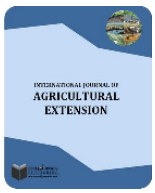

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CONSTRAINTS TO WOMEN'S INVOLVEMENT IN SMALL SCALE AQUACULTURE: AN EXPLORATORY STUDY

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A B S T R A C T

Aquaculture as a weapon to fight malnutrition and poverty has been recognized in developing countries. Both public as well as private sector have been actively involved in promoting small scale aquaculture among women through training and demonstration with a view to empower them socially as well as economically. The review was conducted on women, involved in small scale aquaculture, in south-east Asian countries and contributes substantially in aquaculture development. It reveals that women's involvement is hindered by several socio-economic constraints. Besides, there are certain policy related and infrastructural issues that come in the way of enhancing women's role in aquaculture. These are: low literacy; poor access to resources technology and market; lack of government strategies; lack of women extension workers; inadequate access to credit etc. Several researchers have identified that lack of government strategies to address gender issues and lack of suitable mechanisms as major constraints faced by women in aquaculture. The article suggests a few measures that may help minimizing the constraints faced by women. It is argued that organizing women into groups and linking them with microfinance institutions will go a long way in empowering women in aquaculture.

Keywords: Women, small scale aquaculture, constraints.

INTRODUCTION

Traditionally, the work of rural women is mostly confined to the homestead due to cultural, religious and social restrictions. In male dominated family, female members depend upon the earning of men. Therefore, almost all economic decision is ordinarily taken by men. In rural areas role of women has always been supplementary to that of bread-winner-although they contribute substantially to the family. In farming women are engaged in production and value addition of all sectors e.g., food crops, horticulture, animal husbandry, fisheries etc. the contribution of women in these sectors remains invisible to some extent because the jobs they perform are considered to be their normal duty. In overall farm production women's average contribution is estimated to be 55-66 % of the total labour with percentages much higher in certainregions (Krishna, 2012).Women empowerment is a multifaceted and multi-dimensional concept. It is a process through which women gain greater access to resources and also control over decision-making. Empowerment indicates a shift from the position of enforced powerlessness to greater self-reliance (De *et al*., 2012). Besides agriculture activities, women's contributions in aquaculture sector have become the subject of global consideration.

Role of women in aquaculture activities: Aquaculture can ensure the nutritional security to the rural women population who are deprived of such things under prevailing rice-based farming systems prevailing in south east Asia. Fish farming provides the family with an additional source of income and gives women options on how they want to manage their farms. With this increased power, it gives women a voice in the house-hold and also in the community; women can form organizations for fish farming and have meetings to voice their potions in society (Bhujel *et al*., 2008).

Backyard technologies usually provided to them. Special efforts have not been made to integrate women into aquacultural extension and training programs (Acharya

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and Benneth, 1982). Some case studies also revealed that women can well manage integrated farms like flori-cum-fish culture, duck-cum-fish culture, poultry-cum-fish culture etc. Nandeesha (1994) reported that in Cambodia, ponds in which women carried out 50% or more of the tasks associated with the culture of fish showed higher yields than other ponds. Studied from Indo-china countries showed that women involved in fisheries had greater financial independence and thus greater decision-making power in the household (Nandeesha, 1996)

EXPERIENCES FROM SOUTH EAST ASIAN COUNTRIES

India: Rural aquaculture as a potent tool to eradicate poverty and malnutrition has been recognized worldwide. Renewed emphasis is being laid by both public as well as private sector in promoting small scale aquaculture among women through training and demonstration. A few such initiatives are described below where women belonging to the lowest strata of the society have been adopted for dissemination of scientific fish farming practices.

1. Culture of ornamental fish in the backyards of households requires very little space, skill and time and has the potential to improve the economic condition of the household. Thirty under priviledged women from Keelamanakudi (Tamil Nadu) were trained by M.S. Swaminathan Research Foundation, Chennai in ornamental fish breeding and culture. Three circular tanks of 0.5 t water holding capacity was provided to each of them. Other production inputs like hand nets, pelleted feed, suction hand pump, prophylactic medicines etc. were provided. Technology of breeding live bearing species viz., Red Sword Tail and Guppy were successfully demonstrated. Women were also trained in feed preparation, feeding, water exchange etc. with the help of visual aids, since most of them are illiterate. After rearing, they sold the ornamental fish every month to local aquaria and retailers and this earned them Rs. 500-800 per household. The thirty women were organized into a Fish Growers Group, which has been registered. After each harvest, 10% of the revenue is deposited in the group's bank account. After two years of continuous monitoring, it was observed that their skills had been enhanced and each woman was able to earn a minimum of Rs. 500 per month. As agricultural labourers they used to earn an income of Rs. 1200 for three months a year. This new enterprise was led by women and henceconsidered to be of social and economic significance by local community (Shaleesha and Stanley, 2000).

2. The Central Institute of Freshwater Aquaculture, Bhubaneswar operated a project "Economic and Livelihood Development of SC/ST Population through Freshwater Aquaculture Technologies" during 2006–09. The Institute disseminated the technologies i.e. carp seed production, carp culture and integrated fish farming was promoted in two districts viz. Keonjhar and Kendrapara of Odisha among socio-economically weaker section of the society. Maa Biswamata Women Self Help Group in Tanar village in Kendrapara district has earned Rs. 30,000/- within a short span of six months by selling fingerlings of major carps. A total of 1.225 million spawn, 0.275 million fry and 0.138 million fingerling of *Labeorohita* were produced in 2007-08 by them. The spawn rearing of Jayanti rohu resulted in production of 0.07 million fry in three weeks and further 0.035 million fingerlings, 50% of which was sold @Rs. 1 per piece (Das *et al*., 2011).

3. Under the project 'Transfer of Technology of Composite Carp Culture through Demonstration among SC/ST Women in Boudh and Purulia District' 13 ha water body spread over 11 ponds was adopted for demonstrating composite carp culture technology. In total 195 SC/ST women have participated in the project. Training was imparted on various aspects of carp culture and critical inputs were also provided. The women took active interest in practicing scientific fish farming. The mean fish yield of adopted ponds in Boudhrose to 795.79 $kgha^{-1}$ in 2010-11 from pre-adoption production level of 378.98$kg{\cdot}ha^{-1}$ despite several constraints like low water retention, adverse climatic condition, social restriction for use of manures and fertilizer and above all the short-term culture for six to eight months. Average income from the adopted ponds was worked out to be Rs. 42513.47 ha^{-1}. Involvement of SC/ST women in composite carp culture has proven to be socially and economically beneficial (De *et al*., 2012). In Phatamunda and KhatkhatiainBoudh district women self-help groups are practicing composite carp culture successfully with the technical assistance of Central Institute of Freshwater Aquaculture ("Aquaculture Brings"2011 and OrissaDiary.com, 2011).

4. Goswami and Ojha (1997) reported on the role of women in Assam in fisheries and a few cases of women involvement in seed rearing and nursery rearing of

carps. Women in rural areas, lacking employment and with low literacy rate have received funding assistance to undertake such income generation activity. It was also reported that small-sized ponds (100-1000 m^2) were managed by women easily as they could fertilize them with cattle dung and feed fish with kitchen waste. Backyard ponds of 200 m^2 were suitable for women to undertake seed nursing during the short period of time. In Assam, women are allowed to weave gill nets, work in dry fish industry and make baskets used for fresh fish transportation, sell fish door to door. All such activities are done by women in the lower economic strata of the society to meet their livelihood necessities.

Bangladesh: Caritas Bangladesh, national non-profit NGO has about 44 multidisciplinary projects under 11 sectors and all are directed to alleviate the condition of the poor and the marginalized section of the people to more human conditions. Among the 11 sectors that Caritas works in Fisheries Development is one. Caritas adopted a single and consistent approach to community development within all the sectors and uses a people–centered approach to its entire development endeavor. Caritas having worked over two decades identified that the performance of women were much better in all spheres of the initiative. It observed that women were more disciplined, determined to bring about a change in their lives; women are more enthusiastic about learning and thus attend training regularly; savings rate of women is much better than that of their male counterparts (Shelly and D' Costa, 2001).

Nepal: Bhujel (2010) reported that small-scale aquaculture project implemented with the objectives of improving nutrition and income of rural communities through empowering women aimed at achieving the goal of food security and poverty reduction. The project was funded by Aquaculture without Frontiers (AwF) in collaboration with the Institute of Agriculture and Animal Science (IAAS), Rampur, Chitwan, Nepal and a local NGO. A total of 52 women were trained on general fish farming and motivated to dig ponds. Forty families, organized in two groups, dug a pond each within three months while others waited for the second year. Average support for pond digging was NRs 2,429 (US$33). After growing fish for about 8 months (May - Dec 2008), average production was achieved 4 kg (maximum 33 kg) per family with the total production of 191 kg. Over 66.66% of the fish produced was consumed by families and their relatives harvested partially on different occasions. They chose Common carp and Grass carp which grew best in the first year. In addition, Nile tilapia was included in polyculture. As a result production and fish consumption increased by two-folds with the highest production of 55kg by a family. In the second year, despite the interests of many, only 27 new women were selected to support by the project. The newly joined women produced 158 kg of fish (average 6 kg per family, maximum 24 kg) in the growing period of about 8 months. In summary, the two-year project was successful in establishing three groups of women, training them and motivating them to dig 70 new ponds and culture fish. This clearly shows that small-scale aquaculture intervention in mid-hills of Nepal empowering women is possible and has tremendous scope.

2."Women in Aquaculture (WIA) in Nepal", an adaptive research project involving women members of fishing communities among the *Tharu, Darai*and *Bote* ethnic minority groups was carried out in Chitwan and Nawalparasi districts to diversify their livelihood options. The project encompassing social, economic, agro-ecological and institutional aspects successfully developed a model for homestead pond aquaculture development (Shrestha *et al.,* 2009). In the initial years, concurrent to aquaculture intervention, savings groups involving women members of the households were formed. In general, a half to two-thirds of the production was used for household consumption while the surplus was sold, generating an average income of USD 103 per household (Pant *et al*., 2009).The per capita fish consumption in a WIA project household was estimated at 11.0 kg, seven times higher than the national average in Nepal of 1.5 kg. The 'WIA in Nepal' project has been widely commended as a success story by governmental and non-governmental organizations, both at national and international levels (Weeratunge-Starkloff and Pant, 2011).

Vietnam: Minh *et al*., *(*1997) reported that the large amount of the family income was earned by women by undertaking seed nursing activity. Women were involved in all activities that included pond preparation, buying fingerlings, feeding, managing fish health and marketing. Voetan and Ottens (1997) has observed that women are responsible for carrying most of the activities of aquaculture; men play the role in buying seed and stocking the pond since men are assumed to have better knowledge on seed quality. After stocking, it

is the women who play the critical role in pond management.

Thailand: In aquaculture sector of Thailand women play important role with many men migrating to city for better income, leaving behind women to take care of farm activities (Suntonratana, 2001). Women are involved in various aquaculture activities, including purchase of fingerlings. Marketing is solely a women-dominated actively, while men are responsible for harvesting of fish. Feeding and maintenance of ponds are the activities carried out with the participation of both men and women (Kelkar, 2001).

Cambodia: In a context of widespread poverty and pressure on natural resources, the Cambodian Government has launched community management of the fisheries resource. In a generally male dominated political and socio-cultural sphere in Cambodia, few women partake in the local management of the fisheries resources. Through empirical investigations carried out in the Tonle Sap region, women's participation in Community Fisheries Committees (CFCs) is examined. The investigations reveal that women's participation strengthens and improves the work of the CFCs in the areas of participation, communication, awareness, good governance and enforcement (Gätke, 2008).Goddard *et al,* (1994) reported that Cambodian women had an active involvement in all aspects of integrated aquaculture. In an assessment of the farm activity, it was indicated that women contributed to 31 % of total activity, whereas 55% of the work was carried out by men and 14% by children. Women were found to actively participate in feeding and marketing of fish. Women are actively involved in nursing of *Pangasius* seed. This is a major activity that brings a lot of economic benefits (Nandeesha, 1994). Nandeesha (2004) reported that followingthe success of small-scale aquaculture, women are engaged actively in seed production of common carp, Nile tilapia and silver barb. Women are the most active participants in production and nursing. Much of the success in seed production through small-scale hatcheries was due to the active involvement of women. Some women have undertaken tilapia seed production by daily collection of seed using scoop net and nursing them in ponds and selling to other farmers.

Synthesis: A brief review of involving women in small scale aquaculture in South-East Asian countries reveal that women can do aquaculture successfully. A host of aquaculture ventures- carp breeding, seed production, grow out carp polyculture, ornamental fish farming, integrated fish farming etc. were popularized. These interventions have benefited the weaker section of the society even in remote and backward areas. The domestic role of the woman in improving her family's health through more nutritious food and to increase her family's meager income has encouraged more women to be involved in homestead small-scale aquaculture. Rural women, in particular, who live in poverty, with no purchasing power, and who suffer from malnutrition due to low protein intake has taken the lead in small scale aquaculture for improvement of their social status and economic power (Nwabueze, 2010).However, women's participation is hindered by several socio-economic constraints. Besides, there are certain policy related and infra-structural issues that come in this way of enhancing women's roles in aquaculture. A brief account of the most commonly reported constraints and theirsuggested remedies is presented in Table 1.

According to table1 low level of literacy is reported to be one of the most severe constraints that hinder women's participation in aquaculture. Social and cultural barriers prevent girls from reaching higher education and developing required skill. Similarly, the burden of household chores restricts them from engaging in aquaculture. Bueno (1997), Sujatha and Dixitulu (1998) and Survarna *et al*. (1998) have identified lack of government mechanisms dealing with women in fisheries, as well as lack of government strategies for addressing gender issues, as the main constraints facing women in aquaculture and fisheries in Asia. Felsing *et al.* (2001) reported that the major constraints for women in Philippines to become involved in aquaculture were identified to be a consequence of the dominating male role, which dictate that women should stay in the home and not be involved in "masculine" activities such as agriculture and aquaculture. Women have the sole responsibility for raising the children, limiting activities to those that can be performed in and around the house. They also reported that it is considered socially unacceptable for rural women to move around outside the village boundaries, and most women cannot drive cars or mopeds. Barman *et al*., (1998) found that women's participation in fish culture activity increases with the intensification of management, but their control over benefits, especially fish for household consumption, declines. In many societies there is a cultural barrier for

male extension worker/trainer to communicate with women farmers. This problem is further compounded by very less women extension worker/trainer and as a consequence women farmer have limited access to extension services. The impact of large-scale interventions on the aquaculture sector in terms of access to assets and capabilities, such as micro-finance and micro-enterprise training, has only been marginally explored in developing countries (Medard, 2005).

Table1. Constraints to women's participation in aquaculture

Constraints	Reported by
Low literacy	Nwabueze (2010); Felsing *et al.* (2001); Ashaletha *et al.* (2002); Sultana (2002); FAO (1996); Gätke (2008); Murshed *et al.* (2008); Van Crowder (1997); Little and Edwards (2003); Minh *et al.* (1996); Bueno (1997); Samet (1997)
Limited access to modern technology	Sultana (2002); Mukherjee *et al*. (2002); FAO (1996); SFLP (2006); Kusakabe (2003); Van Crowder (1997)
Lack of government strategies for addressing gender issues	Bueno (1997); Sujatha and Dixitulu (1998); Survarna *et al.* (1998); Nwabueze (2010)
Lack of access to credit and finance	FAO (1996); Kusakabe (2003); Van Crowder (1997); Harrison *et al.* (1994); Hoa (1998)
Lack of women's organization, women extension worker	FAO (1998); Hourihan (1986); Murray *et al.* (1998)
Male dominant society	Felsing *et al.* (2001); Ibrahim and Yahaya (2011)
Lack of access to resources	Nwabueze (2010); Van Crowder (1997)
Lack of access to market and rural infrastructure	FAO (1996)

SUGGESTIONS

Women play an important role in aquaculture sector. This role encompasses social and economic activities and duties, both within and outside the family. Inspite of this, presence of women in aquaculture sector is very negligible due to some social and cultural stigma. Following suggestions may improve the situation.

Spreading education among women especially farm women requires urgent attention. Location specific and need based training programmes should be organized because women's role in aquaculture is widely recognized. Adopting flexible timings and training approaches would encourage more women to participate in training sessions. In Vietnam, it was noted that after such training women became 'aquaculture specialists' in the household (Voeten and Ottens, 1997). Nwabueze (2010) suggested that women should be empowered through education, training and by providing access to loan to enable them participate in aquaculture development.

Develop women-friendly aquaculture technologies so that they can involve themselves in carp culture business, seed rearing, composite carp culture, integrated fish farming and design special nets convenient for women farmer to harvest fish. Panda *et al.* (2012) observed that with the help of micro finance under Swarnajayanti Gram Swarojgar Yojana (SGSY) women SHGs in India involved in aquaculture could achieve high level of socio economic development.

Appointing more women trainer/ extension worker can give better result in technology transfer by avoiding social hindrances. This would result in providing better access to technology as well as render transfer of technology efforts more successful. Felsing (2001) suggested that organizing women's aquaculture club and implementing aquaculture extension through women union would improve women's access to information.

Success stories of women need to be documented and more research efforts on gender in aquaculture are required. Enabling policy environment must be in place to avoid gender discrimination in wage and work environment. Gender-disaggregated data and information are essential (Razavi and Miller, 1995) to understand their importance in productive enterprises such as aquaculture or to promote equity and women's rights.

Women play an important role in small scale aquaculture in India as well as in south-east Asian

countries. Researches in India and elsewhere lend credence to the fact that aquaculture is a potent tool to empower women, especially those at the bottom of the pyramid. From seed production to grow out carp culture women are actively engaged and this has resulted in socio-economic improvement of their lives. The review also establishes the fact that women do aquaculture rather successfully. It is essential that more and more women get involved in aquaculture. However, to make that happen immediate attention need to paid for creating enabling policy to reduce gender discrimination and providing better access to technology; resources and market; appointing more women trainers; documenting and sharing success stories of women. It is argued that organizing women into groups and linking them with microfinance institutions will go a long way in empowering women in aquaculture.

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