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Knowledge level of farmers about selected water saving technologies in Patiala district of Punjab

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ABSTRACT

The study was conducted to know the knowledge level of 120 farmers belonging to six villages from two blocks of Patiala about selected water saving technologies. Data were collected by personal interview method. Findings of the study revealed that most of the respondents were in the age group of 41-52 years, educated up to matric and had medium operational landholding (10-25 acres). All of the respondents were following paddy-wheat rotation and almost all were having tractors of their own. Majority of the respondents had medium (52.50%) knowledge level about the direct seeding of rice. Similar was the case of zero tillage of wheat and laser land levelling where majority (57.50 and 55.0% respectively) of the respondents had medium knowledge. It was also found that overall knowledge level of the respondents about the water saving technologies was medium.

Keywords: Knowledge; rice; zero tillage; laser levelling; direct seeding

INTRODUCTION

Punjab is one of the most fertile regions and is called bread-basket of India. The state of Punjab contributed 43 per cent of wheat and 29 per cent of rice to the central pool during the year 2013-14 (Anon 2014a). To meet the food requirements of country the area under rice and wheat in Punjab increased but this crop rotation consumed huge amount of water leading to severe groundwater depletion. According to Department of Soil and Water Conservation, Punjab there is a total of 14.54 million acre feet (MAF) surface water and 15.10 MAF of groundwater available in Punjab. This total ground water resource is being exploited to the full extent and rather the demand is more than 39.75 MAF. Approximately 70 per cent area constituting central Punjab faces ground water depletion. At present ground water level is depleting rapidly in the state and 110 out of 141 blocks have already been categorized as over exploited or dark blocks and 3 other blocks are at critical stage (Anon 2014b).

The rate of fall in water table per year was 18 cm during 1982-87; it

increased to 42 cm during 1997-2002 (Hira et al 2004) and further to 75 cm during 2002-06 (Singh 2006). At the same time there is growing pressure on country to meet the increasing demand of grains especially for food.

To meet the future crop demand country will need to increase the water productivity. Therefore better water saving technologies, efficient irrigation system, soil-centric rather than crop-centric policies and better awareness with regard to conservation techniques are the need of the hour (Mittal 2008). A variety of water saving technologies have been developed and recommended by Punjab Agricultural University, Ludhiana such as direct seeded rice, zero tillage in wheat, laser leveller, tensiometer etc.

Adoption of such technologies may help alleviate pressure on groundwater and enhance the long term sustainability of food production in this region. Despite substantial investment in the development of water saving technologies and the potential impact of widespread adoption there is little evidence that farmers have adopted water saving technologies. Lack of knowledge about technologies and their functioning may be one of the reasons for poor adoption of these technologies.

So the present study was carried out to find out the knowledge of farmers about selected water saving technologies.

METHODOLOGY

Study was conducted in Patiala district of Punjab. Out of eight blocks Sanore and Bhunrheri were selected purposively where water saving technologies such as direct seeded rice, zero tillage in wheat, laser leveller and tensiometer were being practiced by the farmers. Three villages from each block were selected. These were Panjola, Balwera, Manjaal, Nainkalan, Bhatian and Partapgarh. Twenty farmers from each village were selected randomly thus constituting the total sample size of 120 farmers. An interview schedule was prepared to collect data about socio-personal characteristics of the farmers. Knowledge test was prepared to find out the knowledge of farmers about selected water saving technologies viz direct seeded rice, zero tillage in wheat, laser leveler and tensiometer. The interview schedule and knowledge test were pretested on 20 non-sampled farmers. Necessary modifications were made in the light of pretesting.

RESULTS and DISCUSSION

Socio-personal characteristics of the respondents

The information regarding socio-personal characteristics of selected farmers which included age, education, operational landholding, agricultural machinery owned and crop grown is given in Table 1.

Age: Data indicate that age of the respondents varied from 29-65 years. Maximum (39%) respondents belonged to the age group of 41-52 years while 33.33 per cent of them were in the age group of 29-40 years and rest in the age group of 53-65 years. Similar findings were reported by Kaur (2015).

Education: More than 28 per cent of the respondents had gained education up to matriculation followed by 20 per cent up to senior secondary. These findings are in agreement with the findings of Kaur (2007) and Kaur (2015).

Operational landholding: It was observed that majority (56.67%) of the respondents had medium (10-25 acres) operational landholding followed by about 20.83 per cent having semi-medium (5-10 acres) operational landholding. These findings are in line with those of Kaur (2007).

Crops grown: All respondents had been growing rice and wheat crops. However about 19.17 per cent of the respondents were also cultivating vegetables along with rice and wheat.

Agricultural machinery owned: Majority of the respondents (80.33%) possessed tractors. However 10.83 per cent respondents also owned laser leveller, 7.50 per cent had DSR drill, 6.67 per cent had zero tillage drill and only 4.17 per cent had combine harvester.

Knowledge level of respondents regarding various water saving technologies

Knowledge about any technology and its functioning greatly affect the adoption of that particular technology. If a farmer is not well aware about the technology and its working then more chances of discontinuance are there. Therefore to find out the knowledge about selected water saving technologies viz direct seeded rice, zero tillage in wheat, laser leveller and tensiometer a knowledge test was developed and responses were taken from the respondents. One score for right answer and zero for wrong answer were awarded. On the basis of total score three categories viz low, medium and high were formed and respondents were categorized accordingly.

Knowledge level of farmers regarding direct seeded rice (DSR): Majority of the respondents (52.50%) had high followed by low level of knowledge (42.5%) (Fig 1). This situation is not conducive for good future of the direct seeded rice. These finding are in line with the work of Kaur (2015) who found that majority of the farmers (59%) had medium level of knowledge, 21.33 per cent had low and 20 per cent had high knowledge level.

Knowledge level of respondents regarding zero tillage in wheat: Knowledge level of respondents about the zero tillage in wheat was divided into three

Table 1. Distribution of respondents according to their socio-personal characteristics (n= 120)

Socio-personal characteristics	Category	Frequency (f)	Percentage (%)
Age (years)	29-40	40	33.33
	41-52	47	39.17
	53-65	33	27.50
Education	Illiterate	12	10.00
	Primary	17	14.17
	Middle	21	17.50
	Matric	34	28.33
	Senior secondary	24	20.00
	Graduation and above	12	10.00
Operational landholding (acres)	Marginal (<2.5)	2	1.67
	Small (2.5-5.0)	4	3.33
	Semi-medium (5-10)	25	20.83
	Medium (10-25)	68	56.67
	Large (>25)	21	17.50
Crops grown	Rice	120	100
	Wheat	120	100
	Vegetables	23	19.17
Agricultural machinery owned	Tractor	97	80.33
	DSR drill	9	7.50
	Zero tillage drill	8	6.67
	Laser leveller	13	10.83
	Combine	5	4.17

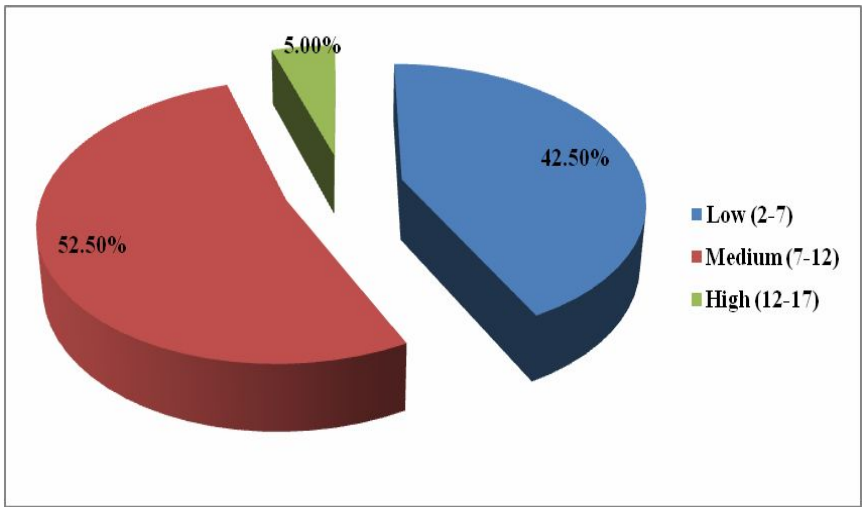

Fig 1. Distribution of respondents according to their knowledge level about direct seeded rice

categories by using range method. On the basis of score obtained data presented in Fig 2 show that majority of the respondents (57.50%) had medium and 31.67 per cent had low level of knowledge about the zero tillage in wheat.

Knowledge level of respondents regarding laser levelling: Fig 3 depicts that more than half (55.00%) of the respondents had medium followed by 36.67 per cent who had high knowledge level about leaser levelling. It means that medium or low knowledge had little effect on the adoption of laser leveling. The fact behind this is that majority of the adopters of this technology used it on custom hiring basis and hardly bothered about its working. They were well satisfied from the results which led higher adoption of the leveller despite having medium knowledge about its working.

Knowledge level of respondents regarding tensiometer: A negligible proportion of the respondents was aware of this technology. Hence the tabulation of results did not reveal much information.

Overall knowledge level regarding water saving technologies

To calculate the overall knowledge level of the respondents the score obtained by each respondent was summed up for all of the selected technologies. On the basis of this overall score the respondents were categorized into three categories viz low, medium and high by using range method.

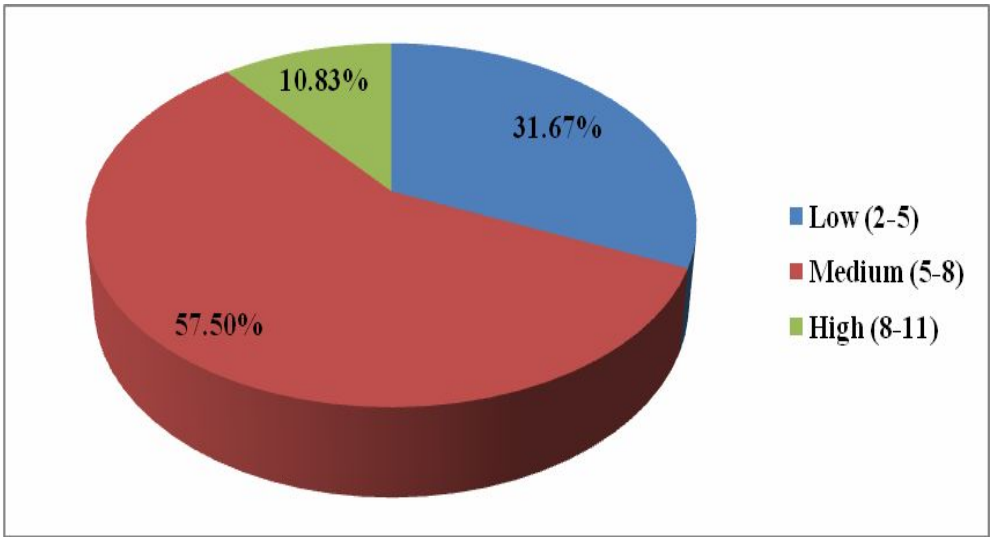

Fig 2. Ditribution of respondents on the basis of their knowledge level about zero tillage in wheat

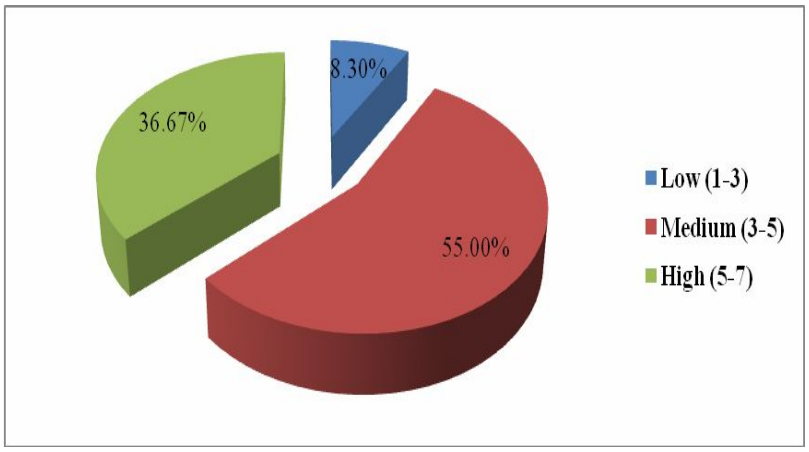

Fig 3. Distribution of respondents on the basis of their knowledge level about laser levelling

Table 2. Distribution of respondents according to their overall knowledge level regarding water saving technologies (n= 120)

Knowledge level (score)	Frequency	Percentage
Low (7-15)	36	30.00
Medium (15-23)	72	60.00
High (23-31)	12	10.00

Data in Table 2 show the overall knowledge level of the farmers. Sixty per cent of the respondents had medium, 30.00 per cent had low and 10 per cent had high knowledge level regarding selected water saving technologies. Therefore in overall this was not a good sign as far as the prospects of water saving technologies were concerned. These findings are in line with those of Singh (2003) who studied the adoption of soil and water management practices by farmers of Kandi area and reported that majority of the farmers (60.67%) had medium level of knowledge. Similarly Singha and Devi (2013) also reported that over half of the respondents (51.67%) had medium level knowledge about resource conservation technologies in rice cultivation.

CONCLUSION

Water saving technologies in agriculture is need of the hour particularly in Punjab state. Despite so many options the farmers are reluctant to use these technologies with exception of laser leveling. There are many factors which may be responsible for poor adoption of these but lack of knowledge is certainly a decisive

factor responsible for this. As evolved from the study majority of respondents was having medium level of knowledge for almost all the selected water saving technologies. Either it may be due to their lackof training or their negative predisposition due to other limiting factors. Therefore farmers need to be properly trained and strongly motivated to gain the desirable results as far as the water saving technologies are concerned.

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