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Factors Affecting Farm Income of Different Farming System in Madhya Pradesh

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Authors' contributions

This work was carried out in collaboration among all authors. Author YT designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors HOS, PKA and PK made the appropriate suggestions and modifications in the manuscript and literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The present study was conducted in Umaria and Anuppur districts of Madhya Pradesh with the specific objective viz. to examine the factors influencing farm income of the respondents. The study confined to two locations of AICRP on IFS, JNKVV, Jabalpur. Total 240 respondents, consisted of 120 beneficiaries under IFS and 120 non-beneficiaries with similar socio economic, were involved in this work. The log linear form of Cobb-Douglas production function was applied to determine the effects of socio-economic variables on farm income. Apart from this, some descriptive statistical analyses were carried out to examine the socio-economic characteristics of the households. The estimated results of the regression models revealed that land holding, irrigation intensity, cost of farm inputs and employment generation had a significant positive effect on farm income among beneficiary's respondents. On the other hand, age, education, cost of farm inputs and employment generation had a significant positive effect on farm income among non-beneficiary's respondents. The results of the present study help in increasing the farm income by the enhancement of the factors which found significant during the study period and the policy makers can also plan accordingly for the betterment of both the respondents.

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Keywords: Farming System; factor affecting; cost of farm inputs; employment generation.

1. INTRODUCTION

Indian agriculture is known for its multi functionalities of providing employment, livelihood, food and ecological securities. The small share of agriculture in national GDP is getting distributed among a larger number of people who depend on it for livelihood and even credit. Current scenario in the country that the area under cultivation may further dwindle and more than 20 per cent of current cultivable area will be converted for non-agricultural purposes by 2030 (Agriculture Census, 2015-16) [1]. The total number of operational holdings in the country increased from 138.34 million in 2010-11 to 146.45 million in 2015-16 showing an increase of 5.8 per cent. The operated area decreased to 157.82 million ha. in 2015-16 from 160 million ha. in 2010-11, a decline of 1.11 percent. (Agriculture Census, 2015-16). A phenomenal increase in food grain production up to 253.16 mt in the year 2015-16 could be achieved using improved technology including integrated farming systems [2]. The country population is expected to reach 1660 million by the year 2050 and for which 349 million tonnes of food grains will be required [2]. Marginal and small farmers constitute 76% of farmers in India. More than 97 million farmers in India are cultivating only 29% of the consolidated and scattered arable land [3]. Integrated Farming System is multidisciplinary whole farm approach and very effective in solving the problems of small and marginal farmers. The approach aims to increase income and employment from small holding through integrating various farm enterprises and recycling crop residues and by products within the farm itself [4].

2. METHODOLOGY

The study was conducted in Umaria and Anuppur districts of AICRP on IFS, JNKVV, Jabalpur. Total 240 respondents, consisted of 120 beneficiaries under IFS and 120 non-beneficiaries with similar socio economic, were involved in this work. The selected beneficiaries were categorized according to their local specific IFS models. Of 240 involved respondents, 120 farmers practicing crop solely, 72 farmers practicing Crop+ Dairy, 30 farmers practicing Crop+Dairy+Vegetable production, 14 farmers practicing Crop+Dairy+Goat farming and 4 farmers practicing Crop+Dairy+Poultry farming. Data were collected using structured pre-tested interview.

Cobb-Douglas production function was used to analyze factors affecting farm income from different IFS models. It was converted into logarithmic form using following equation.

$$\text{Log } Y_i = \log \alpha + \beta \log X_i + U_i \; (i = 1,\ldots,n) \quad [5]$$

Where, Y= Total farm income

X1= Age of farmer (year) X6= No. of livestock

X2=Level of farmer education (years of schooling) X7= Cropping intensity (%)

X3= Years of farm experience X8= Non farm income (Rs)

X4= Cost of farm inputs (Rs/ha) X9= Irrigation intensity (%)

X5= Land holding X10= Employment generation

α = Intercept U= Stochastic disturbance

β1 to β10 = Regression coefficient of X1 to X10 $i = i^{th}$ observation

3. RESULTS AND DISCUSSION

Due to the variation of the explanatory variables, Cobb-Douglas production function was converted in to log form. All values in Table 1. are in log form and the interpretations are in per cent form. The Cobb-Douglas production function selected farm realized income from FS-0 (non-beneficiaries) output as dependent variable while age (year), education (years of schooling), years of farm experiences, cropping intensity (%), irrigation intensity (%), cost of farm inputs (Rs/ha), off farm income and employment generation as independent variables.

3.1 Factor Affecting Farm Income Across Non-Beneficiaries Respondents

As per Table 1, the Cobb-Douglas production function was estimated to analyze relationship between dependent and independent variable. Age, land holding, cost of farm inputs, employment generation were the factors found to be affecting farm income positively and significantly. The R^2 value of 0.56 shows that 56 per cent of the variation in farm income is explained by the considered independent variables in the study and the rest of the variation by unknown factors. One per cent increase in age, education, cost of farm inputs, and employment generation would cause 0.14, 011, 0.53 and 0.34 per cent increase in the farm income, respectively. The estimated parameters

of age (0.14) and cost of farm input (0.53) were found to be significant at 5 per cent, while land holding (ha), employment generation (labour days) were significant at 10 per cent. Similar results were found by Ponnusamy and Devi [6]. The other six variables were found to affect farm income positively, but they were non-significant.

3.2 Factor Affecting Farm Income Across Beneficiary's Respondents

As per Table 2, R^2 value of 0.68 shows that 68% of the variation in farm income is explained by the considered independent variables in the study and rest of the variation by unknown factors. The F-value was also found significant. Land holding, irrigation intensity, cost of farm inputs and employment generation were the factors found to be affecting farm income positively and significantly. One per cent increase in land holding, irrigation intensity, cost of farm inputs and employment generation would cause 0.19, 0.75, 0.61and 0.27 per cent increase in the farm income respectively. However, cost of farm inputs was found to affect the farm income at highly significant rate (1% level of significance) followed by land holding and employment generation (5% level of significance) and irrigation intensity (10% level of significance). Age was found to affect farm income negatively but it was non-significant. Other five variables were found to affect farm income positively, but they were non-significant.

The coefficient of cost of farm inputs, land holding, employment generation and irrigation intensity were positively significant, which implied the increased use of these inputs augment the farm income. The other inputs such as education, years of farm experiences, number of livestock, cropping intensity and off farm income were also had positive impact on farm income but non-significant.

Table 1. Factor affecting farm income (Y) of non-beneficiaries' respondents

Variables	Estimated Parameter	Coefficient	Standard error	P-value
Age (year)	X1	0.14**	0.27	**0.032**
Education (years of schooling)	X2	0.21	0.37	0.752
Education (years of schooling)	X3	0.11*	0.19	0.061
Years of farm experiences	X4	0.07	0.10	0.684
Cropping intensity (%)	X5	0.13	0.18	0.476
Irrigation intensity (%)	X6	0.26	1.24	0.896
Cost of farm inputs (Rs/ha)	X7	0.53**	1.32	0.048
Off farm income	X8	0.35	0.34	0.621
Employment generation (Labour days)	X9	0.34*	0.24	0.078
Constant	X0	0.68E04	6.21	0.231
R^2-0.56				

**** 1% level of significance **5% level of significance *10% level of significance*

Table 2 Factor Affecting farm income (Y) of beneficiaries respondents

Variables	Estimated Parameter	Coefficient	Standard error	P value
Age (year)	X1	-0.02	0.31	0.959
Education (years of schooling)	X2	0.02	0.07	0.819
Land holding (ha)	X3	0.19**	0.09	0.040
Years of farm experiences	X4	0.04	0.15	0.782
No of livestock	X5	0.09	0.08	0.282
Cropping intensity (%)	X6	0.26	3.43	0.940
Irrigation intensity (%)	X7	0.75*	1.63	0.094
Cost of farm inputs (Rs/ha)	X8	0.61***	0.22	0.006
Off farm income	X9	0.02	0.03	0.928
Employment generation (Labour days)	X10	0.27**	0.21	0.020
Constant	X0	0.22E05	8.85	0.525
R^2-0.68				

**** 1% level of significance **5% level of significance *10% level of significance*

This showed that in order to enhance the farm income of different farming systems of beneficiary's respondents i.e., farmers adopted by KVK, the variables like land holding, irrigation intensity, cost of farm inputs and employment generation have to be increased. In order to enhance the farm income of different farming systems of non-beneficiary's respondents i.e., farmers not adopted by KVK, the variables like age, education, cost of farm inputs and employment generation have to be increased. Farm income can be improved by direct policy measures that will reduce cost of inputs and increase farmers knowledge and technical skills. Such measure may include subsidization of inputs and enlightenment campaigns in form of trainings, workshops and seminars. The results of the present study help in increasing the farm income by the enhancement of the factors which found significant during the study period and the policy makers can also plan accordingly for the betterment of beneficiary's and non-beneficiary's respondents.

4. CONCLUSION

Farm income was positively and significantly influenced land holding, irrigation intensity, cost of farm inputs and employment generation among beneficiary's respondents whereas by age, education, cost of farm inputs and employment generation among non-beneficiary's respondents.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Srinika S, Kumari RS, Suhasini K, Bhave MHV. 2017. Adoption of integrated farming system-an approach for doubling small and marginal farmers' income. Indian Journal of Economic and Development. 2017;13 (2):443-447.
2. Singh JP, Gangwar B, Kochewad SA, Pandey DK. Integrated farming system for improving livelihood of small farmers of Western Ponnusamy K and Devi MK. 2017. Plain Zone of Uttar Pradesh. SAARC Journal of Agriculture. 2012;10(1): 45-53
3. Dadabhau AS, Kisan WS. Sustainable rural livelihood security through integrated farming systems-A review. Agriculture Reviews. 2013;34 (3):207-215.
4. Ponnusamy K and Devi MK. Impact of integrated farming system approach on doubling farmers income. Agricultural Economic Research Review. 2017;30(2): 33-204.
5. Ministry of farmers' walfare. Government of India.
Available:www.agcensus.dacnet.nic.in.
6. Ugwumba COA, Okoh RN, Lke PC, Nnabuife ELC, Orji EC. Integrated farming system and its effect on farm cash income in Awka South Agricultural Zone of Anambra State, Nigeria. Amerian-Eurasian Journal of Agriculture and Environment Science. 2010;8(1):01-06

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