



Impact of Farmer FIRST Project on Livelihood of Farmers

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ABSTRACT

Under the farmer FIRST project about 400 beneficiary farmers were provided access to improved agricultural technologies in Khordha district. Skill training and demonstration of modules on improved technologies on Crop, Horticulture, Livestock and Fishery were conducted. Following the DFID framework (1999) the impact on livelihoods of farmers was measured through finding a comparative position of physical, social, financial, human and natural assets of the farmers before and after the adoption of the interventions. A structured interview schedule was developed and data was collected from 87 randomly selected beneficiaries by personal interview method twice (before i.e., in 2016-17 and after the intervention i.e., in 2019-20). The mean value of overall standard of living of adopted farmers derived through the addition of the index values of five assets was worked out to be 2.84 in the post-adoption period against 2.41 in the pre-adoption period. Paired sample t-test indicates the positive and significant impact of the project on the livelihood of the beneficiaries.

INTRODUCTION

The Farmer FIRST approach considers putting the farmer in the driver's seat in matters of problem identification, prioritization, conduct of experiment and its management. This approach focuses on enriching knowledge and integrating technologies in the farmers' conditions and enhancing the farmer-scientist interface. This project is unique in its approach which creates a platform for all the scientists irrespective of their disciplines, to get an opportunity to regularly interact with the rural farm environment and thus, collect valuable feedback on problems, priorities, opportunities and status of agriculture and agricultural technology at the ground level and develop suitable technology modules for different farm situations. The emphasis of the project was on farmers' farm, innovations, resources, science and technology. Smallholders, landless and farm women are especially being addressed through technology integration modules.

Farmer FIRST project implemented by ICAR-Central Institute of Freshwater Aquaculture, Bhubaneswar has covered 4 villages in

Khordha district i.e., Kantia Talasahi, Kantia uparajahi (Block-Jatani), Jagannathpur (Block-Balianta) and Dorbanga (Block-Balipatna). In total, the project has involved more than 400 beneficiaries from 2016-17. Modules on improved technologies on Crop, Horticulture, Livestock and Fishery are being demonstrated. Skill training and technical backup were provided to the beneficiaries. Aiming at sustainable agriculture along with profit maximization, 4 fish-based integrated farming systems were developed where different enterprises like fishery, horticulture, poultry and vermicomposting were integrated. Integrated farming that includes aquaculture can be broadly defined as the concurrent or sequential linkages between two or more farming activities, of which at least one is aquaculture (Edwards, 1993). Integrated aquaculture-agriculture is reported to have improved the livelihoods of small-scale farmers in Bangladesh. Given the inherent local adaptability of the IAA approach, this concept offers a promising alternative – and thus should be considered and tested – in other developing countries (Murshed-E-Jahan et al., 2011). Improved technological modules like integrated nutrient management in paddy,

green gram in rice fallow (TARM 1), scientific carp culture, backyard poultry strain (Kaveri/Vanaraja), introduction of photo insensitive variety of cauliflower var. Fujiyama and introduction of bush-type French bean var. Falguni were demonstrated and performance was recorded.

A livelihood is a means of deriving a just and dignified living by the society, family and individuals (Ellis, 2000). A livelihood can be urban or rural depending upon the context in which families derive their living (Scoones, 1998). The majority of the people in the study area were small and marginal farmers and are involved in farming as a primary means of earning a living. Agriculture, fish farming, animal husbandry and non-farm activities are some of the common livelihoods. The livelihoods of these people are at times challenged due to frequent visits of natural calamities. Rural livelihood is complex and wide-ranging (Ashley et al., 2003). The farmer first project emphasized - providing access to advanced agricultural technologies, building capacities, enhanced farmer-scientist interface and institutional innovations. These interventions assume significance for attaining sustainable rural livelihoods. Through this study, an attempt was made to assess the impact of improved agricultural practices on the livelihood of adopted farmers.

METHODOLOGY

The impact assessment of this project on farming situation and livelihood of farmers was carried out covering a randomly selected sample of 87 farmers in the adopted villages of Farmer FIRST project in the Khordha district of Odisha during 2016-17. A structured interview schedule based on the DFID framework was developed and data was collected by personal interview method. The same interview schedule was introduced before i.e., in 2016-17 and after the intervention i.e., in 2019-20. The impact on livelihoods was measured through finding comparative positions of physical, social, financial, human and natural assets of the farmers before and after the adoption of the interventions.

The physical assets included type of housing, sanitation, conveyance, availability of electricity, cooking and communication facilities. The social assets mainly referred to the recognition, social and political participation, active involvement in developmental works, common services used and group membership pattern. The financial assets were measured based on parameters like sources of income, kinds of savings and investments, lending and borrowing. The human assets involved language competencies, literacy level, management skills and mobility. The natural assets were the possession of natural resources of farm family, viz. farm size, irrigated land, livestock holding, poultry and fishpond. Overall, the standard of living of farmers was assessed based on their assets held before and after the adoption of the technology. Thus, the value of the overall standard of living ranged from 5 to 25. Standard of living of beneficiary farmer is expressed as

$$Li = \sum (Pi + Si + Fi + Hi + Ni)$$

i = 1, 2, 3..... 87

$$P_i = \frac{\sum_{i=1}^{87} \sum_{j=1}^7 PA_{ij}}{\sum_{i=1}^{87} \sum_{j=1}^7 S_{max}}$$

Where, Pi- Physical Asset index, PA- Physical asset, Smax- Highest score, j- Indicates the parameters measuring physical assets, viz. no. of rooms in house, type of roof of the house, sanitary/latrline condition, type of vehicles-owned, electric power usage, cooking facilities and telephone connectivity. In the similar fashion other variables like social (S_i), financial (F_i), human (H_i) and natural (N_i) assets were evaluated. Appropriate statistical tools like mean, standard deviation and paired sample 't' test are used.

RESULTS AND DISCUSSION

It is evident from Table 1 that there was an improvement in all the five types of assets measuring the changes in the livelihood of farm families during post-adoption period. The gain was found maximum in the financial assets (25%), followed by natural assets (21%), human assets (19%), physical assets (15%) and social asset (14%). All assets of farm families increased considerably. The high improvements in financial and natural assets indicate the betterment of living as well as economic conditions. The overall gain in livelihood is worked out to be 18 per cent. Livelihood improvement is not just about the positive change towards a better quality of life and human wellbeing, but it takes into account the local and global change which determines the livelihood (Pandey, 1996).

Table 1. Livelihood index (including physical, social, financial, human and natural) of the farmers before and after of the intervention of the project

Indices of Assets	After	Before	Difference	% Gain
Physical (Pi)	0.71	0.62	0.09	15
Social (Si)	0.72	0.63	0.09	14
Financial (Fi)	0.50	0.40	0.10	25
Human (Hi)	0.56	0.47	0.09	19
Natural (Ni)	0.35	0.29	0.06	21
Livelihood index	2.84	2.41	0.43	18

The mean value of overall standard of living of the respondents derived through addition of the index values of five assets indicated it to be 2.41 during pre-adoption and it increased to 2.84 during post-adoption period. Being a dynamic process, livelihood diversification depends on many factors having spatial and temporal variations. This process of change varies from farmer to farmer and over space and time (Ghosh *et al.*, 2011). Therefore, integration of improved technology through Farmer FIRST project is not exclusive, but one of the factors influencing the changes in livelihood of farmers. (Mehta, 2009) too emphasized that adoption of appropriate agricultural technology holds the key for development of the rural economy.

After implementation of the project i.e. after providing critical inputs, interface with scientists along with technical back up of advanced technologies, the livelihood of the beneficiary farmers has improved leading to enhancement of standard of living of the farmers. It is evident from Table 2 that all the five indices of livelihood namely physical asset (Pi), social asset (Si), financial asset (Fi), human asset (Hi) and natural asset (Ni) have increased significantly (p<0.01). Thus the project indicates a positive and highly significant impact on the livelihood of the beneficiaries. Dey et al., (2010) found that adoption of integrated agriculture aquaculture resulted in increased diversification and higher cropping

Table 2. Paired sample t test

	Paired differences				t	df	Sig. (2-tailed)	
	Mean	Std. deviation	Std. error mean	99% confidence interval of the difference				
				Lower				Upper
AFTER_PA - BEFORE_PA	3.023	3.389	.363	2.066	3.980	8.319	86	.000
AFTER_SA - BEFORE_SA	1.851	2.385	.256	1.177	2.524	7.238	86	.000
AFTER_FA - BEFORE_FA	2.184	2.683	.288	1.426	2.942	7.592	86	.000
AFTER_HA - BEFORE_HA	1.839	2.658	.285	1.088	2.590	6.453	86	.000
AFTER_NA - BEFORE_NA	1.517	2.057	.220	.936	2.098	6.881	86	.000

intensity. Wang (2018) also suggested that increased household livelihoods play an important role in improving land space utilization efficiency, resource conservation and use, and the ecological environment. Kaur & Kumar (2020) reported that introduction of summer moong in paddy-wheat cropping system in Sangrur has led to higher net return for the adopted farmers. Letha Devi et al., (2021) worked out livelihood vulnerability index for crop farming systems, livestock farming system and integrated farming systems in Karnataka. They observed that crop farming system with mono cropping is the most vulnerable while integrated farming system is the least vulnerable. Kumari et al., (2020) reported positive impact of self-help groups on livelihood of women members. It has contributed to their empowerment and increased decision making abilities.

CONCLUSION

The Farmer FIRST project implemented by ICAR-Central Institute of Freshwater Aquaculture has brought in significant improvement in livelihood of the beneficiary farmers. Access to improved agriculture and allied sector technologies coupled with technical backup and institutional innovations have contributed towards this. As per the premise of the Farmer FIRST project, this arrangement needs to be institutionalized and its four elements-Scientists farmers interface, technology assemblage, institutional development and content mobilization should continue even after the closure of the project. This suggests that this approach of direct interface with farmers for developing and applying appropriate technology modules for different agro-ecosystem must receive due attention.

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