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SOCIO-ECONOMIC STATUS OF FARMERS AND THEIR PERCEPTION ABOUT TECHNOLOGY ADOPTION: A CASE STUDY

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ABSTRACT

Adoption of new farm technology is very crucial for agricultural productivity and development. Farmers' perception of new agricultural technology influences their decision to adopt the same. The main of this study is to examine the socio-economic status of farmers and their perception about technology adoption using a case study of Udham Singh Nagar district of Uttarakhand. The study is based on personal interview and group discussion with sample farmers of the district. The study finds that marginal and small farmers are reluctant to use new technology because it increases the cost of production, whereas relatively large farmers believe that technologies are good to them in terms of high yield, less pests and more benefit. The study suggests that there is a need of government assistance to promote the participation of farmers, particularly female ones in agricultural training and workshop.

KEY WORDS: Technology adoption, socio-economic status, farmers, productivity, agriculture

1. INTRODUCTION

Agriculture is a critical sector of the Indian economy. More than half of the India's population still relies on agriculture as it is the principal source of their income and an important source of raw material for a large number of industries. The agriculture sector has been playing a vital role in reducing rural as well as aggregate poverty, socioeconomic advancement and susrainable economic development through the gradual improvement of the rural economy. Whenever agriculture and food grains are talked about, rice comes first in mind. Rice (*Oryza sativa*) is the most important food in many parts of the world including India. More than half of the Indian population depends on rice for food calories and protein. Wheat (*Triticum* spp.) is the second most important cereal in India after rice. Wheat crop contributes substantially to the national food security by providing more than 50 percent of the calories to the people who consume wheat as their staple food. Sugarcane is the major sugar producing crop. India is the second largest producer of sugarcane after Brazil. Mustard (Rapeseed) is the second most important edible oilseed crop in India after groundnut and accounts for nearly 30 per cent of the total oilseeds produced in the country. However, as is the case in many countries, the gaps between yields obtained at research stations and farmers' fields still exist in India. Narrowing of these gaps could improve not only the productivity, but also the efficiency of the major crops. There is hardly any scope for expansion of the area under these crops.

2.DATA AND METHODOLOGY

Uttarakhand has thirteen districts; out of these, Udham Singh Nagar is selected purposively for this study since this district has the highest production of major crops in the state. Keeping in mind the aim of the study, multi stage stratified random sampling technique is used. Firstly, a list of all the developmental blocks of the district is prepared. Udham Singh Nagar has seven development blocks, namely Jashpur, Kashipur, Bajpur, Gadarpur, Rudrapur, Sitarganj and Khatima. Out of these seven development blocks, two blocks - Khatima and Bajpur are selected randomly for the study. In the second stage, five villages from each block were selected randomly for the study. There are total 89 villages in Khatima and 115 villages in Bajpur block of Udham Singh Nagar district. Out of these, ten villages (five villages from Khatima and five from Bajpur) are selected randomly by using a random number table. Thus, in this way, a cluster of five villages is formed in each selected block. In the third stage, farmers are classified into different categories such as marginal (less than 1 hectare of land holding), small (1-2 hectares of land holding), semi-medium (2-4 hectares of land holding), medium (4-10 hectares of land holding) and large (more than 10 hectares of land holding). Then, 50 farmers from each block and 10 farmers from each farm size are selected for the survey.

The study is confined to the farmers' perception of the technology adoption in raising four major crops - paddy, wheat, sugarcane and mustard. Selection of crops is based on per cent coverage area by the major crops in the gross cropped area. Crops (excluding fodder), which together cover more than 99 per cent of the gross cropped area in the district are selected for the study (see, Table 1). Therefore, paddy (43.074 percent), wheat (39.502 per cent), sugar cane (15.076 per cent) and mustard (1.790 percent) whose cumulative coverage is 99.441 percent, are selected for the study.

Table 1. Area under different crops (excluding fodder) in district Udham Singh Nagar for the year 2009

Sr. No.	Crops	Area (Hectare)	Percentage to total area	Cumulative Percentage
1.	Rice	106764	43.074	43.074
2.	Wheat	97910	39.502	82.575
3.	Sugarcane	37367	15.076	97.651
4.	Mustard	4437	1.790	99.441
5.	Potato	847	0.342	99.783
6.	Maize	220	0.089	99.871
7.	Soybean	167	0.067	99.939
8.	Groundnut	70	0.028	99.967
9.	Sunflower	45	0.018	99.985
10.	Gram	30	0.012	99.997
11.	Pigeon pea	5	0.002	99.999
12.	Till	2	0.001	100.000
Total		247864	100.000	-

Source: District Statistical Bulletin, Udham Singh Nagar, 2009.

This study is mainly based on primary data. The required primary data are collected from sample farmers through personal interview and group discussion for the agricultural year 2011-12. This method is demarcated as the most need based, appropriate and feasible for this study. Most of the required secondary data are obtained from the district agriculture office and block development office. Some other important information is collected through the district's official website and publications.

To understand farmers' view about technology and the adoption of the same, descriptive analysis is done. This descriptive analysis is based on the qualitative data obtained from the information on farmers' view of technology, their experience, belief and adoption of technology. To know farmers' perception about technology adoption, a brief description of farmers such as name, age, education, family members, family size, and source of income is also collected from each sample farmer.

3. PROFILE OF SAMPLE FAMERS

This section provides an insight of socioeconomic and demographic profile of the sample farmers in terms of occupation, decision making role, education, family type, family size, average size of land holding and cropping pattern in the study area.

Table 2 clearly shows that the agriculture and allied sector is the main occupation for all the categories of farmers. The agriculture and allied sector includes farming, dairy, poultry, fishery, agricultural labor, etc. More than 90 percent of marginal and small farmers are involved only in this sector in the study area. Many marginal and small farmers also worked as agricultural labor. In case of semi-medium, medium and large farmers, 80 to 85 per cent of the sample farmers depended on agriculture alone for their livelihood. Government service is another source of income for the sample farmers, but the proportion of farmers

involved in government service are very small. Only 5 per cent of small and semi-medium farmers and 10 per cent of medium and large farmers are involved in government service along with agriculture. Other sources of income for the sample farmers are industrial labor, shops, etc. Only 5 percent of marginal, small and medium farmers and 10 per cent of semi-medium and large farmers had additional income from these sources. The last column of table 2 shows that 91 per cent of farmers in Udham Singh Nagar district depend on agriculture alone for their livelihood whereas only 3 per cent of farmers have government service for additional income and 6 per cent have additional income from other sources.

Table 2 further reveals that female participation in decision making is higher in marginal, small and semi-medium farmers than in their larger counterparts. In case of marginal and small farmers, female participation in decision making, either solely or jointly with a male counterpart, is 25 per cent and 30 per cent, respectively, whereas their participation is only 10 per cent and 15 per cent in case of large and medium farmers, respectively. It is clear from the table that females are least involved in decision making in case of large farm families; in fact, none of the females take decision alone in such families.

Table 2: Socio-economic and demographic characteristics of sample farmers for the year 2011-12

Sr. No.	Particulars	Category	Marginal	Small	Semi-medium	Medium	Large	Overall Average	Weighted Average
1.	Occupation (%)	Agriculture	95	90	85	85	80	87	91
		Govt. Service	0	5	5	10	10	6	3
		Others	5	5	10	5	10	7	6
2.	Decision maker (%)	Male	75	70	80	85	90	80	75
		Female	10	10	15	5	0	8	10
		Together	15	20	5	10	10	12	15
3.	Education of respondent (%)	Illiterate	35	35	25	20	15	26	32
		Primary	20	15	30	20	30	23	21
		Secondary	20	20	30	20	20	22	21
		High School	15	20	5	15	5	12	14
		Intermediate	10	10	10	15	15	12	11
		Graduate	0	0	0	10	15	5	1
4.	Family type (%)	Nuclear	70	60	30	35	20	43	58
		Joint	30	40	70	65	80	57	42
5.	Family size (%)	Up to 5	65	40	20	25	15	33	49
		More than 5	35	60	80	75	85	67	52
6.	Caste composition (%)	General	20	20	40	55	60	39	27
		OBC	10	20	20	20	25	19	15
		SC/ST	70	60	40	25	15	42	58
7.	Average age of respondent (years)		58.10	57.55	54.70	53.25	48.55	54	57
8.	Average size of land holding (hectares)		0.58	1.63	3.60	8.10	13.20	5	2

Note: Last column presents weighted average value where weights are in proportion to farmers' population under different size group of farms in Udham Singh Nagar district.

Education is one of the most important socio-economic factors. Education of farmers plays a vital role in adoption of improved farm technologies and farming practices. In the study area, more than 20 per cent farmers are illiterate on each farm size, except large one. The proportion of farmers having primary education varied from 15 per cent (small farm size) to 30 per cent (large and semi-medium farm size). Furthermore, 20 per cent of farmers in each category except semi-medium (30 per cent) had an education up to secondary level. Farmers having an education up to high school level is higher for small farmers and lowest for semi-medium and large farmers. On an average, 12 per cent sample farmers are educated up to intermediate level. None of the sample farmers are educated up to graduate level on marginal, small and semi-medium farms whereas 10 and 15 per cent farmers have a graduation degree on medium and large farms, respectively. The last column of table 2 shows that 32 per cent farmers in Udham Singh Nagar district are illiterate and 21 per cent have education up to primary level only. Only 1 per cent farmers in the district have education up to graduation level.

The typical Indian joint family system disintegrated over a period of time and now nuclear families with the family size of less than or equal to 5 are more predominant in Udham Singh Nagar district. Presently, 58 per cent families of farmers in the district are nuclear ones and only 42 per cent are living in a joint family system. It is interesting to note that majority of marginal and small farmers follow nuclear family system, whereas the majority of semi-medium, medium and large farmers still live in a joint family system.

As far as the caste composition of farmers is concerned, 27 per cent farm families belong to general category, 15 per cent comes under the other backward class and 58 per cent belongs to SC/ST category. Most of the large and medium size farmers belong from general category, whereas most of the marginal and small farmers to SC/ST category. Average age of respondents ranged from 48.55 years (large farmers) to 58.10 years (marginal farmers) whereas their average land holding varied from 0.58 hectares (marginal farmers) to 13.20 hectares (large farmers).

4.FARMERS' PERCEPTION OF TECHNOLOGY

Technology is very important in agricultural production. However, marginal and small farmers in the study area think that technology adoption leads to higher cost of production. Moreover, other categories of farmers believe that technology is good for farmers in terms of high yield, less pests and more benefit.

Nevertheless, training about new technologies to the farmers is not common in the study area. Some farmers do visit "Kisan Mela" held by the Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pantnagar. Few medium and large size farmers had "Kisan Diary" published by the GBPUAT, Pantnagar. Farmers who visited "Kisan Mela" and had "Kisan Diary" usually talks with other farmers about the information they got from the respective sources. This is called as private oral transmission. This type of information diffusion usually occurred at tea shops in the area. Therefore, most of the men got information from skilled farmers. However, how much learning happens through private oral transmission is not known. It is important to note that production activities followed by the farmers in the study area are not learned

from formal classes or training. They have yet to learn technologies from the extension technicians. However, they have heard information about high yielding varieties, plant protection chemicals and treated seeds from the radio and from oral transmission among farmers. It is clear from the discussion with farmers that they want to be trained on crop production and plant protection for the crops. They specifically want to have an intensive course for pest management in paddy and sugarcane production.

Different farmers had different reasons for not adopting new technology. Few farmers had apprehension about the usefulness of new technology; they believed that the method of cultivation adopted by them is superior. Few farmers stated that they have yet to see the demonstration on fields and without same it is very risky for them to use the technology. Farmers with low education and old age did not believe in new technology and only believe in their own experience.

Old cultivation practices embedded in farmers for a long period was found to be another reason for not adopting new technology. Some of them only relied on their own practices such as using high rates of seeds and spraying too much pesticide for prevention of insect occurrence. Some of the large land holding farmers are not so sure about the return of using new technologies; they feel that the risk is very high since they have large land holdings and if new technology doesn't do well in the field, they will face huge losses.

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 their field. They can be termed as progressive farmers. However, actual adoption of new technology depended heavily on economic well being of farmers.

Gender is also an important issue in the adoption of technologies. As most of the women do not have access to technical transmission, or visit farmers' fair due to their busy schedule with household chores and caring of children. They had no time to attend such type of activities; more often than not, they are also not encouraged to go alone to participate in such kind of activities. In general, male farmers have more information about new technologies than their female counterpart.

On the issue of division of labor, most respondents agreed that men should Plough fields and do all the work that needed great physical strength. Planting seeds are viewed as women's work. A large number of male respondents claimed that they help their wives and children in weeding and applying fertilizer and harvesting. However, almost half of the cases, such statements were contested by their family members. They claim that male households leave most of the weeding and fertilizer application to their wives and children.

4. CONCLUSION

The study suggests that there is a need of government assistance to promote the participation of farmers, particularly female ones in agricultural training and workshop. It is important to note that male farmers should encourage the involvement of females in their farm related discussion and decisions which would strengthen the family bondage as well as help them to take right decisions. Interaction with ADO/Ag. A scientist should be encouraged in the study area. 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 their field. The result shows that there is a need to give

more emphasis on education of farmers as education plays vital role in determining the adoption of new technology. It is clear from the discussion with farmers that they want to be trained on crop production and plant protection for the crops. They specifically want to have an intensive course for pest management in paddy and sugarcane production. These finding show that the government can still play an important role in improving the adoption of technology and consequently increasing the productivity and production of major crops in the study area.

REFERENCES

1. *Apantaku et al. (2008), "Analysis of effects of extension teaching methods on farmer's level of cassava and maize production in Ogun State, Nigeria", Ghana Journal of Agriculture Science, 41(1): 13-16.*
2. *Doss C. R. (2003), "Analyzing technology adoption using micro studies: Limitations, challenges and opportunities for improvement", Agricultural Economics 34(3): 207-219.*
3. *Doss C. R. (2006), "Understanding farm level technology adoption: Lessons learnt from CIMMYT's micro-survey in Eastern Africa", CYMMIT Economic Working Paper No. 30 – 07, Mexico, D.F.*
4. *Doss C. R., Mwangi W., Verkuiji H. and de Groote H. (2003), "Adoption of maize and wheat technologies in Eastern Africa: A synthesis of finding of 22 case studies", CYMMIT Economic Working Paper No. 30 – 06, Mexico, D.F.*
5. *Emmanuel Asiedu-Darko (2014), "Farmers' perception on agricultural technologies: a case of some improved crop varieties in Ghana", Agriculture, Forestry and Fisheries, 3(1): 13-16.*
6. *Igodan C. O., Oheji P. E. and Ekpere J. A. (1988), "Factors associated with the adoption of recommended practices for Maize Production in Kainji Lake Basin in Nigeria", Agricultural Administration and Extension, 29(2): 149 – 156.*
7. *Sinja et al. (2004), "Farmer perception of technology and its impact on technology uptake: The case of fodder legume in central Kenya highlands", in a Symposium organized by the African Association of Agricultural Economists on "Shaping the Future of African Agriculture for Development: The Role of Social Scientists" during December 6-8, 2004 at Grand Regency Hotel, Nairobi, Kenya.*
8. *Kelsey D. and Hearne C. (1995), "Co-operative extension work", New York: Comstock Publishing Associates.*
9. *Oladele O. I. (2005), "A Tobit analysis of propensity to discontinue adoption of agricultural technology among farmers in southwestern Nigeria", Journal of Central European Agriculture, 6(3): 249-254.*
10. *Voh J. P. (1982), "A study of factors associated with the adoption of recommended farm practices in a Nigeria village", Agricultural Administration, 9(1): 17 – 27.*