

Analysis of Adoption and Constraints Perceived by Small Paddy Growers in Rice Production Technologies in Muktsar District of Punjab State, India

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ABSTRACT

Indian agriculture is the home of small and marginal farmers. Majority of the holdings are small and number of such holdings are increasing with fragmentation of land. So, the present study was conducted with the objective of studying the extent of adoption and perceived constraints in adoption of recommended paddy growing practices. Data were collected from all the four blocks of the Muktsar district of Punjab. Total 120 small farmers were surveyed for this study. It was found that extent of adoption was least in case of recommended insecticides and pesticides ranked at Xth followed by adoption irrigation management practices. Maximum adoption was in case of recommended varieties of paddy. Least extent of adoption was observed in case of plant population with mean percent score (MPS) 10.00, nursery growing practices (MPS =22.08), irrigation management (MPS =27.50) and recommended chemical and fungicide dose with MPS 34.17 and were ranked eleventh, tenth, ninth and eighth, respectively. The major socio-economic constraint faced by the respondent farmers was lack of the finance with mean score of 1.73 and ranked as Ist, followed by high cost of inputs with mean score of 1.64 and ranked as IInd. Lack of finance was perceived as very serious constraint by more than 75 per cent of the respondents. Similarly, high cost of inputs was perceived as very serious constraint by more than 2/3rd of the respondents. Major technological constraint was high incidence of insect-pest with MPS 76.67 followed by diseases (MPS= 67.50). High incidence of the insect-pest was perceived as very serious constraint by about 60 per cent of the farmers.

Key words: Adoption; Constraints; Rice production technologies;

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. In India, rice is grown on an area of 44 million hectares with a production of about 132 million tons, while in Punjab State, the area under rice during 2012-13 was 2.8 million hectare with production of 1.05 million tones. There are many problems associated with adoption of recommended farm practices which may be related to socio-economic status of farmers, technological, financial, or institutional etc which need to be addressed. These problems reflect the quality of advisory services provided to the small farmers. Rice yield may be increased by adoption of improved rice varieties which have potential to improve nutrition, boost food security, foster rural development and support sustainable development. These recommended practices must be followed in totality

according to the location specific problems of the area. Excessive and imbalanced use of inorganic fertilizers has adversely affected the soil causing decrease in organic carbon, reduction in microbial flora and fauna of soil, increasing acidity and alkalinity and hardening of soil. Moreover, excessive uses of nitrogenous and phosphate fertilizers are contaminating water bodies thus affecting health hazards for human beings and animals. Small farmers due to negligence tend to apply over doses of fertilizers, insecticides etc. with the expectation of obtaining higher yields. Therefore, there is need for more strict control on the over adoption of recommended practices related to land preparation, planting, management of water, application of fertilizers, control of weeds, control of insect pests and harvesting. The scope for expanding rice production lies in enhancing productivity. Research studies have clearly established that the adoption of

recommended rice technology gives high yields and thus income to the farmers. Small farmers are facing many constraints in adoption of rice production technologies. Keeping in mind this context, the study was conducted in Muktsar District of Punjab State with the following specific objectives;

- i. To study the socio-personal status of small farmers.
- ii. To analyze the extent of adoption of rice production technologies.
- iii. To study constraints perceived by small paddy growers regarding rice production technologies.

METHODOLOGY

The study was conducted in four blocks of district Muktsar viz; *Muktsar, Gidderbaha, Lambi and Malout* purposively as having the intensive cultivation of paddy crop. Three villages from each block were selected randomly. In this way the total 12 villages were selected. A list of small paddy growers were prepared with concerned officials from each selected village and 10 small paddy growers were selected randomly from each selected village to analyze the adoption and constraints faced by small paddy growers in the study area by making the total sample size 120. For the collection of data an interview schedule was developed. The respondents were asked to give opinion about the use of recommended paddy growing practices (adoption) on three point continuum viz; always, some times and never and scores 2, 1 and 0 were assigned, respectively. Extent of adoption was calculated on the basis of these scores. Similarly the constraints faced by the small paddy growers were also recorded on the three point continuum namely Very Serious, Serious, Somewhat Serious and the scores were assigned 2,1,0, respectively. The responses were calculated accordingly.

RESULTS AND DISCUSSION

Socio-personal Status: The perusal of the data given in Table 1 revealed that majority of the respondents (56.67%) were in middle age followed by old (26.67%) and young age (16.67%) category. As old age farmers have almost fixed behavior patterns, so middle aged and especially young farmers must be targeted for imparting skill trainings in rice production technologies. Sixty per cent of the respondents were having medium level of education followed by 35 per cent with low level of education. Only five per cent of the respondents were

in high level of education category. Farmers with higher and medium level of education can be easily motivated for adoption of recommended practices.

Table 1. Socio-personal characteristic of respondents (N = 120)

Variables	Characteristics	No.	%
Age	Young	20	16.67
	Middle	68	56.67
	Old	32	26.67
Education	Low (Upto Primary)	42	35.00
	Medium (up to HS)	72	60.00
	High (Above HS)	06	05.00
Land size	Marginal (> 1.0 ha)	43	35.83
	Small (1.0 ha -2.0 ha)	76	63.33
Extension	Low	21	17.50
Contact	Medium	82	68.33
	High	16	13.33
Media	Low	15	12.50
Exposure	Medium	88	73.33
	High	17	14.17
<i>Social Participation</i>	No membership	96	80.00
	Membership of some of the organizations	24	20.00
Family Size	Small (Upto 5)	76	63.33
	Large (More than 5)	44	36.67

Respondents were further categorized into small and marginal farmers based on their size of land holding and it was found that more than sixty per cent (63.33%) were in small farmers' category while about 36 per cent were marginal category farmers. Extension contact of majority respondents (68.33%) was in medium category followed by about 18% of the respondents with low level of extension contact. Similarly, mass media exposure of the majority respondents (73.33%) was also in medium category. Although, majority of the small farmers have medium level of extension contact, but still there is a need for special programmes for reaching small farmers for technology transfer in rice production technology.

Eighty per cent of the respondents were having no membership of any social organization while 20 per cent were involved in membership with some organizations. More than sixty per cent (63.33%) of respondents were having small family size with less than five members and remaining were having large family size with more than five members.

Extent of adoption: The rice production technologies

Table 2. Extent of adoption of rice growing technologies (N=120)

Selected package of practices	TS	MS	MPS	Rank
Varieties	138	1.15	57.50	I
Seed treatment	114	0.95	47.50	II
Nursery growing practices	53	0.44	22.08	X
Plant Population	24	0.20	10.00	XI
Irrigation management	66	0.55	27.50	VIII
Weedicide and dose	104	0.87	43.33	III
Nitrogenous fertilizers	103	0.86	42.92	IV
Phosphatic fertilizers	83	0.69	34.58	VI
Recommended dose of Zinc	102	0.85	42.50	V
Recommended chemical and insecticide dose	60	0.50	25.00	IX
Recommended chemical and fungicide dose	82	0.68	34.17	VII

were itemized into varieties, seed treatment, nursery growing practices, plant population, irrigation management, weedicides and doses, nitrogenous fertilizers, phosphoric fertilizers, recommended dose of zinc, recommended chemicals and dose of insecticides and fungicides. The data given in Table 1 reveals that extensive campaigns by extension agencies had significant impact of adoption of varieties. Therefore, maximum extent of adoption was found in case of varieties with mean per cent score (MPS) of 57.50 and ranked as first. Extent of adoption regarding seed treatment was ranked at second with MPS of 47.50. Extent of adoption in case of weedicides and doses, nitrogenous fertilizers and recommended dose of zinc was ranked as third, fourth and fifth with the MPS of 43.33, 42.92 and 42.50, respectively. This result might be appeared due to the awareness among small farmers regarding ill effects of higher doses of fertilizers on water quality and increased insect pest and diseases infestation on paddy crop.

Least extent of adoption was observed in case of plant population with MPS 10.00, nursery growing practices with MPS 22.08, irrigation management with MPS 27.50 and recommended chemical and fungicide dose with MPS 34.17 and was ranked eleventh, tenth, ninth and eighth, respectively. These findings are supported by the findings of *Meena et. al. (2012)*, *Mustapha et. al. (2011)* and *Singh & Varshney (2010)*.

Constraints perceived by Small paddy growers: The response of small paddy growers specially related to their problems viz., Socio-economic, Technical

knowhow, and Institutional were recorded and ranks were assigned accordingly. The major constraints as perceived by small paddy growers are given in Table-3. Among socio-economic constraints 'Lack of finance' was observed as most serious constraint and this was ranked as first followed by high cost of inputs with MSP 82.08, cheating by seed dealers with MSP 81.67, high cost of labour with MSP 79.17 and ranks assigned were second, third and fourth, respectively. These findings are in line with the study done by *Kumari (2012)*. It was also found that among technological constraints, high incidence of insect-pest was observed as a serious constraint with MPS 76.67 ranked first. The second, third and fourth ranks were assigned to high incidence of diseases, lack of knowledge regarding recommended varieties, high weed infestation with MPS 67.50, 58.75, 57.08, respectively. The least serious constraint perceived was non availability of trained labour with MPS 50.00 and ranked as fifth.

Regarding institutional constraints, it was revealed that unawareness of government supplies and services at proper time was observed as the most serious constraint and was ranked as first with MPS 83.33 followed by lack of awareness of recommended seeds with MPS 80.42, lack of timely communication with MPS 79.17, lack of proper irrigation facility with MPS 68.33 and ranked as second, third and fourth, respectively.

Lack of timely supply of fertilizers was found as the least serious constraint with MPS 60.83 and last rank i.e. fifth was accorded. These findings are in line with the findings of *Kumari (2012)*, *Jayasankar and Thyagarajan (2010)*. The findings shown that small farmers were not aware about government policies and programmes launched especially for small farmers which could provide financial and technical help to them so that they may improve their living standards through increasing paddy crop production.

CONCLUSION

On the basis of findings it was concluded that maximum extent of adoption was found in case of varieties followed by seed treatment, whereas, least extent of adoption was observed in case of plant population. Among socio-economic constraints lack of finance was observed as most serious constraint. It was concluded from technological constraints, that high incidence of insect-pest was observed as a serious constraint whereas

Table 3. Major constraints in paddy cultivation as perceived by small farmers (N=120)

Constraints	Degree of constraints						TS	MS	MPS	Rank
	Very Serious		Serious		Least serious					
	No.	%	No.	%	No.	%				
<i>A. Socio-economic constraints</i>										
Lack of finance	91	75.83	26	21.67	3	2.50	208	1.73	86.67	I
Cheating by seed dealers	84	70.00	28	23.33	8	6.67	196	1.63	81.67	III
High cost of labour	82	68.33	26	21.67	12	10.00	190	1.58	79.17	IV
High cost of inputs	78	65.00	41	34.17	1	0.83	197	1.64	82.08	II
<i>B. Technological constraints</i>										
High incidence of insect pests	71	59.17	42	35.00	7	5.83	184	1.53	76.67	I
High incidence of diseases	65	54.17	32	26.67	23	19.17	162	1.35	67.50	II
High weed infestation	47	39.17	43	35.83	30	25.00	137	1.14	57.08	IV
Lack of knowledge regarding recommended varieties	46	38.33	49	40.83	25	20.83	141	1.18	58.75	III
Non availability of trained labour	29	24.17	62	51.67	29	24.17	120	1.00	50.00	V
<i>C. Institutional Constraints</i>										
Lack of timely communication	73	60.83	44	36.67	3	2.50	190	1.58	79.17	III
Unawareness of government supplies and services at proper time	89	74.17	22	18.33	9	7.50	200	1.67	83.33	I
Lack of timely supply of fertilizers	46	38.33	54	45.00	20	16.67	146	1.22	60.83	V
Lack of proper irrigation facility	63	52.50	36	31.67	21	15.83	164	1.37	68.33	IV
Lack of awareness of recommended seeds	81	67.50	31	25.83	8	6.67	193	1.61	80.42	II

“non availability of trained labour was perceived as least serious constraint. In case of institutional constraints, “unawareness of government supplies and services at proper time” was observed as the most serious constraint while “lack of timely supply of fertilizers” was found as the least serious constraint. Based on findings it is suggested that to enhance the impact, training programmes should target young to medium aged small

farmers with medium to higher level of extension contact. The small paddy growers should be trained in recommended paddy cultivation technology to increase the adoption rate and the problems may be solved through extension activities like exposure visit, awareness about banking schemes and Government policies.

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REFERENCES

Jayasankar R and Thyagarajan S. (2010). Constraints Experienced By The Rice Farmers In Adopting Recommended Bio-fertilizer Practices *Interna. J. Current Res.* **18-20**, (7).

Kumari G. (2012). Constraints in Adoption of Integrated Pest Management (IPM) Practices by Rice Growing Farmers of Jammu Division. *Indian Res. J. Extn. Edu. Special Issue (II)*, 15-17

Meena S L, Lakhera, J P Sharma K C and Johri S K (2012). Knowledge Level And Adoption Pattern Of Rice Production Technology Among Farmers. *Raj. J. Extn. Edu.* **20** : 133-137

Mustapha S B, Undiandeye U C, Sanusi, A M and Bakari S (2011). Analysis of adoption of improved rice production technologies in Jeer local government area of Borno state, Nigeria. Special Issue: Development and Sustainability in Africa – Part 1. *International J. Devt and Sustain. Online ISSN: 2168-8662 – www.isdsnet.com/ijds*, **1** (3) (2012): Pages 1112-1120 ISDS Article ID: IJDS12091101.

Singh P K and Varshney Jay G (2010). Adoption Level and Constraints in Rice Production Technology. *Ind. Res. J. Extn. Edu.* **10** (1), 91-94.

