Adoption Pattern of SRI Technology Amongst the Paddy Growers of Balaghat District of Madhya Pradesh

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ABSTRACT

Rice is the staple food crop of India, providing 43 per cent of caloric requirement for more than 73 per cent of Indian population. The demand can only be met by maintaining the increase in productivity under decreasing trend of land availability and total factor productivity and has to meet the demands for sustainability and preservation of environment quality.Assembly of the practices that culminated in SRI began in the 1960s based on Fr. de Laulanie's observation of 'positive-deviant' farmer practices, starting with planting single seedlings instead of multiple seedlings in a clump, and not keeping irrigated paddy fields flooded during the rice plants' vegetative growth stage. Keeping this in view the study was designed to find out the extent of adoption of recommended practices of SRI technology of paddy cultivation and relationship of the characteristics of paddy growers with their level of adoption. The study was conducted in Balaghat district of Madhya Pradesh during the year 2009 to 2010. Total 103 respondents were selected on random basis.

***Key words:** Pattern; Production; Cultivation;*

Rice is the staple food crop of India, providing 43 per cent of caloric requirement for more than 73 per cent of Indian population. India ranks first in world in area (45 m. ha.) and second to China in production (89.5mt) among all the rice growing countries. During the last five decades, the rice production trend has steadily grown to 1.8 million tons during 2001. Indian crossed Vietnam during 2002 by exporting 5.5 million tons to occupy second position next only to Thailand (*B. Mishra, 2001*). The average annual population growth rate of 1.5 per cent and per capita consumption estimate of about 400g of rice per day, demand for rice is expected to be 100 million tons during 2010 and 140 million tons by 2025. The demand can only be met by maintaining the increase in productivity under decreasing trend of land availability and total factor productivity and has to meet the demands for sustainability and preservation of environment quality.

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METHODOLOGY

The study was conducted in Balaghat district of Madhya Pradesh during the year 2009 to 2010. Total 120 respondents were selected on random basis. The data were collected with the help of pre tested interview schedule. The data were analysed through mean, multiple correlation and regression analysis. For the study of adoption pattern, Seventeen recommended SRI Technology practices of paddy cultivation viz. field preparation, Deep summer ploughing, use of genetically pure and viable seeds, improved varieties, techniques used as pre-sowing of SRI, nursery preparation through SRI technique, optimum seed rate, seed treatment, time of transplanting, depth and spacing etc were selected.

The total score obtained by each respondent from all the seventeen practices was the adoption score of an individual respondent was calculated by using adoption index as described below:

$$\text{Adoption Index} = \frac{\text{Sum of obtained score}}{\text{Sum of obtainable score}} \times 100$$

The extent of adoption of the respondents were classified in three groups viz. low, medium and high on the basis of mean Sd.

RESULTS AND DISCUSSION

Adoption pattern of paddy growers in relation to SRI technology practices of paddy cultivation: The paddy growers were asked to state their extent of adoption of recommended SRI technology practices of paddy cultivation. The percentages of respondents are reported in Table 1.

It is evident from the Table that out of 120 paddy growers the majority (69.17%) had medium extent of adoption about field preparation followed by 20 per cent had low extent of adoption and 10.83 per cent had high extent of adoption.

It is evident from the Table that out of 120 paddy growers the highest (42.5%) had medium extent of adoption about deep summer ploughing while 31.67 per cent had low extent of adoption and 25.83 per cent had high extent of adoption.

Regarding use of genetically pure and viable seeds, majority of paddy growers (56.67%) had low extent of adoption, followed by 25 per cent had medium extent of adoption and high extent of adoption possessed by only 18.33 per cent paddy growers.

Most of the paddy growers (49.17%) had medium extent of adoption of improved varieties followed by 35.83 per cent had high and 15 per cent had low extent of adoption.

A higher percentage of the paddy growers, 41.67 per cent had medium extent of adoption of technique used as pre-sowing of S.R.I. while 33.33 and 25 per cent of them had high and low extent of adoption respectively.

Regarding optimum seed rate, most of paddy growers (40.83%) had medium extent of adoption followed by 30.83 per cent had low extent of adoption and high extent of adoption possessed by 28.33 per cent paddy growers.

Table 1. Distribution of paddy growers according to their adoption of improved SRI technology practices of paddy cultivation (N=120)

Practices	Adoption pattern		
	Low	Medium	High
Field preparation	24 (20.00)	83 (69.17)	13 (10.83)
Deep summer ploughing	38 (31.67)	51 (42.50)	31 (25.83)
Use of genetically pure and viable seeds	68 (56.67)	30 (25.00)	22 (18.33)
Improved varieties	18 (15.00)	59 (49.17)	43 (35.83)
Technique used as pre-sowing of S.R.I.	30 (25.00)	50 (25.00)	40 (33.33)
Nursury preparation through S.R.I. technique	27 (22.5)	57 (47.5)	36 (30.00)
Optimum seed rate	37 (30.83)	49 (40.83)	34 (28.33)
Seed treatment	52 (43.33)	48 (40.00)	20 (16.67)
Time of transplanting	34 (28.33)	45 (37.5)	41 (34.17)
Depth and spacing	40 (33.33)	57 (47.5)	33 (27.5)
Use of organic manure and bio-fertilizers	38 (31.67)	53 (44.17)	29 (24.17)
Balanced dose of chemical fertilizers	57 (47.50)	38 (31.67)	25 (20.83)
Irrigation management	18 (15.00)	30 (25.00)	72 (60.00)
Weed control	30 (25.00)	65 (54.17)	25 (20.83)
Insect control	38 (31.67)	59 (49.17)	23 (19.17)
Disease control	50 (41.67)	52 (43.33)	18 (15.00)
Harvesting methods	32 (26.67)	41 (34.17)	47 (39.17)

Of the total paddy growers, 43.33 per cent had low extent of adoption of recommended seed treatment followed by 40 per cent had medium and rest 16.67 per cent had high extent of adoption.

The most of paddy growers (37.5%) had medium extent of adoption of time of transplanting while 34.17 per cent had high and 28.33 per cent had low extent of adoption.

A higher percentage of paddy growers 47.5 had medium extent of extent of adoption about depth and spacing while 33.33 per cent had low and 27.5 per cent had high extent of adoption.

About method of use of organic manure and bio-fertilizers, maximum (44.17%) of paddy growers had medium extent of adoption followed by 31.67 per cent had low, while 24.17 per cent had high extent of adoption.

Regarding balanced dose of chemical fertilizers, about 47.5 per cent paddy growers had low extent of adoption, while 31.67 per cent had medium and 20.83 per cent had high extent of adoption.

About irrigation management, majority of paddy growers (60%) had high extent of adoption followed by medium and low extent of adoption with 25 and 15 per cent paddy growers respectively.

Regarding weed control, majority of the paddy growers (54.17%) had medium extent of adoption followed by 20.83 per cent had low extent of adoption and 25 per cent had high extent of adoption.

In case of insect control, most of the paddy growers (50.84%) had medium extent of extent of adoption followed by 33.33 per cent had low and 15.84 per cent had high extent of extent of adoption.

Regarding disease control the maximum (45.83%) had low extent of adoption followed by 44.17 per cent had medium extent of adoption and 10.00 per cent had high extent of adoption.

Of the total paddy growers 35.83 per cent had medium extent of adoption of harvesting methods followed by 35.00 and 29.17 per cent paddy growers having high and low extent of adoption?

Correlates of adoption pattern: In order to identify the factors that influence the adoption pattern of paddy growers in relation to SRI technology a multiple regression analysis were carried out and its data have been presented in Table 2. The correlation coefficient indicate that out of the selected fourteen independent variables, the variables viz. education, paddy cultivation experience, extension participation, information seeking behavior, attitude towards improved farm practices, cosmopoliteness, risk preference, economic motivation, mass media exposure, credit orientation and market orientation had positive and significant relationship with adoption score of the paddy growers. Whereas, caste status and area under paddy crop did not show any relationship with adoption pattern. Further the regression coefficient of all these variables were found significant except caste status and area under paddy crop. It can also be noted from Table 2 that, all the selected variables (Model 1) gave highest coefficient of determination (0.64) which was significant at 0.01 level of probability. This indicated that the selected fourteen factors contributed 64 per cent of variation in adoption pattern. In this model the factors, caste status and area under paddy crop did not contribute significantly in variation of adoption pattern.

For arriving at an optimum model, step down multiple

Table 2. Correlation and regression coefficient of adoption pattern with selected independent variables

Independent variables	(r)	byx	"t"
Education	0.586**	3.492**	7.296
Caste status	0.031^{NS}	0.656	0.321
Area under paddy crop	0.086^{NS}	5.192	0.886
Paddy cultivation experience	0.404**	0.164**	4.460
Extension participation	0.202**	0.218**	2.111
Informaton seeking behaviour	0.521**	1.497**	6.151
Attitude towards SRI tech.	0.343**	1.121**	3.687
Cosmo politeness	0.472**	3.986**	5.416
Risk preference	0.395**	1.181**	4.346
Economic motivation	0.491**	1.561**	5.702
Mass media exposure	0.431**	0.936**	4.843
Credit orientation	0.292**	2.074**	3.101
Market orientation	0.752**	0.546**	11.592

r^2 0.640, r=0.80 F value for r = 11.94 **d.f. (14 and 88)
** Significant at 0.01 level of probability; r=Correlation coefficient; byx =Regression coefficient;
"t" = "t" value calculated

Table 3. Optimum model of multiple regression analysis of five characters with adoption pattern

Independent variables	byx)	SE (b)	"t"
Info. seeking behaviour	23.44**	3.06	7.63
Mass media exposure	0.51**	0.21	2.30
Credit orientation	0.23	0.14	1.63
Market orientation	0.52	0.44	1.13
Knowledge	0.45	0.23	1.86

r^2 0.6277, r=0.7922 F value for r = 32.71 **d.f. (5 and 97)
**Significant at 0.01 level of probability; byx= Regression coefficient

regression analysis were carried out and presented in Table 3. In this model the factors, namely information seeking behaviour, mass media exposure, credit orientation, market orientation and knowledge were included and other factors were deleted from regression analysis on the basis of their low ''t'' value. The coefficient of determination was 0.6277 and significant at 0.01 level of probability. It shows that five factors included in the model produced 62.77 per cent of variation in adoption pattern of the paddy growers.

CONCLUSION

Among the seventeen practices the extent of adoption was higher in case of irrigation management. The lower level of adoption was found in case of field

preparation. Out of fourteen selected factors, five factors viz. information seeking behaviour, mass media exposure, credit orientation, market orientation and knowledge were relatively more important because these five factors produce near about equal percentage of variation (0.6277). Hence, information seeking behaviour, mass media exposure, credit orientation, market orientation and knowledge needs manipulation to improve the level of adoption of paddy growers.

*Ways and means for enhancement of the adoption of S.R.I. technology of paddy among the farmers:*In view of the constraints in adoption of SRI system of paddy cultivation practices, it is necessary to develop an appropriate extension strategy for enhancement of production and productivity in the area. The development departments should follow the extension teaching methods suitable for paddy production technology intensively and more emphasis should be given on complex technologies which need understanding of basic concept of the subject matter and learning skill before their adoption. The development departments must focus on timely availability of inputs in the area. The training programme on the farmers' field should also be organized in slack time only after assessment of training needs, so that farmers may save much of their valuable time and get least interaction with their day-to-day routine works. Some important ways and means has been discussed under for enhancement of the adoption of S.R.I. system of paddy among the farmers are as follows:

i.   Information about the S.R.I. system of paddy cultivation should be provided in right time.

ii. Publicity of information center should be tone to popularize the information dissemination among the respondents; more and more respondents should be motivated to access such service.

iii. Technical and scientific literature should be in local language and optimum quantity.

iv. Interaction among the concern agents and respondents without any hesitation.

v.   Demonstration of SRI system of paddy cultivation should be organized properly.

vi. Increasing the co-operation among public and private agencies.

vii. Monitoring and evaluation should be regularly.

viii. Only trained trainees should impost training.

ix. Right of information should be compulsory.

x.   Electric supply should be maintained.

xi. The knowledge and skill of the respondents should be improved by training.

xii. Location specific problem should be prioritized and technological intervention should be formulated to address such problems to make the communication service more effective in solving the problem of a particular areas.

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