



Gender perspectives and dynamics of bivalve farming Self Help Groups

V. P. VIPINKUMAR, P. K. SAHOO*, SRINATH KRISHNA*, T. V. AMBROSE AND S. S. JIBAN DASH*

Central Marine Fisheries Research Institute, P. B. No.1603, Kochi - 682 018, Kerala, India,

*Directorate of Research on Women in Agriculture, Bhubaneswar, Odisha, India

e-mail: vipincmfri@gmail.com

ABSTRACT

This study was undertaken in Kasargod and Kollam districts of Kerala to assess the gender perspectives in terms of gender need and gender role in bivalve farming fisherfolk and group dynamics of the Self Help Groups (SHGs) involved in bivalve farming. From each of the districts, 200 households were selected and male and female counterparts in each household were separately interviewed, comprising a sample of 400 respondents. In addition to this, 10 SHGs of women fisherfolk were selected at random and the group dynamics of each SHG was quantified by developing an index called Group Dynamics Effectiveness Index (GDEI). The gender participation in different activities, gender needs, decision making as well as access and control over the resources in respect to mussel culture were analysed. Opinion of men and women on the above aspect was found to be similar with out any significant difference. However, differential gender response was observed between the villages in Kasargod and Kollam districts. Significantly, the financial transaction was under the control of women and the most important requirement perceived by both men and women was the timely availability of spat. In case of participation and need, both men and women share almost the same opinion. Socio-economic, technological and export support requirements were analysed for gender mainstreaming.

Keywords: Benefit-cost ratio, Dimensions, Dynamics, Empowerment, Gender perspective, Self Help Group

Introduction

The open access regime existing in the harvesting of marine fishery resources in our country warrants stronger emphasis on invoking technological innovations as well as management paradigms that reconcile livelihood issues with concerns on resource conservation. Being the premier marine fisheries research institute in India with more than six decades of service to the nation, the Central Marine Fisheries Research Institute (CMFRI) suggests ways and means to sustain fisheries resources and their optimum utilisation. Innovations do not happen in a socio-political vacuum. It is the extent of partnership between the research and the client system that decides the fate of any technology in terms of its adoption or rejection. Rational utilisation of common property resources for sustainable development without endangering the environment is possible through community participation. Bivalve farming (especially mussel and oyster culture) is one such technology that has offered good scope for enhancing food and livelihood security of the stakeholders in our coastal agro-climatic zone and community participation is an important element of this technology. Mussel farming has already been proved as one of the profitable enterprises in the coastal belts as a subsidiary income-deriving source of coastal fisherfolk. (Asokan *et al.*, 2001; Vipinkumar *et al.*, 2001; Vipinkumar and Asokan, 2008). An attempt has been made in this paper

to assess the gender perspectives and their group dynamics in bivalve farming SHGs using case study approach.

A Self Help Group (SHG) consists of members linked by a common bond like caste, sub-caste, community, place of origin, activity *etc.* The group dynamics of these SHGs refer to the interaction of forces between the members. It is the internal nature of the groups as to how they are formed, what their structures and processes are, how they function and affect the individual members and the organisation. (Lewin *et al.*, 1960). In an intensive study of group dynamics, Pfeiffer and Jones (1972) identified the group dynamics factors as to how the group is organised, the manner in which the group is led, the amount of training in membership and leadership skills, the tasks given to the groups, its prior history of success or failure *etc.* In a detailed study of group dynamics, Hersey and Blanchard (1995) gave emphasis on helping and hindering roles played by individuals in groups such as establishing, aggressive, persuading, manipulative, committing, dependent, attending and avoidance. The dynamics of SHGs engaged in mussel and oyster culture and gender perspectives were also explored in the Indian context (Sahoo *et al.*, 2009).

Kasargod, the extreme northern district of Kerala is particularly notable for mussel and oyster farming as it has been successfully accomplished by the women SHGs.

These groups were given financial assistance under Swarnajayanthi Gramaswa Rozgar Yojana (SGSY) scheme by the state government which takes care of economic empowerment of weaker sections (Vipinkumar *et al.*, 2001). Subsidies and institutional credit are the part of the scheme which focus attention on poverty alleviation through organised group approach. This programme looks into training, credit, marketing, technical knowledge and basic facilities necessary for the upliftment of the poor to bring them above the poverty line within three years in such a way that they should have a monthly earnings of at least ₹ 2000/-. The district possesses an area of 1992 km² with a population of 10, 71,508, population density of 538 km⁻², average growth rate of 22.78% and literacy rate of 82.51%. Major means of livelihood are agriculture, fishing, coir retting, coconut husk, toddy tapping *etc.* There is tremendous potential for aquaculture diversification in the coastal belts of Kasargod District and water bodies have ample scope for the judicious utilisation for finfish culture as well as for prawn and crab farming (Asokan *et al.*, 2001).

Quilon or Kollam, is an old seaport town on the Arabian Sea coast in Kerala. About 30% of this district is covered by the Ashtamudi Lake, thereby making it the gateway to the backwaters of the state. The district has an area of 2,491 km² with a population of 25,84,118 and literacy level of 91.49% and has a prominent place in the field of agriculture with a total of 2,18,267 ha of land under cultivation and 70% of the population is engaged in agriculture with the principal crops like paddy, tapioca, coconut, rubber, pepper, banana, mango and cashew. Kollam is an important maritime district of the state with a coastline of 37.3 km, where fishing has a prominent place in the economy. An estimated number of 22,000 persons are engaged in fishing and allied activities. Average fish landing is estimated to be 85,275 t per year and one third of the state's fish catch is from Kollam. There are 93 producer cooperatives, two credit cooperatives and one marketing cooperative, 38 Fishermen Development Welfare Cooperative Societies and nearly 3000 mechanised boats operating from the fishing harbour. The basic data with regard to the fisheries sector of Kasargod and Kollam are presented in Table 1.

The present study focused on the objectives to assess the effectiveness of group dynamics of selected SHGs in bivalve farming and to identify the interrelationship with the cost-benefit estimates of SHGs. It also attempted to assess the gender perspectives in bivalve farming by identifying the gender roles and gender needs in terms of access to resources, participation profile and decision making aspects in various phases of bivalve farming.

Table 1. General profile of fisheries sector in Kasargod and Kollam districts

Parameter	Kasargod	Kollam
Length of the coast line	70 km	37 km
No. of marine fishing villages	16	27
No. of inland fishing villages	2	26
Marine fisherfolk population 2004-2005	45989	96703
Active marine fishermen	10566	21368
Inland fisherfolk population 2004-2005	1004	36653
Active inland fishermen	435	6255
No. of fisheries co-operatives	27	99
No. of domestic fish markets	164	324
Annual marine fish production 2004-2005	8292 t	143138 t
Annual inland fish production 2004-2005	1612 t	10778 t

Source: CMFRI Census data, 2005

Materials and methods

This study was undertaken in two panchayats namely Cheruvathur and Padanna in Kasargod District and Thekkumbhagam and Neendakara in Kollam District. The study area, Cheruvathur panchayat has an area of 18.37 km² with a population of 24, 504 out of which 18, 631 people are literate. Agriculture is the main occupation of the majority and about 150 families are engaged in fishing as the main occupation and about 300 families as subsidiary occupation. Similarly, Padanna panchayat has an area of 13.08 km² with a population of 17, 961 out of which 12, 746 people are literate. About 200 families are engaged in fishing as main occupation and about 400 families as part time occupation. The brackishwater estuary systems of these panchayats are extremely suitable for bivalve farming.

Similarly, in Karunagappally Thaluk in Kollam District, Thekkumbhagam and Needakara panchayats were selected and of these, Dhalavapuram and Malibagam villages of Thekkumbhagam panchayat and Pannakkal thuruthu and Puthan thuruthu villages of Neendakara panchayat were selected for data collection. As much as 200 households undertaking bivalve farming were selected and male and female counterparts in each household were separately interviewed, comprising a total of 400 respondents. The data regarding gender participation in different activities, gender needs, decision making and access and control over the resources in respect to bivalve culture were collected through personal interviews of the respondents with the help of a pre-tested well structured interview schedule. In addition to this, 10 women SHGs engaged in bivalve culture, five each from the above districts were randomly selected to measure the group dynamics (Table 2).

Table 2. Details of the SHGs identified in Kasargod and Kollam districts

Name of the district	Name of the panchayat	Village	Samples selected (SHGs)	No. of members
Kasargod	Cheruvathur	Kaithakkad	Mahatma Mussel Unit	13
		Kavunchira	Kairali Mussel Unit	15
		Kaithakkad	Kaithakkad Mussel Unit	13
	Padanna	Thekkekkad	Thekkekkad Mussel Unit	12
		Vadakkekad	Vadakkekad Mussel Unit	15
		Ori	Ori Mussel Unit	13
Kollam	Thekkumbhagam	Dhalavapuram	Mahatmaji Kudumbasree Group	19
		Malibhagam	St. Maries Kudumbasree Group	16
	Neendakara	Puthan thuruthu	Ashtajalarani Group	18
		Pannakkal thuruthu	Chavara south Group	15

The group dynamics of SHGs was measured by the index called Group Dynamics Effectiveness Index (GDEI) developed by Vipinkumar and Singh (1998) with appropriate modifications suitable for the present context. The GDEI was operationally defined as the sum-total of the forces among the members of SHG based on the sub-dimensions, such as participation, influence and styles of influence, decision making procedures, task functions, maintenance functions, group atmosphere, membership, feelings, norms, empathy, interpersonal trust and achievements of SHG. All these sub-dimensions were measured by a set of inventories containing appropriate questions arranged in a three-point continuum as always, sometimes and never with a scoring pattern 2, 1 and 0 for positive and *vice versa* for negative questions. The Benefit-Cost ratio (BC ratio) was analysed in each group and cost dynamics were also worked out. The problems and constraints faced by the women were also assessed in each case and listed out.

Gender mainstreaming is the current international approach to advancing gender 'equity' and 'equality' in society where equity is a means and equality is a result (Booth and Bennett, 2002). Gender mainstreaming is a strategy first articulated by ECOSOC (United Nation's Economic and Social Council) in 1997 with GAD (Gender and Development) goals and a commitment to gender equity and equality in all aspects of policies, plans, programme design and implementation which involves incorporating gender perspective into all programmes to ensure that these impact on women and men in an equitable way. It aims to transform the 'mainstream' at all levels to end gender discrimination (Stratigaki, 2005). In the present study, with regard to the assessment of gender perspectives, the impact of these SHGs on gender mainstreaming was studied in terms of equity and equality of both men and women in each household in terms of participation profile, access and control over the resources and decision making aspects and identification of gender roles and gender needs. For this,

the male and female counterparts of each household were separately interviewed with the pre-tested structured interview schedule on the extent of gender mainstreaming in terms of the parameters such as, access and control over the resources, participation profile, decision making and identification of gender role and gender needs.

Results and discussion

The relationship of benefit-cost estimates and GDEI of selected SHGs is presented in Table 3. The study, focused attention on Group Dynamics Effectiveness as a trait of SHGs resulted by the joint influence of individual members of the group generated out of skills and orientations from the past life experiences. It definitely varies from person to person, place to place, time to time, situation to situation and in turn from group to group. This might be the probable reason for the differential degree of GDEI observed among respondents.

Profile of cost estimates of bivalve farming Self Help Groups

The major expenditure required for bivalve farming is for the materials such as bamboo, nylon rope, coir, cloth, seed, *etc.* and labour costs essentially cover construction, seeding, harvesting *etc.* The women's groups constituted in the scheme "Development of Women and Children in Rural Areas (DWCRA)" started mussel farming as early as 1996-97 and were assisted by loan amount worth ₹ 8800/- per member with a subsidy of 50% of the loan. The duration of the loan is 5 years and the rate of interest is 12.5 % per annum. In addition to this, a revolving fund of ₹ 5000/- was also provided without interest. When the SHGs are economically empowered with the provision of loan facilities, the returns from mussel farming help them to repay the loan slowly. The loan was granted through Farmers' Service Cooperative Banks and North Malabar Gramin Banks in Cheruvathur and Padanna panchayaths of Kasargod District. Majority of the SHGs showed considerable progress in repayment of the loans, which may be concluded as an indication of the profitability of mussel

Table 3. Relationship of Benefit-Cost estimates and GDEI of selected SHGs

SHG	Cost (₹)	Returns (₹)	BC Ratio	GDEI score	Correlation coefficient (r)	Significance (2-tailed)
SHG 1	32,355 /-	40,000 /-	1.236	52.78		
SHG 2	50,415 /-	64,000 /-	1.269	54.33		
SHG 3	37,950 /-	48,000 /-	1.265	53.91		
SHG 4	45,550 /-	60,000 /-	1.317	57.32		
SHG 5	55,590 /-	72,000 /-	1.295	55.68	0.863**	0.001
SHG 6	43,095 /-	58,000 /-	1.346	60.08		
SHG 7	32,000 /-	42,000 /-	1.312	59.14		
SHG 8	31,750 /-	40,500 /-	1.275	57.78		
SHG 9	32,500 /-	42,000 /-	1.292	59.16		
SHG 10	32,850 /-	44,500 /-	1.354	60.17		

farming. The expenditure details of the selected SHGs in the initial year of mussel cultivation are also shown in Table 3. The BC Ratio of SHGs was found as substantially good which proves the profitability of mussel farming in the first crop itself and since in the subsequent years, material costs such as those of bamboo, rope, cloth and labour cost in construction *etc.* are negligible, this ensures reasonable profit and adoption of mussel farming enterprise bringing about economic empowerment of rural women through organised SHGs.

Experiences and observations indicated that, for a group to be developed as an SHG, it requires a period of at least 36 months and it is a hectic process. It has to pass through various phases such as formation phase, stabilisation phase and self helping phase. These SHGs promote a cooperative and participative culture among the members, which ensures the empowerment culture of the self helping phase. The loan sanctioning, utilisation, accounts maintenance and timely repayment of loans *etc.* are all systematically accomplished with proper maintenance of the documented records by the group members. This ascertains the fulfillment of norms and standards of the SHG leading to economic empowerment of the members.

Table 3 also presents the relationship of Benefit-Cost estimates and GDEI. The average yield in kg per metre length of the rope recorded in all SHGs also showed a positive relationship with GDEI score. There was a proportional positive association of BC ratio with GDEI owing to the correlation coefficient value ($r = 0.863$). One of the major dimensions of GDEI is 'achievements of SHG' which is an indirect representation of yield and economic gain from the micro-enterprise of the SHGs and therefore it could be a primary factor responsible for a positive relationship of yield or BC Ratio with GDEI.

Assessment of gender perspectives in bivalve farming

The gender participation in different activities, gender needs, decision making and access and control over the resources in respect to bivalve culture were analysed. Opinion of men and women in above aspect was found to be similar without any significant difference. However, differential gender response was observed between the villages in Kasargod and Kollam districts. Significantly, the accounting/money transaction is under the control of women and the most important requirement perceived by both men and women is the timely availability of spat. In case of participation and need, both men and women share almost the same opinion which supports the findings of Sahoo *et al.* (2009). Socio-economic, technological and export support requirement was analysed for gender mainstreaming. Male and female respondents in a household were separately interviewed for getting the response of gender needs in terms of access to resources in mussel/oyster culture, participation in various activities of bivalve farming, gender needs and decision making in various stages. The typology access to resources in bivalve farming in gender response such as female alone, male < female, male = female, male > female and male alone indicated separately for male and female respondents (Table 4). A perusal of the Table 4 clearly shows the response pattern of male and female separately in access to resources concerned with bivalve farming. Among the responses of female and male for the items of access to resources, most of the items are dominated by 'male alone' except for 'extension services' and 'market access' which are dominated by 'female alone'. Access to 'extension services' and 'market' by 'female alone' is a commendable significance of mussel farming SHGs mobilised by women.

Similarly the participation profile in various activities concerned with bivalve farming is presented in Table 5. The gender response in participation in various activities

Table 4. Access to resources for bivalve farming (n= 400)

Resource access	Female alone		M<F		M=F		M>F		Male alone		No access	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Craft	24.5	25.13		0.5	2	2.01	12.5	14.57	61	57.79		
Extension service	37.69	36.87	4.02	2.02	8.04	8.08	24.12	22.73	18.09	21.72	8.04	8.59
Gear	25	24.12		2.01		1.51	14	15.58	61	56.78		
Institutional credit	26.5	26.63	1.5	1.01	13	11.06	19.5	19.6	39.5	41.71		
Market	23.62	23.74	4.02	2.02	26.63	20.2	27.14	28.79	17.59	23.74	1.01	1.52
Non-institutional credit	0.5	1.01	0.5		6.5	4.52	19.5	14.07	21.5	25.13	51.5	55.28
Other inputs	0.5	1.52	3.5	3.54	11	14.65	35.5	34.34	40.5	39.39	9	6.57
Site/Water	1.5		1.5	0.5	5	5.53	35.5	41.21	56.5	52.76		
Total	17.46	17.37	1.88	1.45	9.01	8.43	23.47	23.85	39.49	39.9	8.7	9

in mussel farming such as female alone, male < female, male = female, male > female and male alone indicated separately by male and female are presented in the table. A perusal of the table clearly indicates the participation profile in gender perspective in mussel farming for male and female separately and it can be glanced clearly that, the male dominating operations of bivalve farming were after care, arranging bamboo poles and ropes, seeding nets,

canoeing to the sites, harvesting, hiring canoes to estuary, mussel spat collection, post-harvest operation, raft construction, seeding rate and seeding, site selection, transport to shore and tying the seeded ropes to the raft which are labour intensive as per the responses of both male and female. But the female dominating activities are record keeping, shell disposal, marketing of live mussel, shucked mussel, meat shucking *etc.*

Table 5. Participation profile in gender perspective in bivalve farming (n = 400)

Activity	Man (Independently)		With man		With woman		Women (Independently)	
	Female	Male	Female	Male	Female	Male	Female	Male
Accounting and record keeping	6.5	6.03	37	24.12	34.5	46.73	22	23.12
After care	16.5	16.58	74.50	50.25	6	28.14	3	5.03
Arranging bamboo poles	43	17.09	51.5	76.38	1	0.5	4.5	6.03
Arranging ropes	30.65	16.58	65.33	64.82	1.51	14.07	2.51	4.52
Arranging seeding nets	25	16.08	65	62.81	8	17.09	2	4.02
Canoeing to the sites	43.72	26.13	53.27	70.35	0.5		2.51	3.52
Disposal of shell	8	2.01	34.5	18.59	35.5	57.79	22	21.61
Harvesting	19	17.09	71.00	49.75	5	25.13	5	8.04
Hiring canoes to estuary/sea	44.72	28.14	52.76	66.83		1.01	2.51	4.02
Marketing of live mussel	17.5	1.51	23	27.14	37	48.74	22.5	22.61
Marketing of shucked mussel	17	1.51	20	26.13	40.5	49.75	22.5	22.61
Meat shucking	7.5	1.51	28	27.64	42	47.74	22.5	23.12
Mussel spat collection	48	27.64	30	49.75		0.5	22	22.11
Post-harvest operation	19	5.03	38.5	43.72	19.5	28.64	23	22.61
Raft construction	33.67	22.61	56.78	61.81	4.52	11.56	5.03	4.02
Seeding rate and seeding	23.62	17.59	65.83	57.79	7.54	19.6	3.02	5.03
Site selection	49	34.17	28	35.68	1	8.04	22	22.11
Transport to shore	36.5	16.58	41.5	58.29	3	6.53	19	18.59
Tying the seeded ropes to the raft	28.14	15.58	43.22	54.77	23.12	24.62	5.53	5.03
Total	27.2	15.23	46.28	48.77	14.23	22.96	12.28	13.04

Table 6. Gender needs in activities of bivalve culture (n = 400)

Need area	Important		Less important		Most important	
	Female	Male	Female	Male	Female	Male
Access to extension services	44	46.27	1	1.99	55	51.74
Availability of quality seeds	24	20.4	4.5	3.98	71.5	75.62
Credit	51.5	58.21	5	5.97	43.5	35.82
Exposure visits	54.5	50.25	1.5	3.98	44	45.77
Farm management practices	7	9.45	5	2.99	88	87.56
Marketing	44	39.8	0	1	56	59.2
Packaging and transport	15	15.92	10.5	8.96	74.5	75.12
Property right	16.5	9.45			83.5	90.55
Safeguard against unfair transactions	79.5	81.09	4	5.97	16.5	12.94
Social support	33.5	32.84	0.5	1	66	66.17
Support from counterpart	52.5	50.25	1.5		46	49.75
Timely availability of seeds (quantity)	7	1	0	0	93	99
Training in farm management	45.5	46.77	0.5	1.49	54	51.74
Training in marketing	2	3.48	0.5	0.5	97.5	96.02
Training in mussel farming technology	11.5	10.95	1.5	1	87	88.06
Training in packaging	10	8.46	20	20.9	70	70.65
Training in value addition	13	11.44	3	2.49	84	86.07
Total	30.06	29.18	3.47	3.66	66.47	67.16

In the same way, response to the gender needs in various activities concerned with bivalve farming as per the importance assigned by the male and female counterparts separately is presented in Table 6. With regard to the gender needs, the most important need area expressed by both male and female respondents was training and marketing. As mussels and oysters are highly vulnerable for perishability, marketing of the products is the key for the success of the dynamics of these SHGs. Proper 'training on technical matters' and 'marketing aspects' is inevitable for desirable results. Next important need was 'property right'. Both male and female respondents more or less equally assigned 'safeguarding against unfair transactions' as important category of need area.

Similarly, the extent of decision making in various activities concerned with mussel farming as per the response of male and female separately is presented in Table 7. Decision making aspect of fishermen is of paramount significance with regard to marine fisheries sector in the Indian context (Srinath, 1990). The gender response in decision making in various activities in bivalve farming such as female alone, male < female, male = female, male > female and male alone indicated separately by male and female are shown in the table. It is interesting to note that the decision making aspect on the various phases of bivalve farming being accomplished by 'male alone' in most of the activities as per the response of male and female without much difference. But the decision making of the

activities like accounting and record keeping, institutional credit and meat shucking *etc.* were equally shared by male and female. It was observed that, decision making for marketing was a female dominating activity by majority's perception as per the response of both male and female. The results indicated the decision making capability of male and female respondents of the selected households independently being performed in various phases of mussel farming in Kasargod and Kollam districts.

Problems and constraints experienced in bivalve farming

Mussel and oyster farming faces a number of impediments like water salinity, seed availability, selection of location/site, climatic vagaries, identification of proper beneficiaries and proper monitoring opportunities. The major constraints faced by the women in mussel cultivation in the rank order were unpredictable seed availability, difficulties in meat shucking, marketing of mussel, mortality of seeds during transportation, slow growth and social constraints like caste splits, conflicts *etc.* The respondent members of the SHGs were of unanimous opinion that the government agencies should come forward with improved marketing facilities as marketing of the mussel was perceived as one of the biggest constraints. Provision of loans with reduced interest rates and freezer facility for storage of harvested mussels can bring about a breakthrough in this sector in the near future.

The findings of the present study indicated that, the adoption of bivalve farming when accomplished through

Table 7. Decision making in various phases of bivalve farming (n = 400)

Decision making activity	Female alone		M<F		M=F		M>F		Male alone	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Accounting and record keeping	24.75	24	10.61	2.5	35.86	33	15.15	23.5	13.64	17
After care / Maintenance	9.55	6.97	16.58	4.48	27.64	26.87	19.1	27.86	27.14	33.83
Arranging bamboo poles	1		22.5	3.98	3.5	4.98	21	36.82	52	54.23
Arranging ropes	2	1.49	21	5.47	12	4.48	25.5	39.8	39.5	48.76
Arranging seeding nets	1.51	1	23.12	5.97	8.04	6.47	26.13	38.81	41.21	47.76
Harvesting time	22.5	23.38	1.5	0.5	27	21.89	20.5	20.9	28.5	33.33
Hiring canoes to estuary/sea	0.5	1.49	22	4.98	0.5	1	20	32.34	57	60.2
Institutional credit	24	22.89	1.5	2.49	43.5	25.37	17	17.41	14	31.84
Marketing	23.62	25	19.1	12	29.65	18	12.06	25.5	15.58	19.5
Meat shucking	23.35	23.62	15.23	11.06	38.07	26.13	11.68	21.61	11.68	17.59
Mussel spat collection	23	23.38	0	0	4.5	4.48	19	11.94	53.5	60.2
Non-institutional credit	22.61	22.89	6.03	7.46	32.16	19.4	25.63	17.41	13.57	32.84
Post-harvest operation	23.62	23.5	2.01	1	28.14	15.5	22.11	25.5	24.12	34.5
Raft construction	1.51	3	22.11	4	6.53	4.5	25.63	40	44.22	48.5
Seeding rate and seeding	1.01	2	24.12	5.5	12.56	11.5	27.14	41.5	35.18	39.5
Site selection	23	23.38	2	0	6.5	4.98	15	10.45	53.5	61.19
Tying the seeded ropes to the raft	0.5	3.5	38.69	15.5	10.05	10.5	8.54	27	42.21	43.5
Total	13.4	13.61	14.59	5.1	19.16	14.05	19.49	26.96	33.36	40.28

organised cooperative groups of women is achieving considerable significance because of its tremendous profitability. Though bivalve culture possesses the potential as an exclusive women based independent enterprise, it would be vital to look up on the gender issues in the selection of suitable sites and various operations fulfilling the essential parameters for undertaking bivalve culture. An assessment of gender role and gender need is inevitable in this context. It would be pertinent to have a study on the drudgery in bivalve farming trials and research investigations on the effect of coir retting zones on growth of mussel need to be taken up to suggest precautionary measures. Laboratory experiments should be broadened to study the effect of coir retting zones on growth of mussel. Similarly, the export potential of mussel can be promoted through value addition experiments on depuration plants in filtered seawater. Organised fishermen's cooperatives can play a vital role in various stages of seeding, harvesting, sorting, grading, packing and marketing with an intention

of export potential. As mussel seed availability is a major constraint, efforts should be made for setting up of spat production facilities with technical support of CMFRI on a larger scale. This study also emphasises on the gender analysis and gender mainstreaming to explore the gender need and gender role for economic empowerment through bivalve farming as a means of poverty eradication through SHGs. Bivalve farming through SHG approach could be a major poverty eradication activity which needs to be promoted among the coastal fisherwomen.

Acknowledgements

The authors are grateful to Dr. G. Syda Rao, the former Director, CMFRI, Dr. R. Sathiadhas, the former Head, Socio Economic Evaluation and Technology Transfer Division (SEETTD) and Dr. R. Narayanakumar, Head, SEETTD for the wholehearted cooperation rendered to undertake the study.

References

- Asokan, P. K., Vipinkumar, V.P., Appukuttan, K.K., Surendranathan, V. G. and Sivadasan, M. P. 2001. Mussel culture in backwaters of Kasargod District, Kerala. *Mar. Fish. Inf. Serv. T& E Ser.*, 169. p. 9-11.
- Booth, C. and Bennett. 2002. Gender Mainstreaming in the European Union, *Eur. J. Womens Stud.*, 9 (4): 430-46.
- Hersey, P. and Blanchard, K. H. 1995. *Management of organizational behaviour*, 6th edn., Prentice Hall, New Delhi, p. 345-362.
- Lewin, K., Lippett, R. and White, R. 1960. Leader behaviour and member reaction in three social climates, In: Cartwright, D. and Zander, A. (Eds.), *Group dynamics: Research and theory*, 2nd edn., Evanston, III : Row, Paterson & Company, p.16-55.
- Pfeiffer, J. W. and Jones, E. J. 1972. *Annual handbook for group facilitators*, Vol.3. Pfeiffer & Company, San Diego, California, p. 19-24.
- Sahoo, P. K., Vipinkumar, V. P., Mishra, A. K. and Srinath, M. 2009. Gender participation and gender issues in mussel culture - A study from coastal village of Kerala. *Compilation of abstracts of National Seminar on Women in agriculture*, International Extension Forum (IEF), Directorate of Research on Women in Agriculture (DRWA) and Research Association for Gender in Agriculture (RAGA), Bhubaneswar, p. 25.
- Srinath Krishna 1990. Decision making by marine fishermen. *Rural Dev. Rev.*, 9(3&4): 970-974.
- Stratigaki, M. 2005. Gender mainstreaming vs positive action: An ongoing conflict in EU Gender Equality Policy', *Eur. J. Womens Stud.*, 12(2): 165-186.
- Vipinkumar, V. P. and Singh Baldeo 1998. Dimensions of Self Help Group dynamics of horticulture farmers. *J. Extn. Educ.*, 3 (1&2): p. 1- 9.
- Vipinkumar, V. P. and Singh Baldeo 2001. Correlates of effectiveness of Self Help Group dynamics of horticulture farmers. *J. Extn. Educ.*, 11(2): 2795- 2801.
- Vipinkumar, V. P., Appukuttan, K. K. and Asokan, P. K. 2001. Mussel Farming by Women's Self Help Groups in Kasargod District – A case study. *Mar. Fish. Inf. Serv. T& E Ser.*, 169: 4-6.
- Vipinkumar, V. P. 2005. Extension of mussel farming through community participation in Karnataka - A case study. In: *Proceedings of papers of 7th Indian Fisheries Forum*, Bangalore, India, p. 433-440.
- Vipinkumar, V. P. and Asokan, P. K. 2008. Mussel farming technology dissemination to the Self Help Groups. *Ind. J. Extn. Educ.*, 44(1&2): 112-115.