



# A Study on Knowledge Level of Farmers Regarding Paddy Straw Management in Punjab, India

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

Punjab is the state that contributes the most food grains to the central pool and is mostly an agricultural state. Small and marginal farmers are the backbone of Indian agriculture. Majority of the holdings are medium and number of such holdings are increasing with fragmentation of land. So, the present study was conducted with the objective of studying the socio-economic characteristics of the respondents. Data were collected from Pathankot and Gurdaspur district of Punjab. Two blocks was selected from each district and from total four blocks 25 respondents were selected randomly to make sample size of 100 respondents. It was found that vast proportion of respondents belonged to old age category. Youth is moving abroad and showing less interest in agriculture sector. Significant percentage of respondents (49 percent) were found to have attained schooling up to matric level and most of the respondents belong to nuclear family. It was found that though having good farming experience and education level, farmers of the state were not sticking to the recommended practices and resource use levels. The information of operational landholding of the respondents was classified into Small, Semi- medium, Medium and Large categories and

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mostly respondents have medium landholding i.e. 4-10 acre of land. The findings also revealed that respondents who attended more training and had more extension contacts have high knowledge level regarding paddy straw management.

*Keywords: Socio economic; agriculture sector; landholding.*

## 1. INTRODUCTION

Paddy (*Oryza sativa*) is grown all over the world and is staple food for more than half of the world population. India is the second leading producer of rice in the world. Rice crop occupied 31.49 lakh hectares in Punjab with total paddy production of 208.83 lakh tonnes (139.92 lakh tonnes of rice) during 2020-21 [1]. Adopting suggested farming practices is fraught with issues that need to be resolved, including those relating to the socioeconomic standing of the farmers and issues with technology, money, institutions, and so forth. Adoption of improved rice varieties, which have the potential to improve nutrition, ensure food security, promote rural development, and assist sustainable development, may increase rice yield. The soil has been negatively impacted by the excessive and unbalanced use of inorganic fertilizers, which has resulted in loss of organic carbon, reduction in the microbial flora and fauna of the soil, increase in acidity and alkalinity, and hardening of the soil. Additionally, overuse of nitrogenous and phosphate fertilizers is poisoning water sources, endangering both human and animal health. Due to neglect, small farmers often apply excessive amounts of fertilizer, pesticides, and other agricultural chemicals in an effort to increase output. Therefore, there is a need for stricter regulation of the widespread adoption of advised techniques for preparing the soil for planting, managing the water, applying fertilizer, controlling weeds and insect pests, and harvesting [2]. Most farmers know only some of the potential uses of the straw, namely as a source of animal feed, compost, vermicompost, nursery mats for seed germination, and paper making. Farmers acquired most of this information from other farmers who had realized the potentials through involvement in straw development projects [3]. Rice straw management can provide farmers and the local community with added economic value and can induce a larger village economy growth by developing industries and give supplemental values to farm environment. Farmers' awareness and understanding of the role of organic material in farm soil is still low, as shown by the little attention farmers paid to reintroduced

farming waste back into the soil. Rice straw is most often burned or left to be taken by another person as fuel for industrial needs [4].

Some traditional uses for crop stubbles are for animal fodder, fuel materials, cattle shed bedding, and mulching in soil. A few other options, such as its use as fuel in power plants, utilization in mushroom farming, for the removal of biolubricants, in paper and pulp industry, and for biogas generation, can be assimilated into a plan to provide alternatives to stubble and straw burning. Several scientists suggested that alternative energy resources can be generated from this biomass of agricultural sector [5].

Since agriculture is the foundation of the Indian economy, human resources must engage in a variety of tasks connected to agricultural development in order to meet the nation's objectives for rural development, employment creation, and a plethora of other fields that contribute to sustainable growth. Mechanization has resulted in decreased work prospects and reduced the growth of the agricultural industry, which has raised unemployment. It is crucial to emphasize the value of training when addressing these problems. So, there is urgent need to sustain the livelihood of rural masses especially the marginal and small famers of the state [6].

## 2. MATERIALS AND METHODS

The present study was conducted in Pathankot and Gurdaspur districts of Punjab. The sample of the study was based on random sampling technique. From Pathankot and Gurdaspur districts of Punjab, two blocks were selected randomly from each district. All four blocks from Pathankot and Gurdaspur districts were selected for the study on the basis of area under rice cultivation. A total 100 respondents was selected randomly from four blocks i.e. 25 from each block. For the collection of primary data, interview scheduled was prepared and the information regarding the knowledge level of farmers about paddy straw management was collected. The schedule was prepared to measure the knowledge of the farmers on the various aspects of paddy straw management. In the schedule, all 16 questions about paddy

straw, effects, uses, varieties of paddy and its harmful effects were formulated on the basis of discussions held with subject matter specialists of the Department of Extension Education. Relevant literature was also consulted. The schedule was administered with 20 farmers randomly from the non-sample area. The responses were dichotomized as correct/incorrect with scores of 1 and 0 respectively. Also the information about their socio-economic characteristics was collected from farmers through personal interview method.

### 3. RESULTS AND DISCUSSION

The results present in Table 1 shows the socio-economic characteristics of farmers. It was found that vast proportion of respondents belong to the old age category i.e. 62 per cent of respondents having age above 50 year as they are more experienced about the cultivation of crops. Few respondents belong to young category having age up to 35 year because mostly the youth have been moving abroad and the rest are not interested in agriculture. The findings revealed that young generation was less occupied in agriculture. A significant percentage of the respondents were found to have attained schooling up to the Matric level. About 91 per cent of the respondents belong to the Nuclear

family. The reason behind more nuclear families is they are financially more stable than joint families. Since it's a smaller family, the expenses are considerably lesser, which means better financial stability. Majority of the respondents i.e. 82 per cent fall under small category of family size having 3-6 members in family. Highest number of respondents i.e. 46 per cent belongs to medium category of operational landholding having 4-10 acre of land and 9 per cent of respondents in Small category of operational landholding respectively because the farm land is shrinking due to increase in population and division of families.

The information placed in Table 1 depicts that 90 per cent of the respondents had not attended any type of training. Less training was given by the government and private agencies due to which respondents were less aware about the latest innovative technologies. Only 22 percent of the respondents had extension contacts to increase the production of crop. Farmers usually had extension contacts with ADO and HDO of their nearby area. Only 1 per cent of the farmer had high mass media exposure i.e. above 6. Respondents gather information from the YouTube and WhatsApp groups mostly. These findings are in line with Kaur et al. [7].

**Table 1. Distribution of respondents according to socio-economic characteristics (n=100)**

Parameter	Categories	Frequency (%)	Average (Mean $\pm$ SD)
<b>Age</b>	Young (<35)	2 (2.00)	53.54( $\pm$ 8.27)
	Middle (35-50)	36 (36.00)	
	Old (>50)	62 (62.00)	
<b>Education</b>	Primary	0	11.58( $\pm$ 2.27)
	Middle	4 (4.00)	
	Matric	49 (49.00)	
	High school	28 (28.00)	
	Graduate	15 (15.00)	
	Post graduate	4 (4.00)	
<b>Family type</b>	Nuclear	91 (91.00)	0.09( $\pm$ 0.28)
	Joint	9 (9.00)	
<b>Family size</b>	Small (3-6)	82 (82.00)	4.77( $\pm$ 1.23)
	Medium (6-9)	17 (17.00)	
	Large (9-12)	1 (1.00)	
<b>Operational landholding (acres)</b>	Small (1-2)	9 (9.00)	6.83( $\pm$ 6.65)
	Semi medium (2-4)	20 (20.00)	
	Medium (4-10)	46 (46.00)	
	Large (10)	25 (25.00)	
<b>Training attended</b>	Yes	10 (10.00)	0.10( $\pm$ 0.30)
	No	90 (90.00)	
<b>Extension contact</b>	Yes	22 (22.00)	0.22( $\pm$ 0.41)
	No	78 (78.00)	
<b>Mass media exposure</b>	Low (below 3)	85 (85.00)	1.55( $\pm$ 1.37)
	Medium (3-6)	14 (14.00)	
	High (above 6)	1 (1.00)	

**Table 2. Distribution of respondents on the basis of their knowledge level (n=100)**

Knowledge level	Frequency (%)
Low (2-4)	18 (18.00)
Medium (4-8)	57 (57.00)
High (8-12)	25(25.00)

**Table 3. Relationship between knowledge level of paddy growers and socio - economic variables (n=100)**

Socio economic variable	Correlation coefficient (r value)	p value
Age	0.123	0.221
Education	0.068	0.502
Training attended	0.514**	0.000
Extension contact	0.589**	0.000
Mass media exposure	0.175	0.082

Table 2 shows the knowledge level of the respondents regarding paddy straw management. Data related to the knowledge level were classified into 3 categories Low, Medium and High. It concludes that 57 per cent of the respondents have medium knowledge level i.e. mostly farmers have given only 4-8 correct answers of the questions and 25 per cent of the respondents had high knowledge level. About 18 per cent of the respondents had low level of knowledge regarding paddy straw management. Farmers had less knowledge about the harmful effects paddy straw burning and uses of paddy straw. The findings are in line with Balamatti et al. [8], Roy and Kaur [9].

Table 3 shows the relationship between knowledge level of Paddy growers and Socio- economic Variables are calculated by correlation coefficient. It was concluded that respondents attended more trainings had more extension contacts and had high level of knowledge regarding paddy straw management.

#### 4. CONCLUSION

On the basis of major findings of the study, it was concluded that young generation is less occupied in agriculture. Based on findings, it was suggested that to enhance the impact, training programmes should target young to medium aged small farmers. To enhance the rate of adoption, small rice growers should be trained in suggested paddy farming techniques. Extension activities like exposure visits, awareness of banking programmes and Government policies can help to solve problems. Most of the respondents had studied up to matric level. Agriculture extension services should be

provided to create awareness among farmers regarding the air pollution associated with the burning of paddy residue, as well as long term benefits of incorporation of paddy residue into soil.

#### CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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