Study on socio-economic status and characteristics of farmers adopting agroforestry system in Kaushambi district of eastern Uttar Pradesh, India

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ABSTRACT

The study was conducted on respondents adopting agroforestry-based farming system in eight villages of Kaushambi district of Uttar Pradesh. From each village 20 farmers were selected making a total sample size of 160 respondents. The study was conducted on the landholding-wise and the respondents were divided as small, medium and large farmers. The respondent farmers were medium-aged to old; among the small and medium farmers majority were middle pass whereas among large farmers most of them were high school pass; most of them had agriculture/agroforestry experience of more than 10 years; family size was from medium to large ie above 5 members; were having mainly nuclear families and semi-cemented or cemented houses. Their annual income was above Rs 26,000; the status of the farmers grew who adopted the agroforestry system. The risk orientation was low to medium in the three categories of the farmers; the scientific orientation was of medium level. Exposure to media was found more among the big farmers and it was also found that group meetings were attended by all the farmers in majority.

Keyword: Agroforestry; farming system; farmers; orientation

INTRODUCTION

Agroforestry is a dynamic, ecologically-based natural resource management system that through the integration of trees in farm and rangeland diversifies and sustains smallholder production for increased social, economic and environmental benefits (Leakey 1996). Agroforestry has been used as a major strategy to enjoin forest occupants to become partners in rehabilitating degraded forestlands. Agroforestry is an instrument to reduce soil erosion, improve soil quality, vegetative cover, land productivity and making the farmers socio-economically sound through sustained farm productivity (Chakraborty et al 2015). Agroforestry helps in carrying the desired level of diversification and sustainability. Kareemulla et al (2005) reported that the farm-industry linked and helped the systems to become more sustainable than the non-agroforestry cropping systems.

Various models of agroforestry systems have been practiced in different agro-ecological conditions of India which focused on biophysical and social variations. Trees are planted on the borders or bunds within the field systemically or sporadically habitually with crops such as rice, sugarcane, wheat, pulse, jute, oilseed, vegetables etc and the farmers also cultivate shade-tolerant crops such as ginger, turmeric and aroid when trees have high canopy coverage like jackfruit, mango and mahagony (Miah et al 2002). Trees act as insurance of crop fields in case of mutant crop failure or to maintain crops against environmental challenges and also to grant extra income from trees. Moreover if there is failure in one crop the other crops would fulfill the deficit. Thus agroforestry largely grows with sustainability concerns resiliency, diversity and avoiding harmful side effects in mind (Brooks et al 1995). Successful scaling up of agroforestry technologies requires a proper design to meet farmer's needs-biophysical needs, socio-economic and socio-culturalcircumstances and expectations (Akinnifesi et al 2008). Non-agroforestry production in the developing countries has rarely fulfilled the needs of the people to livelihood (Kalaba et al 2010).

In this way agroforestry system represents sustainable land use and assists to improve soils by nutrient leaching process to maintain and increase quality of soil fertility for world food security and environmental sustainability (Fanish and Sathya Priya 2013). Agroforestry sustains a greater contribution (91.44%) of the total income of farmers per year. This contribution is acquired from agricultural crops, forest trees (timber) and livestock (Qurniati and Haryono 2013). Ram Newaj et al (2008) observed that soil organic carbon fixation increased by 5 to 6 times higher in agroforestry system in comparison to non-agroforestry system or sole crop and sole trees.

METHODOLOGY

The present study was conducted to find out the socio-economic characteristics of agroforestry growers in the Kaushambi district of Uttar Pradesh where eight villages viz Saiyad Sarawan, Gospur, Kajipur, Mahgaon, Mohammadpur, Shekhpur Rasulpur, Kasenda and Patehpur Sahaopur were selected during 2017 to 2018. From each selected village 20 respondents with some form of agroforestry cultivation were selected. Thus a total 160 respondents formed the sample for the study. The respondents' data were post-stratified to compare across the farm holding size classes. The data were collected with the help of personal interview questionnaire survey method and statistically analyzed.

RESULTS and DISCUSSION

The respondents were categorized into small, medium and large farmers as per the size of the landholding and the observations were made on their socio-economic profile.

The data given in Table 1 show that among the small farmers majority (60.00%) were old; majority (38.10%) among medium farmers were middle-aged and among large farmers majority (54.84%) were old. In a study conducted by Tinde et al (2017) on socio-economic characteristics of wheat growers regarding adoption of improved wheat production technology in Uttar Pradesh reported that maximum respondents belonged to 31 to 45 years age group. Among the small and medium farmers majority (28.89 and 25.00% respectively) were middle pass whereas among large farmers most of them (25.81%) were high school pass. Chakraborty et al (2015) reported that the level of education among agroforestry farmers is generally high. Most of the farmers had agriculture/agroforestry experience of more than 10 years among all the three categories of farmers. This could be due to the reason that they were getting good returns from the system for a long time. In all the categories of farmers the family size was from medium to large ie above 5 members. Safa (2005) found that incomes of farmers were found to be influenced by family size. All the categories of farmers in the study were mainly having nuclear families (62.45, 65.66 and 69.19 among small, medium and large farmers respectively). Chouhan et al (2017) in their study on socio-economic status of farmers adopted agroforestry of Basavanapura and Hejjige village found that 62 and 72.67 per cent farmers were having nuclear and 38 and 27.33 per cent farmers were having joint families in Basavanapura and Hejjige village respectively. Majority of the respondents were having semi-cemented or cemented houses. The annual income of the majority of the small and medium farmers was medium ie Rs 26,000-50,000 (75.56 and 67.86% respectively) whereas in case of big farmers it was high (above Rs 50,000). Similar results were also reported by Dwivedi et al (2007). Among small, medium and big farmers 91.11, 90.48 and 100.00 per cent respectively possessed radio/TV/mobile phones. But majority of the big farmers (80.64%) also had scooter/motor bike and 22.58 per cent possessed car/tractor and improved agricultural machinery which was not true for small and medium farmers. Thus the study showed that the status of the farmers grew who adopted the agroforestry system. Chouhan et al (2017) also reported that the status of the farmer increased by adopting the agroforestry.

It was found that the risk orientation was low to medium in the three categories of the farmers. Tinde et al (2017) reported that the 65.33 per cent of wheat growers belonged to medium level of risk bearing ability whereas 19.33 and 15.33 per cent of them had low and high risk bearing ability respectively. The scientific orientation was of medium level among majority of the farmers (60.00, 61.90 and 67.74% among small, medium and big farmers respectively). Tinde et al (2017) revealed that 69.33 per cent of wheat growers belonged to medium level of scientific orientation and 28.00 and 2.66 per cent of them had low and high level of scientific orientation respectively.

The data given in Table 2 depict that among small farmers majority never viewed television, listened to radio or read newspaper for agriculture purpose. Among medium farmers 48.81 per cent were

Table 1. Socio-economic status of respondents of Kaushambi district as per landholding-wise classification

Variable	Class	Respondents					
		Small farmers		Medium farmers		Large farmers	
		F	P	F	P	F	P
Landholding (ha)	Up to 1	45.00	28.12	-	-	-	-
	1 to 2	-	-	84.00	52.50	-	-
	>2	-	-	-	-	31.00	19.37
Age (years)	Young (<29)	9.00	20.00	28.00	33.33	4.00	12.90
	Middle age (30-50)	9.00	20.00	32.00	38.10	10.00	32.26
	Old (>50)	27.00	60.00	24.00	28.57	17.00	54.84
	Total	45.00	100.00	84.00	100.0	31.00	100.00
	Mean	48.533		40.762		48.516	
	SEd±	12.374		12.181		11.457	
Education	Illiterate	05.00	11.11	13.00	15.48	06.00	19.35
	Primary	08.00	17.78	14.00	16.67	04.00	12.90
	Middle	13.00	28.89	21.00	25.00	06.00	19.35
	High	11.00	24.44	16.00	19.05	08.00	25.81
	Intermediate	06.00	13.33	14.00	16.67	04.00	12.90
	>intermediate	02.00	04.44	06.00	07.14	03.00	09.68
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	02.244		02.262		02.290	
	SEd±	01.334		01.498		01.596	
Agriculture /agroforestry farming experience (years)	Low (up to10 years)	07.00	15.56	11.00	13.10	04.00	12.90
	Medium (11 to 20)	19.00	42.22	43.00	51.19	15.00	48.39
	High (>21)	19.00	42.22	30.00	35.71	12.00	38.71
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	20.222		18.190		20.097	
	SEd±	06.947		07.119		06.896	
Family size (members)	Small (up to 4)	10.00	22.22	19.00	22.62	06.00	19.35
	Medium (5-7)	14.00	31.11	34.00	40.48	08.00	25.81
	Large (>7)	21.00	46.67	31.00	36.90	17.00	54.84
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	06.489		06.107		06.742	
	SEd±	02.149		01.957		02.016	
Family type	Nuclear	29.00	62.45	56.00	65.66	23.00	69.19
	Joint	16.00	37.55	28.00	34.34	08.00	30.81
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	01.244		01.214		01.226	
	SEd±	0.435		0.413		0.425	
House type	Kuchcha	17.00	37.78	17.00	20.24	03.00	9.68
	Semi-cemented	22.00	48.89	54.00	64.29	14.00	45.16
	Cemented	06.00	13.33	13.00	15.48	14.00	45.16
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	01.644		01.952		02.355	
	SEd±	0.712		0.599		0.661	
Annual income (Rs)	Low (up to 25,000)	11.00	24.44	21.00	25.00	00.0	00.00
	Medium (26,000-50,000)	34.00	75.56	57.00	67.86	07.00	22.58
	High (>50,000)	00.00	00.00	06.00	07.14	24.00	77.42
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	33066.66		33678.57		55000.00	
	SEd±	6603.718		9308.839		8164.966	
Inventory status	Radio/TV/Mobile	41.00	91.11	76.00	90.48	31.00	100.00
	Cycle	33.00	73.33	56.00	66.67	13.00	41.93
	Scooter/Motor bike	17.00	37.77	51.00	60.71	25.00	80.64
	Car/tractor	00.00	00.00	09.00	10.71	07.00	22.58
	Improved agricultural machinery	00.00	00.00	09.00	10.71	7.00	22.58
	Mean	18.20		40.20		16.60	
	SEd±	18.73		29.98		10.90	

Risk orientation	Low	21.00	46.66	24.00	28.57	10.00	32.25
	Medium	21.00	46.66	57.00	67.85	20.00	64.51
	High	03.00	06.66	03.00	03.57	01.00	03.22
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	11.69		10.988		11.065	
	SEd±	02.42		02.247		02.112	
Scientific orientation	Low	04.00	08.89	09.00	10.71	00.00	00.00
	Medium	27.00	60.00	52.00	61.90	21.00	67.74
	High	14.00	31.11	23.00	27.38	10.00	32.26
	Total	45.00	100.00	84.00	100.00	31.00	100.00
	Mean	11.267		11.024		09.355	
	SEd±	02.675		02.082		01.684	

F= Frequency, P= Percentage

Table 2. Mass media exposure of respondents of Kaushambi district as per landholding-wise classification

Category	Mass media	Respondents' exposure					
		Regular		Occasional		Never	
		F	P	F	P	F	P
Small farmers	Television	07.00	15.56	13.00	28.89	25.00	55.56
	Radio	08.00	17.78	18.00	40.00	19.00	42.22
	Newspaper	08.00	17.78	12.00	26.67	25.00	55.56
Medium farmers	Television	16.00	19.05	41.00	48.81	27.00	32.14
	Radio	05.00	05.95	24.00	28.57	55.00	65.48
	Newspaper	12.00	14.29	23.00	27.38	49.00	58.33
Large farmers	Television	15.00	48.39	14.00	45.16	02.00	06.45
	Radio	02.00	06.45	06.00	19.35	23.00	74.19
	Newspaper	14.00	45.16	12.00	38.71	05.00	16.13

F= Frequency, P= Percentage

occasional viewers of TV; 65.48 per cent never listened to radio: 58.33 per cent never read newspaper. Among large farmers majority (48.39 and 45.16%) were regular TV viewers and newspaper readers respectively but majority (74.19%) never listened to radio.

The data given in Table 3 show that among small farmers majority attended group meetings (95.56%); 60.00 per cent were regular participants in these meetings; 48.89 per cent each occasionally participated in demonstrations and field days and 75.56 per cent never got opportunity to go on educational tour. Among medium farmers also majority attended group meetings (89.29%); 48.81 per cent were regular participants of these meetings; 51.19 per cent each occasionally attended demonstrations, field days and agricultural exhibitions and 59.52 per cent never went on educational tour. Like other two categories among the big farmers majority attended group meetings (90.32%); 45.16 per cent each attended group meetings and Krishi Melas regularly; 58.06 per cent attended demonstrations occasionally and 35.48 per cent each never attended field days and agricultural exhibitions.

CONCLUSION

The socio-economic characteristics of farmers are important for better policy options. The results of the study indicated that agroforestry farmers of Kaushambi district, Uttar Pradesh had proper knowledge and adoption about scientific agroforestry cultivation practices. Economically they were more benefitted by adopting agroforestry cultivation in comparison to non-agroforestry farmers. The findings of the study indicate that the farmers of the study area needed more technical support to increase their income. Infrastructural development and public intervention in developing farmers' technical know-how could enhance production and ensure the optimum use of land as well as soil and water conservation.

Table 3. Extension participation of respondents of Kaushambi districts as per landholding-wise classification

Category	Respondents' participation							
	Attended		Regular		Occasional		Never	
	F	P	F	P	F	P	F	P
Small farmers								
Training program	24.00	53.33	05.00	11.11	19.00	42.22	21.00	46.67
Demonstration	33.00	73.33	11.00	24.44	22.00	48.89	12.00	26.67
Field days	28.00	62.22	06.00	13.33	22.00	48.89	17.00	37.78
Field visit	28.00	62.22	14.00	31.11	14.00	31.11	17.00	37.78
Groups meeting	43.00	95.56	27.00	60.00	16.00	35.56	02.00	04.44
Agril exhibition	24.00	53.33	07.00	15.56	17.00	37.78	21.00	46.67
Krishi Mela	31.00	68.89	11.00	24.44	20.00	44.44	14.00	31.11
Education tour	11.00	24.44	02.00	04.44	09.00	20.00	34.00	75.56
Mean	27.25		10.40		17.40		17.30	
SEd±	09.10		07.70		04.40		09.10	
Medium farmers								
Training program	52.00	61.91	11.00	13.09	41.00	48.80	32.00	38.09
Demonstration	67.00	77.38	22.00	26.19	43.00	51.19	19.00	22.62
Field days	54.00	64.29	11.00	13.10	43.00	51.19	30.00	35.71
Field visit	56.00	66.67	21.00	25.00	35.00	41.67	28.00	33.33
Groups meeting	75.00	89.29	41.00	48.81	34.00	40.48	09.00	10.71
Agril exhibition	62.00	73.81	19.00	22.62	43.00	51.19	22.00	26.19
Krishi Mela	48.00	57.14	17.00	20.24	31.00	36.90	36.00	42.86
Education tour	34.00	40.48	05.00	05.95	29.00	34.52	50.00	59.52
Mean	56.00		23.50		32.30		28.30	
SEd±	12.46		15.50		14.20		12.20	
Big farmers								
Training program	18.00	58.06	02.00	06.45	16.00	51.61	13.00	41.94
Demonstration	23.00	74.19	05.00	16.13	18.00	58.06	08.00	25.81
Field days	20.00	64.51	04.00	12.90	16.00	51.61	11.00	35.48
Field visit	25.00	80.64	09.00	29.03	16.00	51.61	06.00	19.35
Groups meeting	28.00	90.32	14.00	45.16	14.00	45.16	03.00	09.68
Agril exhibition	20.00	64.51	09.00	29.03	11.00	35.48	11.00	35.48
Krishi Mela	27.00	87.10	14.00	45.16	13.00	41.94	04.00	12.90
Education tour	27.00	87.10	10.00	32.26	17.00	54.84	04.00	12.90
Mean	23.50		08.40		15.10		07.50	
SEd±	03.82		04.40		02.30		03.80	

F= Frequency, P= Percentage

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