Impact of Training Programs for Women Farmer Groups under the Farmer FIRST Program

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ABSTRACT

ICAR funded Farmer FIRST program (FFP) being implemented in Pathiyoor panchayath of Alappuzha district, Kerala State, India, promoted women empowerment enabling them to be partners of agricultural development. The present study was conducted among 140 women farmers of FFP during 2019-20 to study the impact of training programs using Kirkpatrick training evaluation method. The socio personal profile indicated that majority of the respondents were middle aged and 89 per cent possessed an average land holding size below 0.081 ha (20 cents), 98 per cent of them were educated, average annual income of 70.80 per cent of women respondents were below Rs. 50000, and the major livelihood was derived from wage earning + farming by 55.55 per cent and 15.25 per cent only possessed livestock, and others had small units of poultry, which showed low resource level. The results indicated improvement in income, savings and knowledge on agricultural topics among the participants. The technology adoption also improved after FFP interventions by more than 2 technologies along with skill acquisition. More than 90 per cent of the participants perceived improvement in productivity of crops due to technology adoption and attained diet diversity. The social capital scenario among women farmers indicated the role in promoting technology dissemination and enabling adoption of new varieties based on participatory evaluation. The innovation in social mobilization in land consolidation for farming by the women farmers groups contributed to these impacts and the FFP panchayath was declared as fallow free.

Key words : *Training programs; Kirckpatrick method; Gender; Social impact;*

Training farmers is an important and critical component in enhancing farming skills and taking knowledge based decisions. Agricultural projects and programs integrates training component to introduce and empower participant farmers with knowledge, skills, and technologies. Majority of agricultural works are done by women farmers (*FAO, 2011*) and thus empowering them will have far-reaching effect on agricultural development. They usually operate multiple livelihood options including farming, animal husbandry, and marketing along with household chores and involving in social issues. *Doss (2011)* opined that under performance of agriculture in many countries could be related to the constraints and aggrieved role performance of women, who are vital resources in farming. Recognizing the participation of women in the economic, political and social arena including leadership is according to *Sen (1999)* the most important aspect of political economy development. Women cultivators and agricultural laborers together account for 17.2 per cent (3.7 and 13.5% respectively) of the female work force as per *Census (2011)*. Training is one of the important components to educate, up skill and motivate farm women to apply scientific practices in their farming. Generally participation of women farmers were observed to be below the desired level in various agriculture training programs conducted by the Institute, Hence in the ICAR Farmer FIRST (Farm, Innovation, Resources, Science and Technology) program implemented in Pathiyoor Panchayath, Alappuzha District, Kerala, exclusive training programs for women farmers were conducted. *Sen (1992)* observed that

group approach is an effective communication tool of Agricultural Extension in rural areas as it is cost effective to reach out to large number of farmers rapidly. In this paper an attempt is made to assess the impact of training programs conducted for women farmers Self Help Groups by following the *Kirkpatrick (1998)* Model. Several criticisms were raised on Kirkpatrick's training evaluation such as training evaluation model heavily depend on the after training data from the participants according to *Bates (2004)*. The fundamental and ethical enquiry on evaluation will be 'are we doing the right thing and doing it well' as asked by *Schwandt (1998)*. Potential benefits of any training will be broader and diverse. But another problem with this methodology pointed out by *Goldstein and Ford (2002)* was even though benefits of the programs were provided, the formative data on the reasons of the success or non effectiveness is not generated. But it was well stated by extensive review by *Grider et al. (1998)* that most of the evaluation studies in organizational trainings historically focused on measuring and reporting only the reaction level. Hence these observations were inculcated in the paper while evaluating the trainings conducted for women farmers. Hence the study was taken up with the objectives to assess the impact of the training programs on women Self Help Group members and to bring out the changes in social process towards improving the crop productivity and the income of the members of women Self Help Groups.

METHODOLOGY

The Farmer FIRST program (FFP) 'Participatory technology integration to empower and ensure livelihood security of farmers in Alappuzha District' is being implemented in Pathiyoor Panchayath, Alappuzha District, Kerala state, since 2016. Technical interventions carried out under the program in six modules: Crop, Horticulture, Livestock and poultry, Integrated Farming System (IFS), Natural Resource Management (NRM) and Value addition and entrepreneurship. The extension interventions included conducting training programs, method demonstrations, focus group meetings, extension literature, social interactions, linkages and convergences, conducting exposure visits for farmers, and regular visits to the project area by scientists and other experts. The socio economic status of the women farmers such as age (in completed years), education level, land holding size, annual income, family size, major source of income and possession of livestock and poultry, were brought out through interview based on the pre tested schedule.

Out of over 124 training programs conducted during 2016-17 to 2019-20 under Farmer FIRST program, 71 were for women Self Help Groups (SHG). The training programs were formulated and executed based on systematic training cycle model of *Mankin (2009)* which has five principal steps viz., training needs analysis, preparation for training, training delivery, application of trained skills and knowledge and evaluation. Based on the Participatory Rural Appraisal (PRA), field visits conducted by the scientists and group meetings with farmers, topics of training programs were prioritized and decided. These can be broadly grouped under participatory experimentation and evaluation of varieties and management of existing/ new crops, soil test based nutrition, selection and treatment of seed/ planting material, integration of local knowledge, identification and management of pest and diseases, organic farming practices, integrated farming systems and entrepreneurship development. The training methodologies included lectures, video films, interactive sessions, method demonstrations, participatory experiments, on field intensive extension support and need based group sessions in the farm itself.

The training programs conducted as part of Farmer FIRST program during 2016 to 2019-20 was evaluated using the Kirkpatrick model. It is consisting of four sequential steps such as (i) reaction which is all about the emotions/feelings of the learner; (ii) learning which measures the knowledge acquired from the training program; (iii) behavior which reflects the attitudinal changes including skill development, application, and refinements; and (iv) results that indicate the extent of achieving the organizational goals. Knowledge level of participants at the beginning of the training programs and the knowledge gained by the participants on completion were assessed using pre and post teacher made knowledge tests. Reaction of participants were observed during the program and objectively assessed and documented during the feed-back sessions of the programs. Impact assessment of training programs at these two levels (i.e., reaction and learning) of *Kirkpatrick and Kirkpatrick (2006)* model is common in almost all training programs, but the behavior changes and performance at workplace are seldom measured. To make an objective assessment of the impact of training programs conducted for women SHGs as per Kirkpatrick model, data was collected from 140 sample respondents. Selection of respondents was made by

following a multistage random sampling design. In the first stage 7 wards (lowest administrative segment of a panchayath) out of 17 wards were selected. In the second stage two SHGs were selected and finally the members. A structured pre-tested interview schedule was used for data collection through personal interviews of the respondent along with recording of observations at field. This was further supplemented with telephone interviews wherever felt necessary.

RESULTS AND DISCUSSION

Knowledge and skill up gradation in the farm sector is far below the desired level. Large share of farmers and farm laborers remain to be categorized as the 'unreached' as can be seen in the present study that 85 per cent of the respondents were not undergone any kind of agriculture training before the implementation of Farmer FIRST program in Pathiyoor Panchayath. As in the case of any other panchayath in Kerala, Pathiyoor too has an office of the Department of Agriculture Development and Farmers Welfare and also there are two Agricultural Research Institutions within a reach of 50 km. Despite these favorable conditions, women farmers by and large, are not able to access knowledge and technologies and the gender disparity in extension outreach was visible.

Table 1. Training programs attended (N=140)

Number of training	Trainings attended (%)*	
	Before FFP	After FFP
Nil	86.11	29.16
<5	12.5	44.44
5 to 10	1.38	9.72
11 to 15	0	9.72
16 to 20	0	5.56
>20	0	1.38

*Significant @ 1 % (p value 0.000006068)

The training programs were designed to cater to the needs of the women farmer groups in off campus mode. Follow up visits, method demonstrations; diagnostic field visits and interactive meetings were done for the training effectiveness. The data were subjected to paired t test and H_0 hypothesis rejected, since the difference in average of the after minus before and u_0 was big enough to be statistically significant. *Kaur and Talukdar (2007)* reported that trainees perceived trainings to be very useful in terms of gain in knowledge and development of skills and need based benefits from group interactions among the trainees.

The positive side is that the concerted efforts of the project team had resulted in the change and the percentage of women attended at least one training program had increased to 72 per cent. Further 26.42 per cent of the members of selected SHGs attended more than 10 training programs during the project period. This achievement is mainly due to appropriateness of topics selected for the training programs with well defined objectives to address the felt-needs of women farmers. Furthermore these programs were conducted in their vicinity and that also ensured better attendance and participation. The presence of project-team in the location in terms of frequent follow up visits, method demonstrations, diagnostic field visits, field problem diagnosis and interactive meetings were made the trainees to attend more number of training programs besides making the programs more effective. The group based capacity building approach created confidence among rural women, especially among the poor, and as *Alam et al. (2011)* noted, this process should be continued for empowerment of women as well for their skill up gradation.

The impact of any extension approach is dependent on the socioeconomic factors and social process generated among the beneficiary groups. Socioeconomic profiles of the respondents are summarized in Table 2a & b. Some of these factors are also used as the baseline indicators to workout improvements on carrying out interventions.

Participation of middle-age women in the training programs (Table 2a) and their initiative to utilize the acquired skills as revealed from this study has many connotations. First instance, as reported in many studies, youths are not coming forward to take up agriculture as a livelihood option. It also implies that people are turning towards agriculture only when other opportunities were ruled out. This aspect can also be reflected on the education level. Only 13 per cent of the participants are graduate or above. The middle-age group also will show anxiety for settling to a profession at the earliest and keeping their aspirations high is a challenge. To make things further tough, these women are also resource poor, 70 per cent of them are having a land holding below 0.04 ha, making it uneconomical for any commercial farming activities. Nevertheless 77.77 per cent of them reported to be received some kind of income from farming (Table 2b), though it is unsubstantial. The animal and poultry components are the two subsidiaries that can be integrated with marginal holdings for

Table 2 a. Socio-economic profile of respondents (N=140)

Socio-economic profile	%
Age (years)	
Below 35	07.00
35-55	65.00
Above 55	28.00
Education	
Illiterate	1.42
Below 10th Standard	45.71
10th Standard	40.00
+2 and above	12.87
Land holding size (cents)	
Up to 5	32.14
6 to 10	37.14
11 to 20	19.28
More than 20	11.44
Annual income (Rupees)	
Below 50000	70.83
50000-100000	19.4
Above 100000	9.72
Number of family members	
Up to 2	12.14
3 to 5	66.43
More than 5	21.43

Figures in the parenthesis are percentage to total (N=140)

Table 2 b. Socio-economic profile of respondents (N=140)

Major source of income	%
Only wage earnings	6.95
Wage & farming	77.77
Wage & small business	5.57
Wage, farming & small business	9.71
Animals	
Cow	16.66
Other animals	12.46
None	72.22
Poultry	
Hen	16.67
Duck	4.16
Hen & duck	8.34
None	70.83

additional income, but not possessed by over 70 per cent of the participants. Importance of farm assets in poverty reduction through economic development and management of multiple vulnerabilities was discussed by *McKay and Perge (2013).*

Evaluation of programs for reaction level : The effectiveness of training programs were brought out in regard to relevancy and need of topics, content of trainings, quality of instructors, and knowledge gained for farming in field situation. The overall effectiveness of training was found to be medium to high level, as responded by 74.6 per cent, and the overall came under medium effectiveness category. Participants were largely satisfied with the relevance of training topics (82.1%) and competence of instructors (76%). These findings are in line with the observations of *Anilkumar et al. (1994)* and *Mahipal and Prasad (1997)* that majority of the respondents had gained medium level of knowledge about various technologies imparted during training. The fact that effectiveness of training programs for women SHG members warranted post-training support and extension advisory services in combination with diagnostic field visits that are customized to women farmers' time availability, knowledge level and resource base.

Evaluation in terms of learning by the participants : Women farmers are well equipped with experiential knowledge in homestead farming systems and they are mostly involved in agricultural operations like nutrition gardens, bio input preparation, recycling of bio resources in the homestead, harvesting and post harvest operations as well as household activities. The knowledge of women trainees were assessed at the beginning by conducting a test. On completion, again a test is conducted to obtain the knowledge gain. It was observed that overall 71.33 per cent participants gained practical knowledge in farming. This result was in tune with the study report by *Rajeev et al. (2009).* As observed by Kaur and *Talukdar (2007)* and *Singh and Singh (2014),* the participants perceived the effectiveness of training programs in terms of gain in knowledge and development of skills along with need based benefits from group interactions among them during the program. Partnerships in learning evolved in group discussions, training sessions and during the collective activities the women farmers supported each others for fine tuning the skills. It is also observed that the trainees appreciated problem solving ability of fellow trainees and utilized them. These learning activities eventually bridge the gap of training and utilization of skill at workplace as observed by *Sampson and Cohen (2001).* The gap in use of learning partnerships in workplaces was also identified by *Collier and McManus (2005).* Some of the research gaps were also identified during the interactive sessions with the trainees. Most important one is the need for drudgery reduction so as to improve the skill acquisition by women farmers and to assess the extent and process of cross

learning among women trainees.

Behaviour changes : The changes in behaviour were measured for three variables: acquisition of skills; technology utilization pattern and diet changes.

With regard to acquisition of skills, the most important objective of training for farm women, the training programs were focused on ten critical skills that are being identified in focus group discussions. The skills identified were on land preparation in sandy loam soils, soil sampling method, planting in correct spacing, quality seed selection, seed treatment, application of fertilizers, use of sprayers, preparation of spraying pesticides for spraying, harvesting and post harvest operations. Since machinery use was trained only for one group, it was not included in the skills. It was observed that 97.14 per cent of the participants of these programs stated that they acquired additional skill. Number of skills acquired by the participants is shown in Table 3. Of course it also depends on number of training programs they attended.

Table 3. Comparison of skills acquired by women SHG members trained in the Farmer FIRST program (N=140)*

No. of skills	Pre-training (%)	Post-training (%)
0	80.71	2.86
1-3	17.86	43.57
4-5	1.43	40.00
6 or more	0.0	13.57

* Significant @ 1% (p value 0.000008803)

Acquisition of skills is the most important objectives of the training programs. Empowerment of women SHG members with adequate skills resulted in proper adoption of technologies. Skill acquisition required field level rehearsals and experiential learning also.

It was observed that 97.14 per cent of the respondents are skilled after attending various training programs compared to 2.77 per cent at the time admission to training programs. Technologies identified for imparting training are cultivation of high yielding varieties (various crops), appropriate spacing, integrated nutrient management, and use of organic inputs for plant protection and value addition. Training and follow up activities of women members of self help group (SHG) elevated them to become social vehicles for knowledge transfer, skill upgrade, networking, and adoption of appropriate technologies through their acquired social and communication skills. Data revealed that skill acquisition by women farmers needs more concerted efforts in drudgery reduction skills as well. The improvement in skill acquisition among participant women farmers were subjected to paired t test and found to be statistically significant and Ho hypothesis rejected.

For effective utilization of newly acquired skills, the women SHG members are to be equipped with resources. Non-availability/access of sufficient land for cultivation is one of the major constraints mentioned by the trainees. A mutually consented social mobilization approach of land consolidation was then evolved in the Farmer FIRST program. The approach is to identify contiguous fallow land (including area of coconut mono cropping) appropriate for different crops for which a committee was formed in every ward – the lowest administrative unit in panchayath. The committee consisted of peoples' representatives, scientists, representatives of the women self help groups, progressive farmers, representatives of community based organizations (CBO) and land owners. The committee explored locally and in discussion with land owners obtained their mutual consent and identified contiguous area for each crop. Thus a total of 351.7 hectares of fallow land were brought under cultivation during 2016-17to 2019-20 under various crops. This process was necessitated as a responsible extension intervention for upbringing women farmers.

Intervention on crop diversification in fallow land resulted changes in diet diversity of women SHG members and their family. Among the respondents, 88.1per cent indicated improvement of intake of tubers and fresh vegetables in their daily diet and finger millet and sesamum during the season. One tenth of them told that intake of leafy vegetables improved to 4 days per week. Based on the scores assigned to changes in consumption of different items (milk, vegetable, tubers, egg, pulses etc.), it was observed that 80.56 per cent respondents made medium level changes in diet. It was low in 8.33 per cent of respondents.

The aforesaid changes in behavior can be considered as impact of the training programs as suggested by *Das (2015)*.

Evaluation based on results : How far the training programs conducted for women SHG members helped them for better earning was examined for increase in income and savings (Table 4). The activities of women SHGs not only helped to increase income but also to improve their savings. Nearly one-third of the respondents reported have an increase in monthly

income of over Rs.1000 and nearly 14per cent of them making a monthly savings over Rs.1000. The increase in earning as observed in this study is similar to that reported by *Jain (2015)* where it is mentioned that 66.77 per cent women trainees improved their savings to the tune of Rs.500 to 1500. More than an increase in income, the SHG activities made the women to be assertive on their role in contributing to family income. The collective decision making and execution empowered them for taking up new agricultural activities and raise adequate investment. Similar observations made earlier by *Danida (2004),* and *Kurbetta (2017)* while analyzing the technology adoption of women trainees of SHGs.

Table 4. Distribution of respondents (per cent) for gain in monthly income and savings (N=140)

Monthly gain (Rs.)	Income (%)	Savings (%)
Up to 1000	66.67	86.11
1000-1500	20.83	5.56
1500-2000	8.33	5.56
>2000	4.16	2.78

Another aspect of organizational change due to the training programs observed in this study is the improvement in yield. Among the respondents, 94.44 per cent perceived an increase in productivity. This is mainly due to good agricultural practices obtained through training programs and participatory selection of high yielding varieties. This result is supported by the observation of Food and Agriculture Organization (FAO), that women could improve the agricultural crop productivity by 20 to 30 per cent if they also given proper access to credit, land and technology/extension services as men, contributing to income and household food security. (*FAO at Work, 2011-12*).

Table 5. Extent of adoption of technologies(n=140)*

Category	Before FFP	After FFP	
Nil	15.27	0	
Only one technology	51.3	0	
Two technologies	22.22	1.38	
Three technologies	8.33	1.38	
More than three technologies		2.77	97.22

* Significant @1% (p-value 0.000000712)

The impact on extent of technology adoption after FFP, also furnished statistically significant change. The data in Table 5 showed that 95 per cent of the women farmers adopted more than three technologies after FFP such as high yielding varieties, spacing, chemical fertilizers and organic inputs for plant protection. The result was statistically significant in paired t test and the H_0 hypothesis rejected.

Partnerships in learning, evolves in group discussions, training sessions and during collective activities the women farmers supporting each other's skill tuning and learning such as promoting individuals in problem solving and reflections among their partners. These eventually bridged the gap of training and workplace learning and utilization as reported by *Sampson and Cohen (2001). Danida (2004), Kurbetta (2017)* also reported that majority of trained women belonged to high level of adoption about dairy management and seed treatment. These results supported the findings and observations of the present study among women farmers.

Perception of women farmers on improvement in productivity of crops : The productivity or yield improvement in the crops cultivated under FFP as per the women farmers' perception indicated that, even though 5.56 per cent perceived lower yield when compared to pre FFP, majority (94.44%) could get 30-50 per cent more yield after FFP due to adoption of good agricultural practices and high yielding varieties. This result is supported by the observation of Food and Agriculture Organization (FAO), that women could improve the agricultural crop productivity by 20 to 30 per cent if they also given proper access to credit, land and technology / extension services as men, contributing to income and household food security. (*FAO at Work, 2011-12*). Das (2015) also reported that productivity, adoption of scientific agricultural practices and adequate use of fertilizers increased among women farmers.

Change in diet after FFP : One of the indicators of the impact of training programs were the change in diet of the women which will be the trend in the family also, since they are the persons who prepares and serve food to the family. The major change indicated by 88.10 per cent of the respondents was on improvement of intake in tubers and fresh vegetables in their daily diet and finger millet, sesamum seasonally, adding to diet diversity. One tenth of them opined that intake of leafy vegetables improved to 4 days per week after the diet survey and trainings. The scores were given based on the additional diversity in diet obtained by the family in FFP, in terms of consumption changes of milk, fresh vegetables, tubers, spices, coconut, egg, pulses and leafy vegetables. It could be seen that after the FFP 80 per

cent of them added diversity in their diet from the FFP interventions. This attains importance based on the basic resources available with them. *Das (2015)* in his study also reported that greater food security, marketable surplus production and consumption improved due to impact of trainings and support services given to them.

Social Capital : Creation of social capital enabled social empowerment through shared responsibilities in farming development among women as well as small and marginal farmers. Under the Farmer FIRST program participatory evaluation of technologies, horizontal dissemination of evaluated and prioritized technologies achieved through shared critical inputs like improved varieties of sesamum, finger millet, maize, spices and tubers released from Agricultural universities and ICAR institutes. The women farmers groups based on an agreement with social committee comprising of ICAR CPCRI, Local panchayaths and farmer representatives had to provide seeds/planting materials, free of cost for other groups as a first time commitment to the maximum of 50 per cent of their produce. The committee will monitor the whole process scientifically throughout the cropping season with technology backstopping and facilitation of ICAR CPCRI. The chain of activities thus systematized, continued and within 3 years the area spread to and awareness improved in all the wards of the panchayath. *Quisumbing et al. (2015)* reported dissemination of sweet potato vines using women groups taking into consideration the gendered characteristics of social networking. Thus they could enable adoption by women farmers and obtain produces for home consumption. It warrants local adaptations are needed for motivating women farmers to participate in agricultural development overcoming constraints and challenges of success to resources. In Farmer FIRST Project (FFP), collective planning and implementation of convergence projects with MGNREGS steered towards enhancing social capital and land productivity. These convergence efforts improved the project ownership and capacity development. *Das (2020)* suggested that government should give more importance to productive works based on local need which will cover more women under the umbrella of MGNREGS. *Aminuzzaman (2018)* indicated that it is important to enhance women's capacity to enter the labor market for income. Three important areas facilitating income are, job creation, connecting with productive jobs being created or get help to create own jobs in self-employment and increasing women's productivity of the existing jobs, which was initiated in this study interventions.

Constraints of women farmers in attending training programs : The major constraints of women farmers were the low access of land for agriculture (73.2%) and water scarcity during summer, access to extension services and critical inputs (70.48%), lack of rural marketing facility (60.0%), and non cooperation of family members (22%). A practical model of consented land consolidation was evolved in this FFP for access to land for agriculture and extension strategies were modified for easy access and regular support services. Hence participatory social processes are to be evolved for utilization of trainings by women farmer groups towards technology adoption and improving productivity.

CONCLUSION

Trainings are meaningful only if it changes the attitude, motivates and reflects in actual work situation and it should be continued as per needs. Women farmers are crucial in improving food production, value addition and nutritional security. The study results is a case in point that women farmers could be empowered for improving income, savings and bringing diet diversity by enabling technology adoption and skill acquisition through need based training programs. Training of women self help groups creates work place opportunities for cross learning, mutual correction and sharpening of skills, exchange of knowledge and gaining mutual benefits of income, sharing labour and obtaining social acceptance as producers. The policy implications are social process of land consolidation, designing and organizing need based training programs for women, convergence with women oriented programs such as MGNREGS and diet diversity in households. The production improvement through trainings saw emergence of procurement, value addition and direct marketing of farm products fresh and on the farm itself for rural customers. The study also indicated that the impact of the training programs requires more direct and indirect factors since the resulted changes are not uniform among the trainees due to socio economic and personal variables. Gender aggregated training needs assessment, social implications in convergence and linkages, designing training programs in terms of changing needs/time availability of women/collective learning in consonance with cross learning based on their learning ability, also to be taken for concurrent and final evaluation.

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