Association between personal, socio- economical and psychological characteristics of farmers with their performance of different farming system in Lower Subansiri district of Arunachal Pradesh

Abstract

Arunachal Pradesh is an agrarian state which is gifted with natural resources and huge scope for agriculture and horticulture sectors. However, farming in Arunachal Pradesh is facing some socio-economic constraints which led to under-utilization of resource bases in the state. To ensure proper utilization of resources and to improve well being of farming community, there is need to adopt suitable farming system which can contribute to livelihood development. Therefore, a study was conducted in Ziro-I and Ziro-II block of Lower Subansiri district of Arunachal Pradesh during 2019-20 to know the association between personal, socio-economical and psychological characteristics of farmers with their performance in practicing different farming systems. A total of 200 respondents were selected from both blocks; 50 respondents each practicing FS-I, FS-II from Ziro-I block and FS-III, FS-IV from Ziro-II block. The result shows that innovative proneness, risk bearing ability, achievement motivation, decision making ability and management orientation had positive and significant association with performance at one and five per cent level of significance for all four farming systems. The probable reasons for the above findings could be that the farmers as an occupation has to deal with new farming practices and face many challenges such as drought, crop failure, pest attack, soil infertility, etc. As these experiences increases along with capital investment, their risk bearing ability also increases which may lead to improve performances in their farming. Additionally, to excel in farming practices there should be desire to achieve success in their work by taking timely decisions and performing as a good farm manager.

Keywords: Performance, farming systems, association, significance, farmers

1. INTRODUCTION

Arunachal Pradesh is the largest state in the northeast of India with an area of 83,743 square kilometers. But only 2.2% of the geographical area is arable. Average size of landholding is 3.52 ha, more than thrice of the all-India average. It is an agrarian state where more than 70.00 per cent population is dependent on agriculture for their livelihood. About 53.00 per cent of the total cultivated area is under jhum and the rest under settled cultivation. Gross sown area in the state for the year 2019-20 was

3,20,000 hectare and net sown area was 2,34,000 hectare (indiastat, 2019-2020).

In Arunachal Pradesh, where jhum cultivation is seemingly a common practice, often the land is left fallow after two to three years of cultivation to allow the regeneration of forest vegetation and improvement of soil fertility but the productivity in the state is low under this cultivation. One of the reasons for low productivity of crops in the state is that more than 80.00 per cent of the crop production in the state is without chemical fertilizers and agrochemicals and therefore, there is an excellent opportunity for marching ahead with organic farming practices. An allied sector of agriculture such as livestock (cattle, mithun, yak, goat, sheep, pigs, and poultry) and fisheries are also primary occupation for the state dwellers. 'Mithun' which is the state animal of Arunachal Pradesh had the highest population across India, at more than 350,000 in 2019. Poultry and piggery are also integral part of tribal culture. In rural area every household practices poultry and piggery as a part of their livelihood and traditional culture. A cattle population in the state is 4,63,758 numbers ranking next to pigs which is 35,63,190 in numbers and poultry population is about 3,36,504 in numbers according to livestock census, 2012. Horticulture also has a vast potential, owing to good agro-climatic conditions and topography, for the development of varied varieties of fruits and vegetables. However, farming in Arunachal Pradesh is facing some socio-economic constraints such as small holdings, poor productivity, poor production management, labour shortages, poor post-production management, poor marketing and networks. All these have led to under-utilization of resource bases in the hills and limited generation of surpluses. To ensure proper utilization of resources and to improve well being of farming community, there is need to adopt suitable farming system which can contribute to livelihood development. Therefore, a study was conducted to know the association between personal, socio-economical and psychological characteristics with performance of farmers practicing different farming system.

2. MATERIALS AND METHODS

The study was conducted in 2019 in Lower Subansiri district of Arunachal Pradesh which is famous for some of the popular farming systems in the state such as Paddy-cum-Fish cultivation, Kiwi fruit and Large Cardamom plantations. Kiwi production (7,430 tonne annually) and large cardamom production (3,620 tonne annually) in the district is one of the highest in the state, therefore, the farmers from this district were purposefully selected for the study. Two blocks from Lower Subansiri district viz., Ziro-I and Ziro-II were selected for the study. Ziro-I is famous for its indigenous traditional practice *i.e.*, Paddy-cum-Fish cultivation and Kiwi fruit plantation whereas Ziro-II is famous for its Large cardamom plantations besides paddy and piggery farming. From each block, five villages were randomly selected for the study. Thus, total ten villages were considered for the study. From each block, two major farming systems were selected for the study. For each farming system, 50 farmers were selected from five villages making a sample

size of 100 farmers for Ziro-I block. Similarly from Ziro-II block, 50 farmers were selected from five villages for each farming system making a sample size of 100 farmers for Ziro-II block. Thus, the total sample size from two blocks was 200. A research design of *Ex-post facto* research was used for the study and the data was collected by personally interviewing the respondents using detailed interviewed schedule where the responses were scored, quantified, categorized and tabulated using statistical methods like percentage, mean, standard deviation, frequencies and chi square test.

Table 1: Selection of respondents from Lower Subansiri district

Blocks	Farming situation	Villages	Respondent	Total
Ziro-I	Paddy+Fish+Piggery (FS-1)	Bulla	10	**50**
		Siiro	10	
		Hong	10	
		Hija	10	
		Hari	10	
	Kiwi+ Paddy+Fish+Piggery (FS-II)	Bulla	10	**50**
		Siiro	10	
		Hong	10	
		Hija	10	
		Hari	10	
Ziro-II	Paddy+ Piggery (FS-III)	Yachuli	10	**50**
		Pho Joram	10	
		Pasa Joram	10	
		Yazali	10	
		Siikhe Joram	10	
	Cardamom+Paddy+ Piggery (FS-IV)	Yachuli	10	**50**
		Pho Joram	10	
		Pasa Joram	10	
		Yazali	10	
		Siikhe Joram	10	

Table 2: Overall personal and socio-psychological characteristics of farmers practicing different farming systems in Lower Subansiri district

N=200

Sl. No.	Characteristic	Criteria	Frequency	Percentage
1	**Age**	Young (<35 years)	15	7.50
		Middle (35-50 years)	76	38.00

		Old (>50 years)	109	54.50
2	**Education**	Illiterate	82	41.00
		Primary school	12	6.00
		Middle school	20	10.00
		High school	44	22.00
		PUC	17	8.50
		Graduation and above	25	12.50
3	**Family size**	Small (below 4)	38	19.00
		Medium (4-8)	115	57.50
		Large (above 8)	47	23.50
4	**Farming experience**	Low (<10 years)	18	9.00
		Medium (10-20 years)	44	22.00
		High (>20years)	88	44.00
5	**Landholding**	Marginal (< 1.00 ha)	66	33.00
		Small (1.00-2.00 ha)	81	40.50
		Semi-medium (2.01-4.00 ha)	39	19.50
		Medium (4.01-10.00 ha)	14	7.00
		Large (10.01 ha and above)	0	0.00
6	**Cropping intensity** Mean =171 SD=34.65	Low(<161.68)	83	41.50
		Medium(161.68-199.61)	43	21.50
		High(>199.61)	74	37.00
7	**Cropping pattern** Mean =4.99 SD=1.33	Low(<4.32)	87	43.50
		Medium(4.32-5.65)	85	42.50
		High(>5.65)	28	14.00
8	**Innovative proneness** Mean =15.57 SD=2.38	Low(<14.38)	52	26.00
		Medium(14.38-16.76)	74	37.00
		High(>16.76)	74	37.00
9	**Risk bearing ability** Mean =8.31 SD=1.22	Low(<7.70)	44	22.00
		Medium(7.70-8.93)	63	31.50
		High(>8.93)	93	46.50
10	**Achievement motivation** Mean =11.89 SD=2.37	Low(<10.70)	58	29.00
		Medium(10.70-13.08)	90	45.00
		High(>13.08)	52	26.00
11	**Scientific orientation** Mean =12.59 SD=1.84	Low(<11.67)	63	31.50
		Medium(11.67-13.15)	70	35.00
		High(>13.15)	67	33.50
12	**Deferred gratification** Mean =24.14 SD=3.32	Low(<22.48)	72	36.00
		Medium(22.48-25.80)	76	38.00
		High(>25.80)	52	26.00
13	**Decision making ability**	Low(<9.07)	89	44.50

	Mean =10.08 SD=2.03	Medium(9.07-11.10)	61	30.50
		High(>11.10)	50	25.00
14	**Mass media exposure** Mean =5.41 SD=2.85	Low(<3.98)	69	34.50
		Medium(3.98-6.83)	78	39.00
		High(>6.83)	53	26.50
15	**Extension contact** Mean =3.19 SD=1.61	Low(<2.39)	77	38.50
		Medium(2.39-4.00)	82	41.00
		High(>4.00)	41	20.50
16	**Extension participation** Mean =4.89 SD=1.74	Low(<4.01)	81	40.50
		Medium(4.01-5.76)	64	32.00
		High(>5.76)	55	27.50
17	**Management orientation** Mean =45.27 SD=3.35	Low(<43.59)	63	31.50
		Medium(43.59-46.95)	71	35.50
		High(>46.95)	66	33.00
18	**Employment generation** Mean =409.18 SD=225.20	Low(<296.57)	56	28.00
		Medium(296.57-521.78)	82	41.00
		High(>521.78)	62	31.00

3. RESULTS AND DISCUSSION

The overall profile characteristics of farmers practicing different farming systems in Ziro-I and Ziro-II block were analyzed and presented in Table no.2. The results shows that more than half (54.50 %) of the respondents belonged to old age category and more than two-fifth (41.00 %) of the respondents were illiterate since in rural areas old age people had less formal education and exposure (1). Nearly three-fifth (57.50 %) of the respondents had medium family size which consists of 4-8 family members as earlier, tribals in the state preferred having more kids since there was no proper development in their remote areas which decreased the survival rate of their kids. Further, they needed large family for man power in managing their farming system and forest activities such as preserving and protecting the passed down forest land, protecting the boundaries, taking care of mithuns (*Bos frontalis*), *etc.* More than two-fifth (44.00 %) of the respondents had high farming experience as for paddy cultivators it was their birth occupation so their high experience was expected. Regarding land holding size, two-fifth (40.50 %) of the respondents had small land holding due to fragmentation of land and more than two-fifth of the respondents had low (41.50 %) cropping intensity and low (43.50 %) cropping pattern. It may be due to low productivity of land since they are practicing farming in the same land for many years without incorporating fertilizers (other than piggery and decomposed weeds and paddy straw), high yield variety or improved technologies. Also, they practice paddy cultivation only once in a year along with finger millets in the bunds in Ziro-I

district. 37.00 per cent of the respondents had medium and high innovativeness and 46.50 per cent of the respondents had high risk bearing ability. The probable reason might be due to kiwi growers and cardamom growers as they are constantly trying out new practices with the help of concern officials and mass media. 45.00 per cent of the respondent had medium achievement motivation and 35.00 per cent of the respondent had medium scientific orientation, it might be due to their better exposure to extension contact which enables them to better understand and try new agricultural technologies and incorporate in their traditional farming systems (2). 38.00 per cent of the respondents had medium deferred gratification and more than two-fifth (44.50 %) of the respondents had low decision making ability, it may be due to their poor education, lack of extension participation and scientific orientation. Almost two-fifth (39.00 %) of the respondents had medium mass media exposure and more than two-fifth (41.00 %) of the respondents had medium extension contact; it may be due to young and middle aged respondents practicing FS-II and FS-IV as they are more acquaint with mobile phones, internet, magazines and they often contact concern officials for the problems or new ideas from where they acquire more knowledge and better insight of their farming systems. About two-fifth (40.50 %) of the respondents had low extension participation and 35.50 per cent of the respondents had medium management orientation; the probable reason may be due to lack of awareness or participation in trainings and campaigns organized by agriculture and horticulture departments. More than two-fifth (41.00 %) of the respondents had medium employment generation from their farming systems which might be due to labour intensive farming activities, less technology interventions which might shorten their man days and due to sensitivity of crops like large cardamom which requires proper care and attention.

Table no. 3 shows the association between personal, socio-economical and psychological characteristics of farmers with performance of FS-I, FS-II, FS-III and FS-IV farmers. From the table, it can be observed that for FS-I farmers, the variables *viz*., innovative proneness, risk bearing ability, achievement motivation, deferred gratification, decision making ability and management orientation had positive and significant association with performance at one and five per cent level of significance. As for FS-II farmers, it can be observed that education, land holding, cropping intensity, innovative proneness, scientific orientation, cropping pattern, risk bearing ability, achievement motivation, mass media exposure, deferred gratification, decision making ability and management orientation had positive and significant association with performance at one and five per cent level of significance. With regard to FS-III farmers, it was found that innovative proneness, risk bearing ability, achievement motivation, decision making ability and management orientation had positive and significant association with performance at one and five per cent level of significance and with regard to FS-IV farmers, it was observed that farming experience, land holding,

cropping intensity, cropping pattern, innovative proneness, risk bearing ability, achievement motivation, scientific orientation, decision making ability, extension contact, extension participation, management orientation and employment generation had positive and significant association with performance at one and five per cent level of significance.

The probable reasons for the above findings could be that the education is an important factor for kiwi farmers to learn more about its way of cultivation through internet and farm magazines. It helped them to improve their practices and create awareness about new technology among kiwi based farming system farmers. As for the significance of the farming experience the probable reason might be that farmers learn from farming experiences and increase in farming experience yields better performance in farming. It gives better perspective of managing farm and handling enterprises. As for land holdings, the probable reason could be that FS-II and FS-IV are commercial farming systems for which capital is an important factor. As land holding increases, risk bearing ability and resource mobilization increases. Also, they are more exposed to mass media, had better extension participation and extension contact. Therefore, its likely that the performance increases with land holding of the farmers. The same reason applies for the significance of extension contact, mass media exposure and extension participation. Having exposure to radio, krishi programmes in television, farm magazines, internet and being in contact with agriculture or horticulture officers or other extension personnel benefit farmers in obtaining information and to adopt improved farming practices. It boosts farmer's innovativeness, risk bearing ability, achievement motivation and decision making ability which helps them in performing better (3). As for management orientation and employment generation, the probable reason could be that the farmer as a farm manager has to manage and utilize the available resources efficiently to make their farm perform better (4). Therefore, possessing higher management orientation leads to higher performance of farmers practicing different farming systems and also, higher the combination of enterprises, higher will be its employment generation and higher will be scale of performances. Therefore, as number of man days increases, greater will be yield, income and performances by farmers (5).

Table 3: Association between profile characteristics and performance of farmers practicing different farming systems **n=200**

Sl. no.	Characteristics	FS-1 (n_{11}=50)		FS-2 (n_{12}=50)		FS-3 (n_{21}=50)		FS-4 (n_{22}=50)	
		χ^2	C-value	χ^2	C-value	χ^2	C-value	χ^2	C-value
1	Age	2.89^{NS}	0.233	4.11^{NS}	0.275	7.63^{NS}	0.363	5.69^{NS}	0.319

2	Education	14.21^{NS}	0.470	20.62*	0.540	15.29^{NS}	0.483	17.93^{NS}	0.513
3	Family size	5.69^{NS}	0.319	7.44^{NS}	0.359	8.22^{NS}	0.375	6.94^{NS}	0.349
4	Farming experience	1.99^{NS}	0.195	5.78^{NS}	0.321	7.34^{NS}	0.357	10.15*	0.410
5	Land holding	13.22^{NS}	0.457	18.89**	0.523	10.08^{NS}	0.409	19.78*	0.532
6	Cropping intensity	8.77^{NS}	0.386	9.78*	0.404	5.63^{NS}	0.318	14.21**	0.470
7	Cropping pattern	4.49^{NS}	0.287	11.35*	0.430	3.99^{NS}	0.271	15.01**	0.480
8	Innovative	12.33*	0.444	15.44**	0.485	10.49*	0.416	11.99*	0.439
9	Risk bearing ability	16.22**	0.494	9.81**	0.404	12.99*	0.454	13.26*	0.457
10	Achievement	11.52*	0.432	14.88**	0.478	12.37*	0.445	13.02*	0.454
11	Scientific orientation	5.69^{NS}	0.319	9.52**	0.399	8.99^{NS}	0.390	13.33**	0.458
12	Deferred	10.88*	0.422	13.45**	0.460	5.12^{NS}	0.304	1.71^{NS}	0.181
13	Decision making ability	11.74*	0.436	10.38*	0.414	14.12**	0.469	15.78**	0.489
14	Mass Media exposure	6.63^{NS}	0.342	9.95*	0.407	3.99^{NS}	0.271	7.66^{NS}	0.364
15	Extension contact	3.08^{NS}	0.240	4.69^{NS}	0.292	7.18^{NS}	0.354	13.89**	0.466
16	Extension	7.82^{NS}	0.367	1.59^{NS}	0.175	6.74^{NS}	0.344	10.97*	0.424
17	Management	13.99**	0.467	14.28**	0.471	15.57**	0.487	16.24**	0.495
18	Employment	4.17^{NS}	0.277	13.56**	0.461	8.27^{NS}	0.376	10.63*	0.418

NS= Non significant, *= significant at 5 per cent level, ** = significant at 1 per cent level

4. CONCLUSION

From the above findings, it was found that innovative proneness, risk bearing ability, achievement motivation, decision making ability and management orientation had positive and significant association with performance at one and five per cent level of significance for all four different farming systems. The probable reasons for the above findings could be that proper education, awareness and exposure plays an important role for farmers to learn more about its improved farming practices. It motivates them to take better decisions, try out new ideas and have better perspective on management orientation.

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