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LIVELIHOOD SECURITY OF SCHEDULED CASTE FARMERS THROUGH INTEGRATED FARMING SYSTEM

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ABSTRACT

The study was conducted in purposively selected Chickballapura district, a total sample of 271 respondents was purposively selected for the study. Data was collected by using structured pre-tested interview schedule and analyzed using appropriate statistical tools. The results indicated that, majority of the respondents belonged to medium level of education, cropping pattern, livestock possession, mass media exposure, extension participation, training undergone and access to resources followed by high level of social participation, management orientation, level of aspiration, participation in development program and willingness towards IFS and low level of cosmpoliteness, innovativeness, scientific orientation and access to extension personnel. It was observed that livelihood security of respondents in highly satisfied category increased to 35.79 per cent from 27.31 per cent after implementation of the project. Out of seven dimensions, employment security increased by 39.35 per cent, living amenities increased by 30.82 per cent, coping strategies against stress increased by 30.75 per cent, ecological security increased by 30.00 percent, economic efficiency increased by 28.95 per cent, assets increased by 25.71 per cent and social equitability increased by 24.41 per cent. Overall scores of livelihood security indicated 30.23 per cent increase after implementation of project. The average gross income of Rs.1,03,264 from both crop and livestock enterprises of IFS against Rs.6,956 before implementation of the project. In total they could realize about Rs.70,300 net profit by adopting intercropping and livestock components in IFS. As such, for every one rupee invested under IFS they got 3.13 rupee income. Hence, the concerned development departments should organize the demonstrations, trainings, field days, exposure visits etc., to educate the farmers about IFS. The positive and significantly related characteristics needs to be considered while selecting the farmers for the extension educational programmes in order to enhance their livelihood security.

Keywords: *integrated farming system, scheduled caste and livelihood security*

INTRODUCTION

India is predominantly an agriculture dependent nation where almost 58.00 per cent of its population engaged in agriculture. The geographical area of the country is 328.7 million hectares, net sown area is 141 million hectares and gross cropped area is 190 million hectares. It is anticipated that the land available for cultivation in 2050 would be 137 million hectares, with the gradual increase in population resulting in continuous fragmentation of cultivable land within the family. Majority (86%) of the farmers belong to small and marginal category land holding. Large areas of agricultural land have developed physio-chemically acidic, alkalaline and saline soils with water is yet another component of the sector under stress (Shukla et al.,2021). Most of the scheduled caste farmers comes under small and marginal category of land holding and agricultural labourers. The concept of livelihood is rapidly gaining acceptance as a valuable means of understanding the factors that influence people's lives and well - being. It is comprised of capacities, assets, activities and coping strategies to overcome crisis required for means of living. Livelihood is the means people use to support themselves, to survive and to prosper. It is an outcome of how and why people organize to transform the environment to meet their needs through technology, labour, power, knowledge and social relations.

ICAR and State Agricultural Universities continuously putting lot of efforts aiming at increasing the productivity of different components of farming system i.e. crops, horticultural crops, livestock, poultry, apiculture, sericulture, mushroom cultivation, organic manures production, bio-gas etc. individually but lacking in their integration by following farming system approach. The integration is made in such a way that product of one component should be the input for other enterprises with high degree of complimentary effects on each other. The University of Agricultural Sciences, Bangalore implemented the project entitled "Livelihood Improvement of Scheduled Caste (SC) Farm Families through Integrated Farming System (IFS)"

with the financial support from the Government of Karnataka under Scheduled Caste Sub Plan (SCSP) during the period from 2014-15- to 2018-19.The project aims at sustainable development of agriculture among the farmers by bringing them to mainstream and also efficient management of soil, water, crop and IPM practices in crop husbandry. Further, it integrates dairy, poultry, sheep, piggery, fishery, sericulture, agro-forestry and other related enterprises with crop husbandry which increases the overall net income. With this background, the present study is conceptualized to following objectives

OBJECCTIVES

(1) To know the personal and socio-psychological characteristics of respondents

(2) To measure the livelihood security of SC farmers practicing Integrated Farming System

(3) To know the relationship between personal and socio-psychological characteristics of respondents with their livelihood security

(4) To analyze the impact of Integrated Farming System on development of SC farmers

METHODOLOGY

The study was conducted in purposively selected Chickballapura district of Karnataka based on the implementation of the project entitled "Livelihood Improvement of Scheduled Caste (SC) Farm Families through Integrated Farming System (IFS)" by University of Agricultural Sciences, Bangalore during 2014-15 to 2018-19. Three taluks were selected namely Chintamani, Bagepalli and Chickballapura and two grama panchayats from each taluk, three to four (03 to 04) villages/ grama panchayaths were selected based on maximum number of SC farm families. All the farm families having land holding 1 to 5 acres land were considered as beneficiaries (respondents) of the project. Total sample of 272 respondents were purposively selected for the study. Data was collected by using structured interview schedule and analyzed by using mean, percentage, standard deviation, correlation coefficient and regression coefficient.

RESULTS AND DISCUSSION

Table 1: Distribution of respondents according to their personal and socio-psychological characteristics (n=272)

Sr. No.	Characteristics	Category	Number	Per cent
1	**Education**	Low	55	20.22
		Medium	163	59.93
		High	54	19.85
2	**Land holding**	Marginal	118	43.38
		Small	84	30.88
		Big	70	25.74
3	**Cropping pattern**	Low	69	25.37
		Medium	103	37.87
		High	100	36.76
4	**Livestock possession**	Low	83	30.51
		Medium	101	37.13
		High	88	32.35
5	**Cosmopoliteness**	Low	99	36.40
		Medium	82	30.15
		High	91	33.46
6	**Innovativeness**	Low	105	38.60
		Medium	80	29.41
		High	87	31.99
7	**Mass media exposure**	Low	91	33.46
		Medium	108	39.71
		High	73	26.84

Sr. No.	Characteristics	Category	Number	Per cent
8	**Extension participation**	Low	87	31.99
		Medium	109	40.07
		High	76	27.94
9	**Social participation**	Low	72	26.47
		Medium	96	35.29
		High	104	38.24
10	**Scientific orientation**	Low	109	40.07
		Medium	88	32.35
		High	75	27.57
11	**Management orientation**	Low	72	26.47
		Medium	96	35.29
		High	104	38.24
12	**Level of aspiration**	Low	92	33.82
		Medium	83	30.51
		High	97	35.66
13	**Risk orientation**	Low	90	33.09
		Medium	76	27.94
		High	106	38.97
14	**Training undergone**	Low	54	19.85
		Medium	164	60.29
		High	54	19.85
15	**Participation in the developmental programmes**	Low	54	19.85
		Medium	85	31.25
		High	133	48.90
16	**Willingness towards IFS**	Low	93	34.19
		Medium	78	28.68
		High	101	37.13
17	**Access to extension personnel**	Low	96	35.29
		Medium	81	29.78
		High	95	34.93
18	**Access to resources**	Low	54	19.85
		Medium	188	69.12
		High	30	11.03

It was observed in Table 1 indicated that the majority of the respondents belonged to medium level of education, cropping pattern, livestock possession, mass media exposure, extension participation, training undergone and access to resources. This finding can be explained on the basis of the fact that the rural social environment was the major cause for such trend. As the rural people are still traditional bound, they don't prefer to continue their children education, the distance of higher study centres from villages also might have prevented the parents from providing higher education to their children. Medium level of cropping pattern and livestock possession was observed due to the reason that through project seed material, planting materials and animal component like sheep and poultry birds were supplied free of cost to respondents. Participation in extension activities and development programmes provided opportunities for them to improve their knowledge about IFS technologies and to be rational in decision making and in adoption of new technologies. Training provided opportunities to improve their knowledge and skills about IFS. Under the project ample opportunity was given to respondents to undergo training on various aspects of IFS. The respondents practicing IFS have taken up more than one enterprises which includes crop production, dairy, sheep rearing, poultry birds,crop rotation etc., which results

medium level of access to resources. The study conferred that high level of social participation, management orientation, level of aspiration, participation in development program and willingness towards IFS. Nowadays villages have more number of social organisations such as grama panchayats, taluk panchayats, farmer co-operatives etc., might have made them to take part in it. Further, the government policy of reservation to SC farmers in these organizations might have enhanced their participation in social organization. Through project respondents exposed to different components of IFS by training programs, result demonstrations, visits to Krishimela which improves their managerial skills, social participation and aspiration level. Further low level of cosmopoliteness, innovativeness, scientific orientation and access to extension personnel might be due to the fact that, the villages did not had better road connectivity and transport facilities, hence the respondents didn't get chance to visit city to get ideas to sell their produce, to purchase inputs, to contact the extension personnel for technical advice. Similar findings recorded by Raksha *et al.*(2012), Jayanta Roy (2012), Mamathalakshmi (2013), Harshitha (2018), Sujay Kumar (2018), and Shwetha and Shivalingiah(2019).

Table 2: Distribution of respondents according to their livelihood security (n=272)

Category	Before		After		Change in Per cent
	Number	Per cent	Number	Per cent	
Less satisfied	118	43.54	90	33.21	-10.33
Satisfied	79	29.15	84	31.00	1.85
Highly Satisfied	74	27.31	97	35.79	8.48

A critical appraisal of Table 2 indicated that, livelihood security of respondents in less satisfied category decreased to 33.21 per cent from 43.54 per cent, satisfied category increased to 31.00 per cent from 29.15 per cent and highly satisfied category increased to 35.79 per cent from 27.31 per cent after implementation of the project. The results obtained are similar to the findings of Mamathalakshmi (2013) and Shwetha & Shivalingiah(2019).

Table 3: Dimension-wise impact analysis of livelihood security among respondents (n=272)

Sr. No.	Dimension	Mean Value		Percentage increase
		Before	After	
1	**Assets**	1050	1320	25.71
2	**Living amenities**	980	1282	30.82
3	**Economic efficiency**	380	490	28.95
4	**Ecological security**	640	832	30.00
5	**Social equitability**	721	897	24.41
6	**Coping strategies against stress**	683	893	30.75
7	**Employment security**	948	1321	39.35
	Overall Livelihood Security	**5402**	**7035**	**30.23**

The results depicted in Table 3 indicated that, the improvement in different dimensions of livelihood security after the implementation of IFS project. It was observed that employment security increased by 39.35 per cent, living amenities increased by 30.82 per cent, coping strategies against stress increased by 30.75 per cent, ecological security increased by 30.00 percent, economic efficiency increased by 28.95 per cent, assets increased by 25.71 per cent and social equitability increased by 24.41 per cent. Overall scores of livelihood security indicates 30.23 per cent increase in before and after implementation of project. The results obtained are similar to the findings of Lavanya (2010) and Harshitha (2018)

Relationship between personal and socio-psychological characteristics of respondents with their Livelihood Security

The findings in the Table 4 revealed that 11 out of 18 characteristics found to have significant relationship with livelihood security.The characteristics such as land holding, cropping pattern, livestock possession, innovativeness, extension participation, social participation, management orientation and training undergone exhibited positive and significant relationship with farmers' livelihood security at 1 per cent level.Land holdings of all respondents having minimum land holding of one to five acre which in turn

influenced their livelihood security. Increasing cropping intensity and diversified cropping pattern gives better income and livelihood. Through the project, the seeds, planting materials and livestock components were supplied free of cost and the respondents engaged in rearing of livestock as subsidiary occupation for additional income. Hence, livestock possession had positive and significant relationship with livelihood security of respondents.Innovativeness of an individual is closely associated with change, adopting innovative ideas and practices leading to secured livelihood. Extension participation of respondents might have enhanced their knowledge about different technologies available for better farming,this might have resulted in increasing the income and livelihood. The results could be attributed to the fact that the participation of individuals in formal and informal organizations or groups, broadens one's sphere of interest and increases one's information concerns and added to social participation. Interaction opportunity helped to share ideas and refine their interpretation of situation.In addition to this exposure to technical persons enhanced the aspirations of the individuals with better understanding of reality of situation. The results obtained are similar to the findings of Lavanya (2010), Mamathalakshmi (2013) and Harshitha (2018).

Table 4: Relationship of personal and socio-psychological characteristics of respondents with their Livelihood Security
(n=272)

Sr. No.	Independent variables	Correlation co-efficient (r)
X_1	**Education**	-0.067 NS
X_2	**Land holding**	0.460**
X_3	**Cropping pattern**	-0.310**
X_4	**Livestock possession**	0.577**
X_5	**Cosmopoliteness**	0.133*
X_6	**Innovativeness**	0.484**
X_7	**Mass media exposure**	0.082 NS
X_8	**Extension participation**	0.581**
X_9	**Social participation**	0.380**
X_{10}	**Scientific orientation**	0.090 NS
X_{11}	**Management orientation**	0.167**
X_{12}	**Level of aspiration**	0.043 NS
X_{13}	**Risk orientation**	0.058 NS
X_{14}	**Training undergone**	0.502**
X_{15}	**Participation in the developmental programme**	0.002 NS
X_{16}	**Willingness towards IFS**	0.157**
X_{17}	**Access to extension personnel**	0.060 NS
X_{18}	**Access to resources**	0.181**

NS: Non-Significant; *: Significant at 5% level; **: Significant at 1% level

Management orientation had positive and significant relationship with livelihood security of respondents, it could be due to the fact that orientation towards managerial aspects enhanced utilization of resources and income from their farm. The exposure of respondents to training programmes increased their confidence, knowledge level and skills to do varied works in a skillful manner, as a result earnings also increases. Hence, training received had positive and significant relationship with livelihood security of respondents. Further,it is clear from the results that, there was a positive and significant relationship between willingness in IFS and livelihood security,as farmers mainly depends on farming, willingness to do agriculture and effective utilization of the available resources leads to higher productivity, profitability, generated

employment as well as livelihood. The access to extension personnel of the respondents was found to be significantly correlated with their livelihood security as the respondents had regular contact with the agriculture officers, scientists of UAS, Bangalore through project. Due to their regular contact with the extension professionals the respondents have developed willingness towards e IFS and thus improved their livelihood. The cosmopoliteness of respondents helped to provide an exposure to outside the world which might have helped to get an opportunity to obtain better livelihood. The results obtained are similar to the findings of Devarajaiah (2010),Mamathalakshmi (2013),Harshitha (2018) and Shwetha and Shivalingiah(2019).

Extent of contribution of personal and socio-psychological characteristics to Livelihood Security of respondents

The regression test was applied to ascertain the contribution of independent variables to the livelihood security of respondents and the results are presented in Table 5.

Table 5: Multiple regression analysis of personal and socio-psychological characteristics of respondents with their Livelihood Security (n=272)

Sr. No.	Variables	Regression coefficient (b)	Std. Error of regression co-efficient (SE_b)	't' value
X_1	**Education**	-0.077	0.198	-0.389
X_2	**Land holding**	0.799	0.368	2.169*
X_3	**Cropping pattern**	-0.024	0.022	-1.128
X_4	**Livestock possession**	0.302	0.075	4.041**
X_5	**Cosmopoliteness**	0.331	0.127	2.612*
X_6	**Innovativeness**	0.393	0.156	2.512*
X_7	**Mass media exposure**	-0.029	0.111	-0.266
X_8	**Extension participation**	0.676	0.146	4.613**
X_9	**Social participation**	0.172	0.083	2.064*
X_{10}	**Scientific orientation**	-0.005	0.104	-0.048
X_{11}	**Management orientation**	-0.004	0.085	-0.050
X_{12}	**Level of aspiration**	-0.041	0.061	-0.676
X_{13}	**Risk orientation**	-0.004	0.072	-0.051
X_{14}	**Training undergone**	0.507	0.229	2.214*
X_{15}	**Participation in the developmental programme**	-0.355	0.273	-1.299
X_{16}	**Willingness towards ifs**	0.027	0.067	0.408
X_{17}	**Access to extension personnel**	-0.007	0.065	-0.115
X_{18}	**Access to resources**	0.067	0.021	3.170**

R2= 0.553, F =17.586**; NS: Non-Significant; *: Significant at 5% level; **: Significant at 1% level.

The results of multiple linear regression analysis showed that livestock possession and extension participation had significantly contributed at 0.01 per cent level of probability and variables such as land holding, cosmopoliteness, innovativeness, social participation and training undergone significantly contributed at 0.05 per cent level of probability. The R2 value of 0.553 indicated that all 18 variables had contributed to the tune of 55.3 per cent of variation in livelihood security.

Table 6: Economic analysis of Integrated Farming System (IFS) components before and after implementation of project in Chickballapura district (n=272)

Crop Component	Before									After								Change in yield (%)	Change in Income (%)	Emply. Gene. in (Mandays/ ac.)	Emply. Gene. of Beneficiary farmers (Mandays)
	Avg. Land Holding (Acre.)	Avg. Yield (Ql./ac.)	Avg. yield of Beneficiary farmers (Ql./ac.)	Price (Rs./Ql.)	Prod. Cost/ ac. (Rs.)	Prod. Cost of Beneficiary farmers (Rs.)	Gross Income (Rs./ac.)	Net Income (Rs./ac.)	B:C Ratio	Avg. Yield (Ql./ac.)	Avg. yield of Beneficiary farmers (Ql./ac.)	Price (Rs./ Ql.)	Prod. Cost/ ac. (Rs.)	Prod. Cost of Beneficiary farmers(Rs.)	Gross Income (Rs./ac.)	Net Income (Rs./ac.)	B:C Ratio				
Ragi (n1=185)	0.50	6.50	3.25	1450.00	5200.00	2600.00	4712.50	2112.50	**1.81**	9.50	4.75	1900.00	8500.00	4250.00	9025.00	4775.00	**2.12**	**46.15**	**91.51**	82.00	41.00
Groundnut (n2=86)	0.34	3.00	1.02	2200.00	2400.00	816.00	2244.00	1428.00	**2.75**	4.00	1.36	2250.00	2568.00	873.12	3060.00	2186.88	**3.50**	**33.33**	**36.36**	77.00	26.18
Redgram*										1.50	0.75	3600.00	1000.00	500.00	2700.00	2200.00	**5.40**			6.00	3.00
Maize*										3.00	1.02	1450.00	1000.00	340.00	1479.00	1139.00	**4.35**			6.00	2.04
Total						**3416.00**	**6956.50**	**3540.50**	**2.04**					**5963.12**	**16264.00**	**10300.88**	**2.73**		**133.80**		**72.22**
Livestock Component	Body live wt. or Ltrs/ sheep or poultry or pig or cow		Price/kg or Ltr		Cost		Gross Income (Rs.)	Net Income (Rs.)	B:C Ratio	Body live wt. or Ltrs/ sheep or poultry or pig or cow		Price/kg or Ltr		Cost	Gross Income (Rs.)	Net Income (Rs.)	B:C Ratio	Change in yield (%)	Change in Income (%)	Emply. Gene. (Mandays)	Emply. Gene. of Beneficiary farmers (Mandays)
Cow (n1=135)										1750.00		28.00		19000.00	49000.00	30000.00	**2.58**				240.00
Sheep (n2=136)										95.00		400.00		8000.00	38000.00	30000.00	**4.75**				105.00
Total														**27000.00**	**87000.00**	**60000.00**	**3.22**				**345.00**
Grand total					**3416.00**		**6956.50**	**3540.50**	**2.04**					**32963.12**	**103264.00**	**70300.88**	**3.13**		**133.80**		**417.22**

* Inter crop

It is observed from Table 6 indicated that, after implementation of the project, the average yield of Ragi increased by 46.16 per cent, Groundnut increased by 33.33 per cent. The livestock components (cow and sheep) generated 345 mandays employment per year and provided additional net income of Rs. 60000.The average gross income of Rs. 103264 from both crop and livestock enterprises of IFS against Rs. 6956 before implementation of the project. In total he could realize about Rs. 70300 net profit by adopting intercropping and livestock components in IFS. As such, for every one rupee investment under IFS they are getting 3.13 rupee income.

CONCLUSION

The results revealed that the livelihood security improved from less satisfied to highly satisfied level, out of seven dimensions of livelihood security maximum increase was noticed in employment security. Further, respondents earned Rs. 3.13 income for every one rupee investment under IFS. Hence, encourage the farmers to practice IFS which helps to increase their livelihood by organising extension educational programmes by the concerned development organisations. The concerned departments and organizations should give more emphasis towards amplification of positive and significantly related characteristics to enhance livelihood security of farmers practicing IFS.

CONFLICT OF INTEREST

No conflict of interest among researchers.

REFERENCES

Devarajaiah, K., 2010, A study on livelihood diversification of small and marginal farmers in Kolar district of Karnataka. *Ph.D. Thesis (Unpublished)*, The School of Agricultural Sciences Yashwantrao Chavan Maharashtra Open University, Nashik, Maharashtra.

Harshitha, D., 2018. Family farming efficiency and livelihood security of women headed households in Tumakuru district. *Ph.D. Thesis*, Univ. Agric. Sci., Bangalore.

Jayanta Roy, 2012. Impact analysis of Mahatma Gandhi National Rural Employment Guarantee programme in Dhalai district of Tripura. *M. Sc. (Agri.) Thesis,*Univ. Agric. Sci., Bangalore.

Lavanya (2010), Assessment of farming system efficiency in Theni district of Tamil Nadu. *M. Sc. (Agri.) Thesis,* Univ. Agric. Sci., Bangalore.

Mamathalakshmi, N., 2013.An analysis of livelihood security among agricultural labourers in Karnataka. *Ph.D. (Agri.) Thesis,*Univ. Agric. Sci.,Bangalore.

Raksha, Rita Goel And Lali Yadav, 2012, Constraints faced by rural women in procurement and utilization of credit facilities in Hisar district. *J. Res. ANGRAU*, 40(4): 29 35.

Rutika U. Chuadhari , N. M. Chauhan And K. L. Chaudhary, 2023, Analysis of Livelihood Security of Tribal Farmers, *Guj. J. Ext. Edu*. 34 (1) : 24-29.

Prakash,C.,Patra,A.k.,Rao,C.s.chaudhari, S.K. and Green, A.,2021,Asessesing multi-micronutrients deficiency in agricultural soils of India.*Sustainability*,13(16),9136.

Shwetha, N. V. and Shivalingaiah, Y.n.2019, Development of scale to measure livelihood security of farmers practicing different farming systems in southern Karnataka, India. *Internatl. J. Curr. Microbiol. App. Sci* 8(11): 521-527.

Sujay Kumar, S., 2018. Analysis of Integrated Farming System (IFS) on the development of Schedule Caste (SC) farmers in Southern Karnataka. *Ph.D. (Agri.) Thesis*, Univ. Agric. Sci.,Bangalore.

Vishal S Thorat , Y. A. Garde and Krishna Patil,2022, Factors governing Food Security among Rural Households in Tribal District of South Gujarat, *Guj. J. Ext. Edu*. 33 (1):84-88.

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