

## IMPACT OF FARMER FIRST PROGRAMME ON LIVELIHOOD SECURITY OF SMALL AND MARGINAL FARMERS

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### ABSTRACT

Directorate of Extension education, Navsari has implemented FFP in the year 2017. The total number of modules implemented were six. The objectives of the study were to measure the impact of ensuring livelihood security on small and marginal farmers. Total three villages and two talukas of Navsari District were purposively selected for the study. From each module beneficiary farmers were proportionally randomly selected. Total 120 beneficiary and 120 non beneficiary farmers were selected comprising total of 240 respondents. Ex-post facto research design was used. Twelve independent and three dependent variables were chosen. The impact was measured by comparing the change in livelihood security of 120 beneficiary with 120 non-beneficiaries of FFP by using structured schedule of impact. Majority of the beneficiary farmers had medium level of impact on livelihood security, followed by high and low, respectively. Whereas, more than half of the non-beneficiary farmers had medium level of impact on livelihood security, followed by low and high, respectively. The Two sample Z test for livelihood security was found significant at 1 per cent level of probability. Further, education, social participation, extension contact, innovativeness and scientific orientation were found positive and highly significant with livelihood security of beneficiary farmers.

**Keywords:** FFP, food security, health security, employment security, financial security and social security

### INTRODUCTION

The new proposed project Farmer FIRST Programme, has been initiated by ICAR in October 2016. FFP was launched by ICAR and implemented in XI ATARI ZONES under an externally funded category. ICAR has established 11 ATARIs (Agricultural Technology Application Research Institutes) across India for monitoring, coordinating and reviewing the KVK system. Navsari Agricultural University is the lead organization falling under ICAR ATARI Zone-VIII Pune. Directorate of Extension education, Navsari has implemented the project entitled “Ensuring livelihood security for small and marginal farmers of South Gujarat” in the year 2017. They have implemented the project in three villages of Navsari District. The total number of modules implemented were six, namely Crop based module, Horticulture based module, Integrated Farming System based module, Natural Resource Management based module, Livestock based module and Entrepreneurship based module. The concept of FFP can be denoted by two words viz, “enriching knowledge” and “integrating technology”. This leads to addressing of some questions *i.e.* How much level of impact beneficiary farmers are having on their livelihood security? Which factors are contributing in enhancing livelihood security? There was not a single study conducted and reported so far on this important project in the Gujarat area. Hence, an attempt was made to assess the “Impact of ensuring livelihood security on small

and marginal farmers under Farmer FIRST Programme in Navsari District of South Gujarat.” It is hoped that findings of this study will be useful to the extension personnel involved at ICAR level, ATARI zone level, Directorate level and grass root level for modifying and qualifying their ways and means for the purpose of improving the project. Further, it will also help to know those important factors that influence on the impact of FFP. Hypothesis formulated were, there is no relation between the profile of beneficiary farmers and impact of demonstrated technology on livelihood security and there is no difference between the impact of demonstrated technology on livelihood security of beneficiary farmers and non-beneficiary farmers. The objectives of the study were to study the personal profile of beneficiary farmers under FFP, to measure the impact of ensuring livelihood security on small and marginal farmers under FFP and to study the relationship between personal profile of farmers with impact on livelihood security.

### OBJECTIVE

To know the impact of farmer first programme on livelihood security of small and marginal farmers

### METHODOLOGY

The study was conducted in Navsari district of South Gujarat during the year 2021. FFP was implemented

in two talukas of Navsari District, namely Jalalpore and Gandevi and three villages of Navsari district, namely Hansapore, Chijgam and Pathri. So, total three villages and two talukas were purposively selected for the study. The list of number of small and marginal beneficiary farmers of all six modules were obtained. From each module beneficiary farmers were proportionally randomly selected. Total 120 beneficiary farmers was selected. The 120 non beneficiary farmers having similar size of land were selected from same villages. Total sample size was 240 respondents. Ex-post facto research design was used. Twelve independent and three dependent variables were chosen. In light of the objectives, the interview schedule was prepared and respondents were interviewed at their home and field. The collected data were analysed by using frequency, percentage, arithmetic mean, standard deviation, correlation coefficient (r) and Z test. The impact is operationalised as the resultant effect occurred due to the technologies demonstrated in FFP with an aim to ensuring livelihood security to small and marginal farmers by the Directorate of Extension Education, Navsari. The impact was measured by comparing the change in livelihood security of 120 beneficiary farmers of FFP with 120 non-beneficiaries

of FFP by using a more or less similar structured schedule of impact. A structured schedule with six components viz., food security, health security, employment security, financial security, assets security and social security had been developed with due care, to include all the aspects of livelihood security of population in the schedule. So that, maximum reliability of schedule could be achieved. A set of statements were framed for each component to obtain the response from the respondents. The total score obtained by the individual respondent for all the statements in a specific component was calculated to show the impact on a particular component. Then scores of all components were summed up to show the impact on livelihood security. Then with the help of mean and standard deviation the respondents were categorized as low (Below - SD), medium ( $\pm$  SD) and high (Above + SD) with respect to their impact level on livelihood security. Z test was performed to check the significant difference of impact between beneficiary and non-beneficiary farmers at a 1 % probability level. An attempt was made to find out the association between selected independent variables and impact on livelihood security. The relationship was worked out by using the correlation coefficient (r). Calculated value

of “t” was compared with the table value of “t” with  $n - 2$  degrees of freedom at 5 per cent and 1 per cent level of probability.

## RESULTS AND DISCUSSION

### Impact of Farmer FIRST Programme on livelihood security

Table 1: Distribution of the respondents according to impact on livelihood security

(n=240)

Sr. no.	Impact	Beneficiary farmers		Non-Beneficiary farmers	
		Frequency	Percentage	Frequency	Percentage
<b>I</b>	<b>Categories of impact on food security</b>				
1	Low	14	11.67	30	25.00
2	Medium	79	65.83	64	53.33
3	High	27	22.50	26	21.67
(Mean <sup>B</sup> =12.28) (SD <sup>B</sup> =2.43) (Mean <sup>NB</sup> =7.76) (SD <sup>NB</sup> =2.16)					
<b>II</b>	<b>Categories of impact on health security</b>				
1	Low	25	20.83	43	35.83
2	Medium	69	57.50	62	51.67
3	High	26	21.67	15	12.50
(Mean <sup>B</sup> =3.48) (SD <sup>B</sup> =1.21) (Mean <sup>NB</sup> =1.56) (SD <sup>NB</sup> =1.45)					
<b>III</b>	<b>Categories of impact on employment security</b>				
1	Low	35	29.17	57	47.50
2	Medium	85	70.83	63	52.50
3	High	00	00.00	00	00.00
(Mean <sup>B</sup> =3.42) (SD <sup>B</sup> =0.91) (Mean <sup>NB</sup> =3.05) (SD <sup>NB</sup> =1.00)					
<b>IV</b>	<b>Categories of impact on financial security</b>				
1	Low	21	17.50	42	35.00
2	Medium	70	58.33	66	55.00
3	High	29	24.17	12	10.00
(Mean <sup>B</sup> =15.05) (SD <sup>B</sup> =2.87) (Mean <sup>NB</sup> =10.54) (SD <sup>NB</sup> =2.54)					

V	Categories of impact on assets security				
1	Low	16	13.33	34	28.33
2	Medium	80	66.67	71	59.17
3	High	24	20.00	15	12.50
(Mean <sup>B</sup> =12.20) (SD <sup>B</sup> =2.53) (Mean <sup>NB</sup> =9.91) (SD <sup>NB</sup> =2.86)					
VI	Categories of impact on social security				
1	Low	12	10.00	45	37.50
2	Medium	82	68.33	61	50.83
3	High	26	21.67	14	11.67
(Mean <sup>B</sup> =3.34) (SD <sup>B</sup> =1.35) (Mean <sup>NB</sup> =1.63) (SD <sup>NB</sup> =1.57)					
VII	Categories of overall impact on livelihood security				
1	Low	15	12.50	30	25.00
2	Medium	80	66.67	70	58.33
3	High	25	20.83	20	16.67
(Mean <sup>B</sup> =49.77) (Mean <sup>NB</sup> =34.45) (SD <sup>B</sup> =8.84) (SD <sup>NB</sup> =5.11)					

Mean<sup>B</sup>=mean score of beneficiary group, Mean<sup>NB</sup>=mean score of non-beneficiary group, SD<sup>B</sup> = standard deviation of beneficiary group, SD<sup>NB</sup> = standard deviation of non-beneficiary group

From the above table 1 it is evident that, majority (65.83 per cent) of the beneficiary farmers had medium level of impact on food security, followed by 22.50 per cent and 11.67 per cent had high and low level of impact on food security, respectively. Moreover, slightly more than half (53.33 per cent) of the non-beneficiary farmers had medium level of impact on food security, followed by 25.00 per cent and 21.67 per cent had low and high level of impact on food security, respectively. This finding is in line with the finding of Veeresh and Hosmani (2017) for the beneficiary farmers.

In the case of health security, more than half (57.50 per cent) of the beneficiary farmers had medium level of impact on health security, followed by 21.67 per cent and 20.83 per cent had high and low level of impact on health security, respectively. Moreover, slightly more than half (51.67 per cent) of the non-beneficiary farmers had medium level of impact on health security, followed by 35.83 per cent and 12.50 per cent had low and high level of impact on health security, respectively. This finding is in line with the finding of Veeresh and Hosmani (2017) for the beneficiary farmers.

In the case of employment security, majority (70.83 per cent) of the beneficiary farmers had medium level of impact on employment security, followed by 29.17 per cent had low level of impact on employment security. Moreover, slightly more than half (52.50 per cent) of the non-beneficiary farmers had medium level of impact on employment security, followed by 47.50 per cent had low level of impact on employment security. This finding is in line with the finding of Veeresh and Hosmani (2017) for the beneficiary farmers.

In the case of financial security, more than half (58.33 per cent) of the beneficiary farmers had medium level of impact on financial security, followed by 24.17 per

cent and 17.50 per cent had high and low level of impact on financial security, respectively. Moreover, more than half (55.00 per cent) of the non-beneficiary farmers had medium level of impact on financial security, followed by 35.00 per cent and 10.00 per cent had low and high level of impact on financial security, respectively. These findings are in line with the findings of Veeresh and Hosmani (2017), Anithakumari (2021), Kambale and Sankhala (2021), and Mooventhan *et al.* (2022) for the beneficiary farmers.

In the case of assets security, majority (66.67 per cent) of the beneficiary farmers had medium level of impact on assets security, followed by 20.00 per cent and 13.33 per cent had high and low level of impact on assets security, respectively. Moreover, more than half (59.17 per cent) of the non-beneficiary farmers had medium level of impact on assets security, followed by 28.33 per cent and 12.50 per cent had low and high level of impact on assets security, respectively. This finding is in line with the finding of Veeresh and Hosmani (2017) for the beneficiary farmers.

In the case of social security, majority (68.33 per cent) of the beneficiary farmers had medium level of impact on social security, followed by 21.67 per cent and 10.00 per cent had high and low level of impact on social security, respectively. Moreover, half (50.83 per cent) of the non-beneficiary farmers had medium level of impact on social security, followed by 37.50 per cent and 11.67 per cent had low and high level of impact on social security, respectively. This finding is in line with the finding of Veeresh and Hosmani (2017) for the beneficiary farmers.

In the case of overall impact on livelihood security, majority (66.67 per cent) of the beneficiary farmers had medium level of impact on livelihood security, followed by

20.83 per cent and 12.50 per cent had high and low level of impact on livelihood security, respectively. Moreover, more than half (58.33 per cent) of the non-beneficiary farmers had medium level of impact on livelihood security, followed by 25.00 per cent and 16.67 per cent had low and high level of impact on livelihood security, respectively. Majority of the respondents were having medium level of extension contact, social participation, scientific orientation, innovativeness, knowledge and adoption which might be the reason why majority of the beneficiary farmers had medium to high level impact on livelihood security under FFP.

These findings are in line with the findings of Holkar *et al.* (2019) and Wahekar *et al.* (2022) for the beneficiary farmers and for the non-beneficiary farmers.

### Comparison of livelihood security between beneficiary and non-beneficiary farmers

The 'Two sample Z test' was applied to test the significant difference of impact on livelihood security between beneficiary farmers and non-beneficiary farmers and the results are presented in table 2.

**Table 2: Comparison of livelihood security between beneficiary and non-beneficiary farmer**

(n=240)

Components		Respondents		Two sample Z-test at 1% level of probability	
		Beneficiary farmers (n=120)	Non-beneficiary farmers (n=120)	"P" values	"Z" values
Food security	Mean	12.275	7.758333	0.00	15.230
	Standard deviation	2.43	2.16		
Health security	Mean	3.483333	1.558333	0.00	11.177
	Standard deviation	1.21	1.45		
Employment security	Mean	3.416667	3.05	0.003	2.962
	Standard deviation	0.91	1.00		
Financial security	Mean	15.05	10.54167	0.00	12.888
	Standard deviation	2.87	2.54		
Assets security	Mean	12.2	9.908333	0.00	6.574
	Standard deviation	2.53	2.86		
Social security	Mean	3.341667	1.633333	0.00	9.032
	Standard deviation	1.35	1.57		
Livelihood security	Mean	49.76667	34.45	0.00	16.431
	Standard deviation	8.84	5.11		

From the above table 2 it is evident that, the Two sample Z test for food security had provided a Z value of 15.230 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of food security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for higher food security among beneficiary farmers due to their engagement in diversified crop production and Agri-allied enterprises. Most of the beneficiary farmers had grown paddy, mango, green gram, Indian bean, brinjal on their field as they had received the seeds of these crops to cultivate on their fields as part of FFP. They were also managing the livestock, which might have allowed them access to milk and milk products at their home itself. The income of beneficiary farmers was also high which could have allowed them to consume all categories of food products. These findings are in line with the findings of Singh *et al.* (2021) and De *et al.* (2022) for the

beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for health security had provided a Z value of 11.177 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of health security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for higher health security among beneficiary farmers could be due to their food consumption habits as they are cultivating diversified crops and maintaining livestock. Most of the beneficiary farmers had their education up to high school, college/post graduate level which could be the reason for their awareness about health insurance and approach to hospitals. This finding is in line with the finding of De *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for employment security had provided a Z value of 2.962 and P value of 0.003, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of employment security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for greater employment security among beneficiary farmers could be due to their participation in diversified activities throughout the year, such as cultivation of field crops, horticultural crops, maintaining livestock, following natural resource management and integrated farming system and practicing vermicompost for farm use and sale to some extent. These findings are in line with the findings of Bihari *et al.* (2020) and De *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for financial security had provided a Z value of 12.888 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of financial security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for their higher financial security could be due to their income levels, their engagement in more than two enterprises, getting stable income throughout the year, following complementary/supplementary pattern in enterprise, getting higher yield levels comparing to the previous years, their ability to purchase inputs by their own money and their less dependency on loans/borrowing. These findings are in line with the findings of Bihari *et al.* (2020), Patil *et al.* (2020), Bachhao *et al.* (2021), Singh *et al.* (2021) and De *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for assets security had provided a Z value of 6.574 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of assets security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for higher assets security among beneficiary farmers could be their income, education levels, social participation, extension contact and scientific orientation which might driven them to purchase most of the farm necessities and non-farm necessities at home. These findings are in line with the findings of Singh *et al.* (2021) and De *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for social security had provided a Z value of 9.032 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of social security between beneficiary and non-beneficiary farmers. Hence, we

reject null hypothesis and accept alternate hypothesis. The reason for higher social security among beneficiary farmers could be due to their access to local and non-local institutes, increased prestige in recent years due to participation in FFP, people preferring beneficiary farmers for suggestions as they are part of FFP and increased frequency and number of contacts in the community in recent 3 years. This finding is in line with the finding of De *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

The Two sample Z test for livelihood security had provided a Z value of 16.431 and P value of 0.00, which was found significant at 1 per cent level of probability. It indicated that there was a significant difference of livelihood security between beneficiary and non-beneficiary farmers. Hence, we reject null hypothesis and accept alternate hypothesis. The reason for higher livelihood security among beneficiary farmers could be due to increased food security, health security, employment security, financial security, assets security and social security. These findings are in line with the findings of De *et al.* (2022) and Wahekar *et al.* (2022) for the beneficiary farmers and non-beneficiary farmers.

**Association between personal profile of respondents and impact of demonstrated technology on livelihood security**

The correlation coefficient of twelve variables of the beneficiary farmers with impact of demonstrated technology on livelihood security are furnished in table 3.

**Table 3: Association between personal profile of respondents and impact of demonstrated technology on livelihood security**

(n=120)

Sr. No.	Variables	'r' value
X <sub>1</sub>	Age	-0.0793 <sup>NS</sup>
X <sub>2</sub>	Education	0.3217 **
X <sub>3</sub>	Occupation	0.2737 *
X <sub>4</sub>	Type of family	0.2109 *
X <sub>5</sub>	Land holding	0.1904 *
X <sub>6</sub>	Annual income	0.1874 *
X <sub>7</sub>	Social participation	0.2420 **
X <sub>8</sub>	Extension contact	0.2483 **
X <sub>9</sub>	Innovativeness	0.2562 **
X <sub>10</sub>	Economic motivation	0.1935 *
X <sub>11</sub>	Scientific orientation	0.3279 **
X <sub>12</sub>	Risk orientation	0.2206 *

NS Non significant \* Significant at 0.05 level \*\* Significant at 0.01 level

The data presented in table 3 indicated that education (0.3217\*\*), social participation (0.2420\*\*), extension contact (0.2483\*\*), innovativeness (0.2562\*\*) and scientific orientation (0.3279\*\*) were found positive and highly significant. Occupation (0.2737\*), Type of family (0.2109\*), land holding (0.1904\*), annual income (0.1874\*), economic motivation (0.1935\*) and risk orientation (0.2206\*) were found positive and significant. While, age (-0.0793<sup>NS</sup>) was found negative and non-significant with the impact on livelihood security. Hence, null hypothesis was rejected and empirical hypothesis was accepted for these variables.

It explains that as education, social participation, extension contact, innovativeness and scientific orientation, occupation, type of family, land holding, annual income, economic motivation and risk orientation increased, it had resulted to increase in livelihood security among beneficiary farmers. It is obvious that as the education increased it has led to greater level of awareness, knowledge, understanding and way of doing things. Social participation and extension contact has led to higher access to recent advancements and improvements and increased knowledge about the farm practices. farmers innovativeness might have thrived them for doing things in a new way and scientific orientation has led to perform things in a more scientific and appropriate way further it has improved farmers performance in farm activities and contributed to livelihood security. The farmers engaged in number of allied activities had recycled nutrients, got employment, stable income and had diversified food options at their farm itself. joint families had a greater number of people to earn and manage the farm activities and due to diversified enterprises, they got employment in their farms itself which might be the reason for increased livelihood security. As the land holding and annual income increased the beneficiary farmers were able to get higher profits and purchase the inputs required which further contributed to increased livelihood security. Economic motivation and risk orientation has led the beneficiary farmers to thrive for achieving higher economic benefits and take the risks involved in getting the benefits which lead to increased livelihood security.

These findings are in line with the findings reported by Holkar *et al.* (2019) and Manjeet (2020) for beneficiary farmers.

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