before. UNIDO intends to continue its support to Bangladesh under its Better Work and Standards Program (BEST) - Better Fisheries Quality (BFQ) Component with EU assistance.

Gender-focused training course on small-scale shrimp farming could be useful to do in every Upazila. The manual should be used on a larger scale in Bangladesh and should initiate a process where comments and approval from a higher level is achieved and followed-up by training-of-trainers (ToT) programmes on how to use the manual. It should be translated into English so it can be posted on the web in order to solicit comments and suggestions from a wider group. The training manual could have instructions to the trainer and suggestions for practical exercises with the active involvement of the trainees.

Acknowledgments

The author acknowledges the support of UNIDO to work as a member of a team engaged in improving the compliance level of GAP, social compliance and Corporate Social Responsibility (CSR) issues among the stakeholders related to the shrimp-value chain. The author also expresses his gratitude to the DOF officials and the participants who cooperated during the field work and follow-up evaluation.

References

- BBS (Bangladesh Bureau of Statistics). 2009. Statistical Year Book of Bangladesh 2009. Bangladesh Bureau of Statistics. 584 pp.
- BCAS (Bangladesh Centre for Advanced Studies). 2001. The Coastal Shrimp Sector in Bangladesh: Review of the Literature with Annotated Bibliography. Bangladesh Centre for Advanced Studies (BCAS), Dhaka, Bangladesh. 71 pp.
- BQSP (Bangladesh Quality Support Program). 2010. Technical Report: Women in Development Return Mission, prepared for the Government of Bangladesh by Mrs. Gitte Andersen, International Expert WID, United Nations Industrial Development Organization (UNIDO). 101 pp.
- FAO (Food and Agriculture Organization). 2009. Measuring the contribution of small-scale aquaculture: an assessment. FAO Fisheries and Aquaculture Technical Paper, 534. FAO, Rome. 180 pp.
- Halim S., M. Dwijen, E. Olena, R.S. Hasan and S.A. Kabir. 2001. Women and Children Study under Feasibility Study for the Shrimp Component of the Fourth Fisheries Project (FFP), Bangladesh Centre for Advanced Studies and DFID, UK, 65 pp.
- Kamaluddin, M. 2002. Need for land and agrarian reforms in Bangladesh, Paper presented at the regional workshop on Land Issues for Asia held in June 2002, Phnom, Penh, Cambodia, 7 pp.
- Nuruzzaman, M., B. Anwari, M. Shahjahan and M. Maniruzzaman. 2001. The Dynamics and Diversity of the Shrimp Farming in Bangladesh, Shrimp Sector Technical Review, Final Report, Fourth Fisheries Project, Shrimp and Coastal Aquaculture Component, Department of Fisheries. 74 pp.
- Williams, M. 2011. Better Science, Better Fish and Better Life, paper presented at the plenary session of the Ninth Asian Fisheries and Aquaculture Forum, 21-25 April 2011, Shanghai, China.

Appendix: A Case study

I am Shoma Mondol (25). My husband Gobinda Modol (35) and I live in a village called Putia Bandha under Phultola Upazila in Khulna district. We have two small-scale Golda shrimp farms with a total area of 2.5 *ha* where we culture shrimp from April to November and grow rice from December to March. We also grow crops on the dykes, such as fruit and vegetables, which give us some additional income. One farm is located 1.5 km from my house and the other is close to home. Shrimp and rice farming is rain-fed, but we have been incurring losses from both types of farming. We get a low price for the shrimp. People say our shrimp exports face problems in the foreign market and may be banned by importing countries.

In March 2008, my husband and I attended a training course held on the bank of my shrimp farm near my house. The local Fisheries Extension Officer selected us as a shrimp ‘farming couple’ on behalf of a donor-supported project working for gender-focused extension of Good Aquaculture Practice (GAP) to make Golda shrimp farming profitable and to correct quality problems in shrimp reared in Bangladesh.

Being selected for the shrimp ‘farming couple’ group, we received three types of training held *in situ* up to December 2010. The first was on pond preparation and pre-stocking activities, the second on post-stocking feed and water management, and the third was an evaluation of the two previous demonstrations plus tips on harvesting shrimp and post-harvest handling methods. We received printed hand-outs, a notebook, pen and a project folder during the training.

The *in situ* training at the farm gate allowed us to learn about the basic causes of low production. We learned the steps of better practices through participatory discussions and the practical demonstration of important aspects of shrimp farming. Now, I keep all the records, especially expenditures and sales for both ponds. I do most of the feeding; I monitor the shrimp growth regularly and call a Fisheries Extension Officer through a mobile phone for trouble-shooting.

Last year (2010) we earned BDT 55,000 from Golda shrimp farming and managed to grow 60 mon (1 mon = 40 kg) of paddy. This is enough to feed our family of five. Since participating in the ‘farming couple’ training courses, my husband has begun to respect me for my practical contribution to our shrimp farming activities on top of my regular household chores as a rural housewife. Now I feel better and share my knowledge with our neighbours so they can contribute to shrimp farming in a better way. I believe that women can influence men to change society for the better if they receive good knowledge, gain skills and are involved in the process of development.