

Socio-economic profile of the common adopters of improved practices of crops and livestock enterprises and their problems and suggestive measures - A case study in adopted and non-adopted villages in North Eastern India

A.K. Singha^{1*}, R. Bordoloi¹, P.C. Jat¹, J.K. Singha² and Merina Devi³

¹ICAR-Zonal Project Directorate, Zone-III, Umiam, Meghalaya-793103, India

¹ICAR-Zonal Project Directorate, Zone-III, Umiam, Meghalaya-793103, India

¹ICAR-Zonal Project Directorate, Zone-III, Umiam, Meghalaya-793103, India

²Karinganj College, Assam, India

³Dept. of Poultry Science, GBPUA&T, Pantnagar, India

ABSTRACT

The study on socio-economic profile of the common adopters of improved practices of crops and livestock enterprises was conducted in 13 purposively selected districts in North East region with 130 sample size from each adopted and non-adopted village. Data collection from the selected respondents was made with the help of pre-tested structured schedule through personal interview method. The study reveals that majority of the respondents in adopted villages belonged to middle age category and had low to medium level of education, single family type and medium size of family. They engaged farming as primary occupation and had operational land holding size above 3 hectares with income level ranging from ₹ 50,000.00 -100000.00. Most of the beneficiary farmers received medium level of trainings, mass media exposure and extension contact. While in case of non-beneficiary respondents, the study shows that majority respondents belonged to middle age category, possessed low education level and belonged to SC/ST caste with single family type and medium family size. Farming was the main occupation among the non-beneficiary respondents with average annual income less than ₹ 50,000.00 and were small farmers with operational land holding size ranging from 2-3 hectares. The study further indicates that majority of the respondents in non-adopted villages received medium intensity of trainings organised by different developmental organisations and agencies other than Krishi Vigyan Kendras (KVKs) and had medium level of mass media exposure and extension contact to acquire knowledge and skills related to different farming activities.

Keywords: Socio-economic profile, common adopters, crop enterprises, livestock enterprises, adopted villages, non-adopted villages

Access this article online	
Publisher	Website: http://www.ndpublisher.in
	DOI: 10.5958/0976-4666.2016.00037.1

Agriculture sector comprising of crops and livestock enterprises has been playing a vital role in reducing rural as well as aggregate poverty, socio-economic advancement and sustainable economic development in the country through the gradual improvement of

Address for correspondence

A.K Singha: ICAR-Zonal Project Directorate, Zone-III, Umiam, Meghalaya-793103, India

E-mail: arunkumar_singha@yahoo.co.in

rural economy. Over 58% of the rural households in the country depend on agriculture as their principal means of livelihood. Agriculture, along with fisheries and other livestock sectors, is one of the largest contributors to the GDP. As per estimates by the Central Statistics Office (CSO), the share of agriculture and allied sectors (including agriculture, livestock, forestry and fishery) was 16.1% of the Gross Value Added (GVA) during 2014–15 at 2011–12 prices and the gross capital formation in agriculture, which was 18.3% of agri-GDP in 2012-13 has fallen to 14.8% in 2014-15 (Economic Survey, 2015).

In North East Region, agriculture along with its allied sectors such as animal husbandry and fisheries is the largest sector of the rural economy and is the main source of livelihood and income security of the rural population. Agriculture provides livelihood support to 70% of region's population in the region which produces only 1.5% of country's food grain production and continues to be a net importer of food grains even for its own consumption. Agricultural land including fallow in the region is 22.20% (varying between 37.43% in Assam and 4.40% in Arunachal) as against 54.47% in India. Cultivators (41.61%) and agricultural labourers (13.07%) together constitute the majority of the workforce as against 31.65% and 26.55% respectively in India. Land distribution is mostly egalitarian rooted in the principle of community way of living and sharing. However, the area available under cultivable land for agriculture in the region also continues to decrease due to the rapid economic development, which occupies more agricultural land mainly for housing, business and industrial purposes. The region suffers from weaknesses such as subsistence agriculture with poor infrastructure like roads and markets. The high vulnerability to natural calamities like floods, submergence, landslides, soil erosion, etc. has resulted in low and uncertain agricultural productivity. The low utilization of modern inputs in agriculture has further reduced the ability of the farm households to cope with high risks in production and income. Past studies recognise that unique socio-economic, personal and psychological characteristics of the farmers have significant influences towards adoption of any agricultural technology in different farming systems. Their key environmental and socio-economic factors have significant influence towards adoption and diffusion of agriculture technologies

(Lestrelin *et al.* 2012). The socio-economic characteristics of farmers and farm are important for better policy options (Tani Net 2nd Report, 2000). Generally the socioeconomic approach focuses on identifying the adaptive capacity of individuals or communities based on their internal characteristics such as, education, gender, wealth, health status, access to credit, access to information and technology, formal and informal (social) capital, political power, and so on (Alam *et al.* 2010). Variations of these factors are responsible for the variations in socio-economic characteristics of farmers. It influences the accessibility to the resources, livelihood pattern, food and nutritional security etc. (Roy *et al.* 2013). Any farming or non-farming activity is interdependent with the socio-economic status of the individual and it could be considered both the cause and effect of farming (Kumar *et al.* 2007). Therefore, understanding of the socio-economic and personality traits of the farmers who are engaging improved practices of both crops and livestock enterprises and their problems in meaningful adoption of the practices in their farming systems will certainly help in accelerating the process of effective transfer of technology as because it largely affects the adoption process. Hence, it was felt imperative to study the socio-economic status of the farmers in the region in order to have a holistic approach for the agricultural development of the villages, ultimately leading to the socio-economic development of the farming community in the region.

DATA BASE AND METHODOLOGY

The study was conducted during 2012-14 by the ICAR-Zonal Project Directorate, Zone-III as part of the institute research project-“Impact Analysis of KVK Activities in North Eastern Region”. The study was conducted in purposively selected 13 districts of North Eastern Region which consists of eight states. Only those districts in the region where KVKs are in existence for last 15 years with full strength of scientific staff and infra-structural facilities were selected for the study (Table 1).

From the selected 13 districts of the region (i.e; Assam-4, Arunachal Pradesh-1, Manipur-1, Meghalaya-1, Nagaland-1, Mizoram-2, Tripura-2 and Sikkim-1), two villages-one adopted village based on production potential of different farming systems and relatively higher proximity with the respective KVK in farming

Table 1: State and Host-wise distribution of selected KVKs with more than 15 years of functioning under Zone-III (upto IX plan)

Sl. No.	State	KVK	Host Institute	Year of Establishment
1.	Assam	Cachar	Assam Agril. University	1994
2.	Assam	Golaghat	Assam Agril. University	1994
3.	Assam	Kokrajhar	Assam Agril. University	1985
4.	Assam	Sonitpur	Assam Agril. University	1979
5.	Arunachal Pradesh	West Siang	ICAR Research Complex for NEH Region	1979
6.	Manipur	Imphal West	ICAR Research Complex for NEH Region	1979
7.	Meghalaya	West Garo Hills	ICAR Research Complex for NEH Region	1979
8.	Nagaland	Dimapur	ICAR Research Complex for NEH Region	1979
9.	Mizoram	Kolasib	Dept. of Agriculture, Research & Education, Govt. of Mizoram	1979
10.	Mizoram	Lunglei	Dept. of Agriculture, Research & Education, Govt. of Mizoram	1994
11.	Sikkim	East Sikkim	ICAR Research Complex for NEH Region	1982
12.	Tripura	South Tripura	ICAR Research Complex for NEH Region	1984
13.	Tripura	West Tripura	Sri Ram Krishna Seva Kendra, Kolkata	1979

activities and one non-adopted village where least/ no KVK interventions/ activities have been taken place during last 15 years were selected from each district. On consultation with the available records of the KVK as well as local leaders and extension workers, a list of farmers representing two different categories was prepared for each village. From the individual list of farmers from each village, ten farmers respondents each from adopted and non-adopted village were randomly selected, which made 20 respondents (10 beneficiary and 10 non-beneficiary) from each district. Thus a total of 260 farmer respondents were finally selected for data collection from 13 districts of the region. Data collection from randomly selected respondents was made by using pre-tested "Structured Schedule" through personal interview method followed by group discussion. The selected respondents were personally approached and interviewed at their place of residence/ field by the investigators along with the scientific staff of the concerned KVK and their responses were carefully recorded in the schedule. Any farmer who has been directly associating or receiving help and technical support in carrying out of farming activities such as crops cultivation (Rice and Vegetables) and

livestock farming (Dairy, Poultry, Piggery and Fisheries) in his own farming system on regular basis for last fifteen years was considered as respondent for the present study. While a farmer in non-adopted village who is practicing improved crops cultivation (Rice and Vegetables) and livestock farming (Dairy, Poultry, Piggery and Fisheries) practices in his own farming system with no/ least technical support and assistance from the KVK was considered as respondent (non-beneficiary) for the present study. The personal and socio-economic variables of the farmers such as age, education, caste, family type and family size were measured with the help of the scales developed by Trivedi and Pareek (1964). While the variables- primary occupation, annual income, size of operational land holding, type of primary farming activities, farming experience, trainings received, mass media exposure and extension contact were measured with the help of schedules structured for the study. Simple statistical tools like frequency, percentage, mean and standard deviation were used for analysis and interpretation of data. The respondents were divided into low, medium and high categories on the basis of mean and standard deviation as adopted by Dasgupta (1989).

RESULTS AND DISCUSSION

Socio-Economic characteristics

The distribution of respondents according to their socio-economic characteristics is given in Table 2. The table shows that out of selected 13 independent variables under the study, majority of respondents in adopted villages had belonged to middle age category (47.70%) with age category of 36- 50 years, 40% of them were with low and medium education level each who had formal education upto middle school and high school, 60.77% belonged to Scheduled Caste / Schedule Tribe (SC/ST), single family type (63.08%). As many as 69.23% respondents in adopted villages belonged to medium family size with family members ranging from 5 to 9 and most of them (82.31%) engaged farming as primary occupation for income and livelihood security with average annual income ranging from ₹ 50,000.00 -100000.00 (45.38%). While majority of them (43.07%) were big farmers with operational land holding size of above 3 hectare and possessed farming experience more than 20 years (43.10%). Agriculture along with livestock and fisheries were the primary type of farming activities as reported by majority of 45.38% respondents. The table also discloses that as many as 60% respondents had reported receiving medium level of training programmes conducted by KVKs in their respective districts, medium level of mass media exposure (67.69) and medium level of extension contact (85.38) respectively in order to acquire knowledge and skills in modern agricultural and allied sectors technologies. The findings are in conformity with those of Alam (2010)

in case of education level and size of operational land holdings of the farmers, Roy *et al.* (2013) in case of age of the farmers with majority of them belonged to average age of 42 years and medium level of average annual income.

In case of the non-beneficiary respondents, the Table 2 also reveals that majority respondents (55.40%) belonged to middle age category, possessed low education level (41.54%) and belonged to SC/ST caste (51.54%). With regard to family type and family size, most of the respondents were from single family type (55.38%) and medium family size (62.30%). Farming was the main occupation among the farmers (76.92%) with average annual income less than Rs. 50,000.00 as reported by 46.17% respondents, however, majority of them (36.92%) were small farmers with operational land holding size ranging from 2-3 hectares and 45.40% respondents had farming experience of more than 20 years in their farming systems. Livestock along with agriculture were the main type of farming activities practiced by majority farmers (44.62%). The table further shows that 42.31% of the respondents in non-adopted villages received medium intensity of training programmes organised by other development agencies including State Departments (Agriculture, Horticulture, Veterinary & A.H., Sericulture, Rural Development etc.) with very little programmes organised by their respective KVKs in the districts. The study also reveals that over half of the non-beneficiary respondents had medium level of mass media exposure (51.53%) and extension contact (65.38%) in order to acquire knowledge and skills related to different farming activities.

Table 2: Distribution of respondents according to their personal and socio-economic characteristics

Sl. No.	Characteristics	Category	Score value/ range	Distribution of respondents					
				Adopted village (n1=130)			Non-Adopted village (n2=130)		
				f	%	Mean	f	%	Mean
1.	Age	Young	21-35 years	33	25.38		24	18.46	
		Middle	36-50 years	62	47.70	43.83	72	55.40	45.68
		Old	51 years & above	35	26.92		34	26.14	
2.	Education	Illiterates	0-1	9	6.92	2.33	18	13.85	
		Low education	1-2	52	40		54	41.54	2.01
		Medium education	3-4	52	40		47	36.15	
		High education	5-6	17	13.08		11	8.46	

3	Caste	SC/ST	1	79	60.77	1.62	67	51.54	1.81
		OBC/MOBC	2	21	16.15		21	16.15	
		General	3	30	23.08		42	32.31	
4	Family type	Single	1	82	63.08	1.37	72	55.38	1.45
		Joint	2	48	36.92		58	44.62	
5	Family size	Small	0-5	28	21.54	6.81	32	24.62	6.45
		Medium	6-10	90	69.23		81	62.30	
		Large	10 and above	12	9.23		17	13.08	
6	Primary occupation	Labour	1	5	3.85	2.15	6	4.62	2.22
		Farming/ Agriculture	2	107	82.31		100	76.92	
		Business	3	11	8.46		13	10	
		Service	4	7	5.38		11	8.46	
7	Annual income	Low income	<₹ 50,000	39	30	1,59,768	60	46.17	72,114
		Medium income	₹ 50,000-100000	59	45.38		35	26.92	
		High income	>₹ 100000	32	24.61		35	26.92	
8	Operational land holding	Marginal	<2 ha	23	17.69	3.88	38	29.23	3.64
		Small	2-3 ha	51	39.23		48	36.92	
		Big	>3ha	56	43.07		44	33.84	
9	Farming experience	< 5 years	1	4	3.1	4.22	5	3.8	3.81
		5-10 years	2	20	15.4		22	16.9	
		10-15 years	3	24	18.5		24	18.5	
		15-20 years	4	26	20		20	15.4	
		>20 years	5	56	43.1		59	45.4	
10	Type of primary farming activities	Agriculture(A)/ Crop cultivation	A+(L+F)	59	45.38	-	52	40	-
		Livestock(L) (Dairy/ Poultry/Piggery)	L+(A+F)	45	34.62		58	44.62	
		Fisheries (F)	F+(A+L)	26	20.00		20	15.38	
11	Training received	Low	<3.06	27	20.77	4.22	45	34.61	3.71
		Medium	3.06-6.74	78	60.00		55	42.31	
		High	>6.74	25	19.23		25	19.23	
12	Mass media exposure	Low	<1.10	12	9.23	2.55	40	30.77	2.37
		Medium	1.1-3.98	88	67.69		67	51.53	
		High	>3.98	30	23.08		23	17.69	
13	Extension contact	Low	<2.44	5	3.85	3.84	33	25.39	2.43
		Medium	2.44-5.22	111	85.38		85	65.38	
		High	>5.22	14	10.77		12	9.23	

Table 3: Problems faced by the farmers in adoption of agricultural technologies

Sl. No.	Problems	Distribution of respondents					Rank
		Response Category			Total score	Mean score	
		VS	S	NS			
A	Socio-Personal						
1	Poor education level of the farmers	48	72	10	298	2.29	3
2	Lack of up-to-date knowledge and skill on new agricultural technologies	57	64	9	308	2.35	2
3	Less time devoted in agriculture due to other social activities	34	75	21	273	2.10	5
4	Lack of interest in farming due to poor return in short term	68	42	20	308	2.35	2
5	Farmers' dependence on land lords/ village heads in final decision making in farming due to existing ownership pattern of land specially in hilly areas.	33	50	47	246	1.89	8
6	Poor/ lack of health services/ facilities in rural areas	25	67	38	247	1.90	7
7	Poor Social status in farming as perceived in society	16	37	77	199	1.53	10
8	Reluctance to take up new enterprise(s) due to poor risk taking capacity of the farmers	72	46	12	320	2.46	1
9	Lack or poor involvement of women in decision making process in farming	19	32	79	200	1.54	9
10	Social conflicts due to political interference system	11	26	93	178	1.37	11
11	Non-availability of sufficient community and information centres	50	64	16	294	2.26	4
12	Lack of community grazing fields/ land	28	65	37	251	1.93	6
	Total				3122	1.99	IV
B.	Economic problems						
1	Non-availability of quality seeds and planting materials at right time	88	35	7	341	2.62	1
2	Non availability of labour in peak period of farming coupled with higher wage	83	31	16	327	2.51	2
3	Low remunerative price of produce due to middle men	67	46	17	310	2.38	4
4	High cost of inputs such as quality seeds & planting materials, fertilizers, breeds, animal feeds etc. farmers' affordable price	49	68	13	296	2.27	7
5	Lack of credit facilities and complication banking producers	55	58	17	298	2.29	6
6	Lack of effective marketing networks/ channels and intelligence	42	61	27	275	2.11	8
7	Lack of marketing facilities for perishable items of vegetables and fruits like godown, cold storage etc. at village level	9	37	84	185	1.42	12
8	Poor economic conditions of the farmers with limited source of income	58	56	16	302	2.32	5
9	Predominance of small and marginal farmers with small landholding size causing unprofitable farm activity	17	34	79	198	1.52	11
10	Non-availability of organic inputs locally at adequate quantity	26	37	67	219	1.68	9
11	Lack of post harvest technologies such as processing units, value addition and marketing facilities	73	42	15	318	2.45	3
12	Lack/ poor knowledge on economic analysis of farmers in farming	27	30	73	214	1.65	10
	Total				3283	2.10	II

C.	Extension problems							
1	Shortage of extension manpower in proportion to large number of farmers in districts	33	41	56	237	1.82	9	
2	Poor knowledge of field extension workers on updated and authenticated information in agricultural technologies	30	47	53	237	1.82	9	
3	Poor coordination in implementation of agricultural programme between State extension functionaries and KVKs	55	67	8	307	2.36	4	
4	Lack of sufficient fund of KVK for conducting important extension activities/awareness programmes	65	41	24	301	2.31	6	
5	State extension functionaries are not equipped with modern information and communication technology	48	57	25	283	2.17	8	
6	Lack of effective location specific extension approach	65	53	12	313	2.41	2	
7	Poor/ lack of trustworthiness towards Extension Personnel	12	36	82	190	1.46	11	
8	Lack of post harvest management knowledge and skills of farmers of their farm produce	26	45	59	227	1.75	10	
9	Lack of need based and location specific training programmes and other extension activities	55	53	22	293	2.25	7	
10	Poor participation by farmers in planning, implementation and evaluation of agricultural programmes	68	39	23	305	2.35	5	
11	Duplication of agricultural information and technologies due to services from different sources and stakeholders	57	65	8	309	2.38	3	
12	Lack of hand holding capacity building programmes and its follow up actions in time	78	52	0	338	2.60	1	
	Total				3340	2.14	I	
D.	Communication and information problems							
1	Frequent failure of power supply in remote areas	47	56	27	280	2.15	6	
2	Inaccessible of modern communication and information services in remote areas due to poor ICT service	58	57	15	303	2.33	3	
3	Problem of road connectivity and transport facility due to geographical disadvantage in hilly areas	78	45	7	331	2.55	1	
4	Lack of effective marketing network and intelligence	45	63	22	283	2.17	5	
5	Poor mass media coverage on successful technology application and dissemination systems/ approaches	35	47	48	247	1.90	8	
6	Lack of proper documentation of agricultural information and technologies	36	49	45	251	1.93	7	
7	Lack of mobile phone users and its poor connectivity in remote villages	57	53	20	297	2.28	4	
8	Non availability of AIR programme in remote area of the region	30	52	48	242	1.86	9	
9	Poor and non availability of Internet facility in hilly areas	17	26	87	190	1.46	11	
10	Less emphasis on the farmers views and problems at grass root level in decision making and planning of extension programmes	77	34	19	318	2.45	2	
11	Lack of effective communication model in hilly areas of the region	28	40	62	226	1.74	10	
12	Distortion of message of agricultural technologies due to existing hierarchical nature of transfer of technology system	40	32	58	242	1.86	9	
	Total				3210	2.06	III	

Table 4: Suggestive measures as perceived by the farmers in adoption of technologies

Sl. No	Suggestions	Response Category (f)			Total score	Mean score	Rank
		VI	I	NSI			
1	Focus on income generation activities specially for rural youth and farm women	87	43	0	347	2.67	1
2	Regular technological and methodological backstopping followed by input supply by SAU/CAU, KVKs and other line departments to farmers	80	50	0	340	2.61	2
3	Stress on diversified agriculture to minimise risk of crop failure	76	54	0	336	2.58	3
	Regular and timely training and demonstration programmes to the farmers of adopted villages	69	61	0	329	2.53	4
4	Provision for crop insurance particularly for small and marginal farmers	66	64	0	326	2.51	5
5	Developing and improving road connectivity in remote areas	61	69	0	321	2.47	6
6	Development of location specific and cost effective technological devices/ tools in agriculture	66	54	10	316	2.43	7
7	Focus on entrepreneurship development and commercial outlook of farmers in agriculture	73	30	27	306	2.35	8
8	Establishment of Community Radio Station with special broadcast on success stories/ case studies by farmers	58	55	17	301	2.31	9
9	Development of infrastructure facilities such as processing units, godowns, storage facilities etc. in villages	60	48	22	298	2.29	10
10	Involvement of local people/ farmers in decision making towards planning, implementation and evaluation process of development programmes and projects	57	54	19	298	2.29	10
11	Improving market networks and intelligence for remunerative price of agricultural produce	55	51	24	291	2.23	12
12	Provision for easy availability of credit/ bank loans to farmers with simple lending procedure	47	58	25	282	2.17	13
13	Availability of foundation seeds of paddy and other quality seeds and planting materials at right time	36	43	51	245	1.88	17
14	Setting up of organized markets in cluster of villages	44	62	24	280	2.15	14
15	Provision for sufficient fund and manpower for extension programmes and activities in farmers field	58	45	27	271	2.08	15
16	Setting up of community grazing fields/ lands	49	68	13	296	2.27	11
17	Strengthening linkages between KVK – ATMA-Farmers	32	46	52	240	1.85	18
18	Establishment of Rainwater harvesting structure, Soil testing facility and Portable Carp Hatchery in adopted villages of KVKs	26	47	57	229	1.76	19
19	Improving ICT in remote areas of hilly areas of the region	40	55	35	265	2.04	16
20	Development of location specific contingency plans to mitigate climate vulnerabilities and unseasonal rainfall	33	31	66	227	1.75	20
21	Training on post harvest technologies and marketing	46	57	27	279	2.15	14
Total					6423	2.35	

Note: VI-Very important, I-Important, NSI-Not so important

Problems faced by farmers

In order to study the problems perceived by the farmers in adoption of improved technologies of crops and livestock enterprises, the respondents were provided with open-ended questions to identify and explain the crucial problems faced by them in relation to adoption of improved technologies of crops and livestock enterprises in their farming systems. The specific problem items thus identified were grouped into four major problems namely; socio-personal problem, economic problem, extension problem and communication and information problem. Further, respondents were requested to rank each problem item according to their degree of seriousness/ importance in the existing farming situations such as "Very serious (VS)", "Serious (S)" and "Not so serious (NS)" with score 3, 2 and 1 respectively. The total score for each problem item was obtained by multiplying the frequency of the problem in the response category with their respective weightage and adding them up. The mean scores against each specific problem were calculated by dividing the total score by total number of respondents for the purpose of their meaningful interpretation and ranking (Table 3).

It is seen from the table that out of four major problems, extension problem was perceived as the most important problem faced by the farmers in adoption of agricultural and livestock technologies in their farming systems as shown by its highest mean score of 2.14 and ranked first. The other major problems in descending order of seriousness/ importance were economic problem (2.10), communication and information problems (2.06) and socio-personal problem (1.99) respectively. Specific problem-wise, reluctance to take up new enterprise(s) due to poor risk taking capacity of the farmers (2.46), lack of interest in farming due to poor return in short term (2.35), lack of up-to-date knowledge and skill on new agricultural technologies (2.35), poor education level of the farmers (2.29) were perceived as the important problems under major problem of socio-personal problem of the respondents. In case of economic problem, non-availability of quality seeds and planting materials at right time (2.62), non availability of labour in peak period of farming coupled with higher wage (2.51) and lack of post harvest technologies such as processing units, value addition and marketing facilities (2.45)

were the important problem items and ranked first, second and third respectively. While first three specific problems in order of degree of seriousness under major extension problem, as indicated by their corresponding mean score, were lack of hand holding capacity building programmes and its follow up actions in time (2.60), lack of effective location specific extension approach (2.41) and duplication of agricultural information and technologies due to services from different sources and stakeholders (2.38) respectively. The table also shows that under major problem of communication and information, problem of road connectivity and transport facility due to geographical disadvantage in hilly areas (2.55) was the most important specific problems in adoption of agricultural and livestock technologies followed by less emphasis on the farmers views and problems at grass root level in decision making and planning of extension programmes (2.45) and inaccessible of modern communication and information services in remote areas due to poor ICT service (2.33) respectively. Pandit *et al.* (2010) also reported the similar findings like non-availability of quality seeds and planting materials at right time for the potato farmers in Himachal Pradesh.

Suggestive measures

The respondents were asked in an open-ended questions to suggest important measures, which in their opinion, would help in overcoming the existing problems in adoption of agricultural and livestock technologies and further requested them to put in any one of the response categories based on degree of importance. The results are presented in Table 4. From the table, it is observed that focus on income generation activities specially for rural youth and farm women emerged as the most significant suggestion made by the respondents in solving transfer of technology problem as shown by its maximum mean score of 2.67. The was followed by regular technological and methodological backstopping followed by input supply by SAU/CAU, KVKs and other line departments to farmers (2.61), stress on diversified agriculture to minimise risk of crop failure (2.58) and regular and timely training and demonstration programmes to the farmers of adopted villages (2.53). The other perceived measures/ suggestions in solving the problems

according to their descending order of importance were given in Table 4.

CONCLUSION

It can be concluded that farmers, by and large, in KVKs adopted and non-adopted villages were of middle aged with low to medium level of education, average annual income, training experiences, mass media exposure and extension contact. Farmers who were educated and had basic exposure in the area of science and technology had a strong preference for the adoption of new technology in crops and livestock enterprises in their field. The study also reveals that extension problem was perceived as the most important problem faced by the farmers in adoption of agricultural and livestock technologies followed by economic problem, communication and information problem and socio-personal problem. Efforts should be taken by the concerned stakeholders to minimize such problems in farming in the region. Focus on income generation activities specially for rural youth and farm women emerged as the most significant suggestion made by the respondents in solving transfer of technology problem. These important suggestions may be taken care and further strengthened as part of agricultural development programmes and policies for the farmers in North Eastern Region. The study, therefore, suggests that there is need of the government assistance to promote the participation of farmers in agricultural trainings, demonstrations and workshops. Strategic planning and implementation are necessary to develop agriculture and make the region marginally, if not significantly, surplus in food grains and livestock

production by integrating research, extension and education duly supported by a time bound technological and methodological backstopping to the farmers and supply of critical inputs in each State.

REFERENCES

- Alam, M.M., Siwar, C., Murad, M.W., Molla, R.I., Toriman, M.T. 2010. Socio-economic profile of farmer in Malaysia: Study on integrated agricultural development area in North-West Selangor. *Agricultural Economics and Rural Development* 7(2): 249-265.
- Das Gupta, S. 1989. Diffusion of Agricultural Innovation in village India, Wiley Eastern Ltd., New Delhi.
- Kumar, G., Krishnan, B.P. and Soundaranjan, R. 2007. Socio-economic condition of fishermen in Andaman Islands. *Indian Journal of Extension Education* 43(1&2): 99-102.
- Lestrelin, Guillaume, Nanthavong, Khanla, Jobard, Etienne, Keophoxay, Anousith, Lienhard, Pascal, Khambansenang, Chanxay, Castella and Jean Christophe. 2012. To till or not to till? The diffusion of conservation agriculture in Xieng Khouong Province, Lao PDR opportunities and constraints. *Outlook on Agriculture* 41(1): 41-49.
- Pandit, A., Kumar, A., Rana, R.K., Pandey, N.K. and Kumar, N.R. 2010. A Study on socio-economic profile of potato farmers: Comparison of irrigated and rainfed conditions in Himachal Pradesh. *Potato Journal* 37(1-2): 56-63.
- Roy, M.L., Chandra, N., Kharbikar, H.L., Joshi, P. and Jethi, R. 2013. Socio-economic status of Hill Farmers: An exploration from Almora district in Uttarakhand. *International Journal of Agriculture and Food Science Technology* 4(4): 353-356.
- TaniNet 2nd Report 2000. Second Quarter, DAGS Report, TaniNet Project, UKM-MTDC Bangi, Selangor, Malaysia.
- Trivedi, G. and Pareek, U. 1964. *Socio-economic Status Scale (Rural)*. New Delhi: Manasyan.