

Aquaculture for Strengthening Livelihood of SC/ST Women in Purulia: A Case Study

H.K. De and G.S. Saha

Central Institute of Freshwater Aquaculture, (Indian Council of Agricultural Research) Kausalyaganga,
Bhubaneswar, Odisha – 751 002, e-mail: hkde@sify.com

Abstract:

Aquaculture as a weapon to fight malnutrition and poverty has been recognized in many parts of the world. In India too, both government and non-government organizations are laying adequate emphasis promoting aquaculture among resource poor women. Marshal Dahar Tendal (M.D.T.) samity, a women self-help group (SHG) in Purulia District of West Bengal, India is one such successful case of empowering women through aquaculture. The group has taken lease of a community tank 'Dhagabandh' measuring 1.75 ha and started practicing grow out carp polyculture. In 2010-11, the group harvested 1800 kg fish (Catla, Cola, Labeo rohita, Cirrhinus mrigala, Cyprius Crpio, Hypoplaimictys moliris and Ctenopharygodon idella) from that pond which used to yield a meager 195 kg/ha fish earlier. Central Institute of Freshwater Aquaculture (CIFA) located at Bhubaneswar, India imparted hands on training and also demonstrated various aspects of freshwater aquaculture. The women took active interest in practicing scientific fish farming. Smt. Basanti Mumu (37), a member of that SHG, informed that each of the 12 members got 2 kg fish every time harvesting was done during the year and the rest of the fish were sold to the trader at Rs.100/kg. Each household got 8 kg. fish for consumption and earned Rs.4327 from sales proceeds. By stocking good quality fish seed and taking proper care the productivity level has gone up by four times as compared to pre-adoption level. Now the SHG has developed confidence in carp polyculture and interested to undertake fish culture in this pond with gradual improvement of management practices. Active involvement of poor women in carp polyculture has proven to be economically beneficial and it is hope that his would go a long way in strengthening their livelihood.

The Purulia District of West Bengal comes under transition between the young alluvial plains of West Bengal and ancient plateau of southeast Jharkhand. As per 2011 census the district has 2.927 million populations with as many as 36.56% SC/ST. Santhals are the predominant tribe of Purulia. The climatic condition and soil structure restrict availability of water throughout the year and it greatly affects fish production. Involvement of women in aquaculture is very poor. Empowering women has been receiving lot of attention in recent years. Both Government and non-government agencies are actively involving women in variety of enterprises for socio-economic development. It is believed that women's empowerment is an essential element for fighting poverty and malnutrition. The article gives an account of promoting aquaculture among tribal women and how they are benefitted from this intervention.

Background Information of the Women Self Help Group

Marshal Dahar Teendal (M.D.T.) Sanity, a self-help group (SHG) of 12 women in Porashia village under Sonathuli Gram Panchayat of Kashipur block in Purulia District of West Bengal was formed in 2001. The members of this group are santhals with average age being 32 years. The group has primary level education and is mainly engaged in agriculture. The elected president is Mrs. Belmoni Tudu and the secretary is Mrs. Momita Mandi. Initially this self-help group was provided with some financial aid from the village panchayat (the lowest rung in the three tier Panchayat raj institutions – a local self-government) to start small scale agricultural activities. This group holds joint saving bank account in Mallabhum Gramin Bank though each

member was having their own individual bank account. Beneficiaries took loan from the bank in 2002 for duck and poultry rearing. Later this SHG got involved in fish farming. M.D.T. Samity started in aquaculture in Changabandh pond having 1.75 ha water spread area which was lying idle. The pond water was utilized for other purposes viz. washing of clothes and utensils, bathing and irrigation etc. The pond was seasonal in nature with water retention period of 6 months only. This was leased by the village panchayat to M.D.T. Samity for three years. The lease value, as reported by the farmers was Rs.6000/year. The lease value goes up by 10% in subsequent years.

Intervention by CIFA

The utilization of available water resources in the district through scientific method of carp culture has gained momentum in recent years with support from government as well as non-government agencies. M.D.T. Samity followed traditional practices of aquaculture, however, after the intervention of CIFA (Central Institute of Freshwater Aquaculture) a new horizon has opened in carp culture. Initially they started with Indian Major Carp culture in an extensive way, without use of fertilizer, feed etc subsequently they shifted to composite fish culture with incorporation of exotic carps. Beneficiaries were educated about the advantages of scientific fish culture. In order to upgrade the technical capability of the beneficiaries several skill training programmes were conducted. Various aspects of composite Carp culture were demonstrated during workshop in the village. A group of beneficiaries were brought to CIFA, Bhubaneswar for an exposure visit.

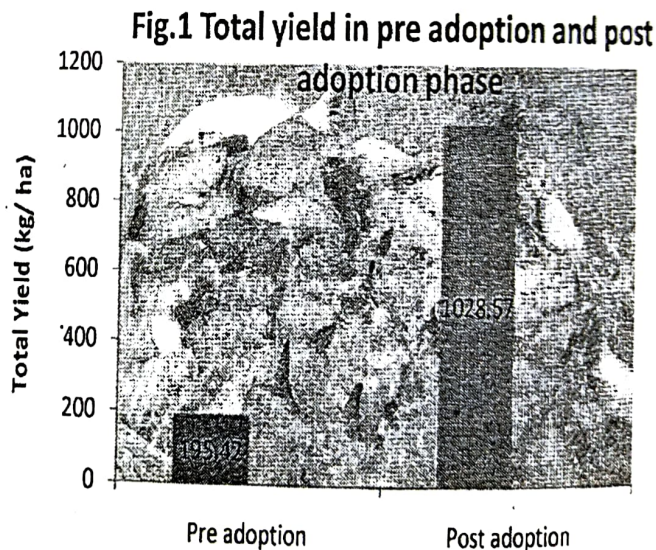
Several audio-visual aids were used to draw attention of the beneficiaries towards composite carp culture. Besides hands on training programme, leaflets prepared in local language (Bengali) were distributed for creating awareness. The interventions have improved the technical skills of the beneficiaries with regard to all relevant low cost packages of practices on freshwater aquaculture, which definitely would help in continuing the activity of fish farming by tribal women in coming years.

Culture of Carp in seasonal pond

Emphasis was laid on need based and low cost technology in the demonstration process. Weed clearance was done manually. After preparing the pond

fishes were stocked @ Rs.5000/- ha. The fish species being cultured were Common carp (*Cyprinus Carpio*), Silver carp (*Hypophthalmichthys molitrix*), Grass carp (*Ctenopharyngodonidella*), Rohu (*Labeo rohita*), Catla (*Calacatla*) and Mrigal (*Cirrhinus mrigala*). As post stocking care of fishes, the beneficiaries were taught about the procedure of using organic manure like cattle dung, poultry litter and farm yard manure in the pond. Mixture of mustard oil cake and rice bran at 1:1 by weight as supplementary feed was advocated to be provided at 2-3% of the estimated biomass. Dispensing of feed in dough in feed trays or perforated bag hung at uniform distance inside the ponds has been demonstrated. Depending on the water quality lime was applied as per requirement. Periodic sampling was done to monitor fish health status. Women have actively participated in all aspects of composite carp culture like stocking, feeding, sampling, harvesting and marketing. Fish production level was recorded after harvesting the fishes from the pond. The average growth of the fishes ranged between 250-499 gm.

Fig 1. Total yield in pre adoption and post adoption phase



The average productivity of the adopted ponds before adoption was found to be 195.42 kg/ha (Table 2). Prior to adoption the beneficiaries used to stock mixed seeds of Indian Major Carps (*L. Rohita*, *C. Catla*, *C. mrigala*). However, in case of post adoption a total number of 8750 fingerlings were stocked. As evidence from fig 1, the mean production from the adopted pond was 1028.57 kg/ha in 6 months culture period as against

the pre-adoption production level of 195.42 kg/haduring same culture period. The average production cost was worked out to be Rs.3167.28/ha (Table 1). The production package practiced by the farmers enabled them to earn net income of Rs.65674.14/ ha. Each member of the M.D.T Samity got 8.0 kg fish @ 2 kg / member every time partial harvesting was done) for their household consumption. The group kept aside Rs.63000/- of the net income in the bank to meet next year's expenditure. This leaves an amount of Rs.51929.75 which was equally distributed among the members as profit. The women benefitted in two ways (i) they got quality fish (8.0 kg/ family for home consumption and (ii) additional money (Rs.4327.50) they brought to the family has improved their status.

Harvesting and Marketing

Carp culture technology adopted by the farmers is single stocking and multiple harvesting. The lowest

harvesting weight of fish was 100 gm for mrigal, however, the harvesting weight of catla was 200-250 gm. The exotic carps are harvested when attain the body weight of 300-400 gm. Harvested fishes are distributed among the fishermen in the pond site itself. Farmers self their surplus produce to the main market where iced fish is sold along with the fresh fish. The price of the iced IMC in major markets (Purulia, Adra and Raghunathpur) was Rs.100-120/ kg for rohu and catla, Rs. 70-80/ kg for grass carp, silver carp, mrigal and common carp. Local and fresh fish always command a higher price than the local fish and the difference was Rs.30-40/ kg. Partial harvesting was done 3-4 times in 6 months culture period. Partially harvested fishes were generally used for household consumption by the women beneficiaries during various social festivals (Hormela, Makarsankrati, Tusu, Joychandimela) in the village.

Table 1

Economics of composite carp culture in Dhangabundh (1.75 ha.) in 6 months of culture

Sl.No.	Items	Rate (Rs.)	Quantity	Cost
1	Pond lease value price/ha	-	-	6000.00
2	Lime	10/kg	90 kg	900.00
3	Urea	7/kg	85 kg	595.00
4	DAP	8/kg	40 kg	320.00
5	Fish seed	Rs.2.5/seed	8750 Nos	21875.00
6	Mustard Oil Cake	14/kg	1000 kg	14000.00
7	Rice Bran	2.5/kg	1000 kg	2500.00
8	Netting Charge	250/net	4 times	1000.00
9	Labour Charge	100/man-day	5 men-day	500.00
10	Miscellaneous Expenditure			545.00
11	Sub Total			48235.00
12	Interest on Variable cost @ 15% for 6 months			7235.25
13	Grand Total			55470.25
14	Total production (kg)			1800 kg
15	Household consumption by the members			96 kg
16	Gross Income (by selling fish @ Rs.100			170400.00
17	Net Income (16-14)			1,14,929.75

Table 2
Production and yield in pre-adoption phase in Dhangabundh pond

Pre adoption details (2009-2010)				Post adoption details (2010-2011)			
Initial Size (mm)	Fish seed Stocked (no.)	Total Production	Yield (kg/ha)	Initial Size (mm)	Fish seed Stocked (no.)	Total Production	Yield (kg/ha)
50-70	4000	342	195.42	70-90	8750	1800	1028.57

Factors Responsible for Success

1. Sri Budheswar Murmu, an educational unemployed youth and informal village leader acted as a catalyst and helped in a number of ways.
2. Organizing the women into SHGs, mobilizing and motivated them to do aquaculture
3. Provided access to the experts to work with the tribal community
4. Act as an interpreter and translated our advice in local language thus making communication more effective.
5. Belmoni Tudu, an enterprising woman has the leadership quality to run SHG. She also influenced other women SHGs in her village to get involved in aquaculture activities for income generation and livelihood improvement.
6. Active support of Fishery Extension Officer of Kashipur block also contributed to the success.
7. Hands on training programs and low cost technological package for seasonal water bodies have been useful to them. This intervention brought about

improvement in their skills, knowledge and abilities and it directly applied to the farm fields.

8. High demand for fish for house hold consumption as well as in the local nearby market.

Conclusion

Introduction of composite carp culture practices have brought a new ray of hope for the tribal women in Purulia. Women beneficiaries of Marshal Dahar Teenal Samity now actively participate in all the activities of aquaculture. The members got quality fish to consume and also extra money as part of the profit. They took part in decision making related to fishery activities which is fairly good indicator of their enhanced status. Success of M.D.T. Samity has motivated other women as the neighborhood to take up aquaculture as a means to eradicate malnutrition and poverty.

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The dream begins with a teacher who believes in you, who tugs and pushes and leads you to the next plateau, sometimes poking you with a sharp stick called "truth".

-Dr. S. Radhakrishnan

"that the majority of Western politicians are being driven to the world's negotiating tables, not by the plight of the poor nations, but the plight of their own economies and by the serious dislocations in the wealthy nations"

-Jan Tinbergen, Reshaping International Order, 1976, P.47