



## Adoption of Integrated Pest Management Practices by Paddy Growers

### KEYWORDS

Paddy, adoption exploratory research design, relational analysis

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**ABSTRACT** The study was conducted in Lakhani, Sakoli and Lakhandur tahsils of Bhandara district in eastern Vidrabha of Maharashtra State. The sample constituted 120 paddy farmers drawn from 12 villages. The exploratory design of social research was used. Finding revealed majority of paddy growers (72.83%) were having medium level of adoption of integrated pest management practices of paddy. Findings with regards to relational analysis revealed that the selected variables age, annual income, area under paddy showed negative and significantly also sources of information positively and significantly correlated with adoption at 0.05 level of probability. Also social participation and economic motivation has positively and significantly correlated with adoption at 0.01 level of probability.

### INTRODUCTION

Rice is the staple food over half of the world population. Rice is normally grown as annual plant, and in tropical areas it can survive as a perennial crop. In Maharashtra about 65 percent population, depends on agriculture-allied activities for their livelihood. The total area in Maharashtra state was 15.18 lakh hectares with annual production 26.96 lakh tons of rice. (Anonymous 2010-2011). The Eastern Vidarbha region consists of Bhandara, Gondia, Gadchiroli and Chandrapur and some part of the Nagpur district is famous for specialized farming with rice as major crop. About 80.0 percent gross cropped area in this region is under rice. In part of Eastern region rice is one of important Kharif crop in Bhandara and Gondia district. In other words, rice is the major source of income of farmers in this district. One of the most important reasons for low level of yields is the incidence of pest and disease. Losses in rice yield the tune 10-25 percent occurs due to the attack of insect pest and disease (Singh 2001). With a view to keep the infestation of pest and disease within normal limits the Integrated Pest Management Practices are recommended for adoption by the rice growers. According to FAO (1972) Integrated Pest Management is a pest management system that in the context of the associated environment of the pest practice, utilizes all suitable techniques and method in compatible manner as possible and maintain the pest population at level below economic threshold level.

### METHODOLOGY

#### Sampling Framework

The study was conducted in Bhandara district in eastern Vidrabha of Maharashtra State. Three panchayatsamities from district were selected on the basis of maximum area under paddy crop. The selected panchyatsamities were Lakhani, Sakoli and Lakhandur. From each panchayat samities four villages selected on the basis of large area under paddy cultivation. The exploratory design of social research was used.

Rogers (1993) defined adoption is the decision to make full use of innovation as the best course of action available. Adoption in the present investigation was operationally defined as degree of actual use of integrated pest management practices by the paddy growers.

It was measured with the help of teacher made scales which

were develop in consultation with scientists, research articles and scientific publications and total 21 statements were framed. It was measured on three-point continuum as full adoption, partial adoption and non-adoption by assigning the score of 2, 1 and 0, respectively. The adoption score were then converted into adoption index by applying following formula.

Actual obtained adoption score

$$\text{Adoption index} = \frac{\text{Actual obtained adoption score}}{\text{Maximum Obtainable adoption score}} \times 100$$

The respondents were then categorized as indicated below.

Sr. No.	Adoption level	Index range
1	Low	up to 33.33
2	Medium	33.34 to 66.66
3	High	Above 66.66

### RESULTS AND DISCUSSION

#### Adoption of IPM Practices

It is evident from Table 1, that the majority of respondents completely adopted some integrated pest management practices like first ploughing the field after harvest of previous crop (79.17%), the varieties were sown (Suraksha and Sakoli-8) (50.83%), sowing the paddy seeds in seedbeds (Jun) (50.83%), apply nitrogen to paddy crop after transplanting 50kg/ha (46.67%), burning of stubbles and bushes in paddy field for killing hibernating stage of insect (45.83%).

However, It is observed that the relatively higher proportion of the respondents partially adopted the integrated pest management practices like destroy the leftover in nursery to reduce the further infestation of disease (47.5%), use brine solution for seed treatment of paddy (46.67%), Butachlor and Pendamithilin weedicides use for control of weeds in paddy (45.83%), 50kg P<sub>2</sub>O<sub>5</sub> apply for 1 ha. area (45%), 45-50 kg of seed sown in 1 ha. (43.34%), 15 days after transplanting first weeding are adopted (43.34%).

It is also found that large majority of respondents not adopted the integrated pest management practices like conserve friendly insect to control pest of paddy viz, Dragonfly Spider

and *Crysopepla cornea* (100%), 10-12 pheromone traps install for 1 ha. area (97.5%), Chloropyriphos use for root dip treatment of rice seedling (92.5%), and 70,000 tricogramachilonis card apply for 1 ha. area (80.83%).

**Table 1: Distribution of the respondents according to practice-wise adoption of integrated pest management practices**

Sr. No.	Practices	Extent of adoption (n=120)					
		Complete adoption		Partial adoption		Non adoption	
		Frequency	Percent-age	Frequency	Percent-age	Frequency	Percent-age
<b>A Cultural practices</b>							
1	Firstly plough the field after harvest of previous crop. (to kill the hibernating insect)	95	79.17	19	15.83	6	5
2	Burning of stubbles and bushes in paddy field (for killing hibernating stage of insect)	55	45.83	46	38.34	19	15.83
3	Varieties are sown. (suraksha and Sokoli- 8)	61	50.83	48	40.00	11	9.17
4	Sown paddy seeds in seedbeds. (June)	61	50.83	49	40.83	10	8.34
5	Quantity of seed sown in 1 ha. area. (45-50 kg)	52	43.33	52	43.34	16	13.33
6	Destroy the leftover in nursery. (to reduce the further infestation of disease)	45	37.5	57	47.50	18	15.00
7	stage paddy seedling transplanted. (20-25 days)	46	38.34	48	40.00	26	21.16
<b>B Mechanical practices</b>							
8	Carry out first weeding after transplanting. (15 days)	32	26.66	52	43.34	36	30.00
9	Removal of the pest infested plant part. (to destroyed the insect pest)	40	33.33	45	37.5	35	29.16
<b>C Chemical practices</b>							
10	Use brine solution for seed treatment of paddy	35	29.16	56	46.67	29	24.17
11	Seed treatment of paddy Thirum 3 g/kg	40	33.33	50	41.67	30	25.00
12	Chemical use for root dip treatment of rice seedling. (Chloropyriphos)	4	3.33	5	4.17	111	92.50
13	weedicide use for control of weeds in paddy. (Butachlor and Pendamethelin)	42	35	55	45.83	23	19.17
14	Apply nitrogen to paddy crop after transplanting. (50kgN/HA)	56	46.67	35	29.17	29	24.16
15	P2O5 apply for 1 ha. (50kg-P2O5/ha)	51	42.5	54	45	15	12.50

16	K2O apply for 1 ha. (50kg K2O5/ha)	47	39.17	49	40.83	24	20.00
17	Insecticides use for control of pests .( paddy stem borer and gall fly) (Phorat 10kg/ha, and Quinolophos G 15kg/ha)	42	35	51	42.5	27	22.50
18	Fungicides use to control the disease (Blast of paddy and Bacterial leaf blight) (Copper oxychloride 25 g + 10 litre water and Carbendazim10g+10 litre water)	46	38.34	51	42.5	23	19.16
<b>D Behavioural and Biological control practices</b>							
19	Pheromone traps you install for 1 ha. area. (10-12 traps/ha)	3	2.5	0	0	117	97.50
20	Conserve friendly insect to control pest of paddy. ( Dragonfly, Spide and Crysopeplacarne)	0	0	0	0	120	100.00
21	Tricogramachilonis card apply for 1 ha. (70,000 cards /ha)	14	11.67	9	7.5	97	80.83

**F- Frequency, %- Percentage**

**Table 2: Distribution of the respondents according to their overall adoption level about integrated pest management practices of paddy**

Sr. No.	Category	Respondents (n=120)	
		Frequency	Percentage
1	Low	20	16.67
2	Medium	91	75.83
3	High	9	7.50
Total		120	100.00

Table 2 reveals that three fourth of the farmers (75.83%) were included under medium category of adoption level of integrated pest management practices, followed by low level of adoption (16.67%) and only 7.50 per cent of the farmers were found in high level of adoption of integrated pest management practices.

It could be inferred from the above findings that three fourth of the respondents had medium level of adoption about integrated pest management practices of paddy. These finding is similar to Ghodichor (2004) and Manjunath (2010)

**Table 3: Coefficient of correlation of characteristics of the respondents with their adoption**

Sr. No.	Variables	"r" values
<b>A) Personal, situational characteristics</b>		
1	Age	-0.1713*
2	Education	0.1197NS
3	Land holding	-0.1424NS
4	Annual income	-0.1726*
5	Area under paddy	-0.1881*
6	Social participation	0.2424**
<b>B) Communication characteristics</b>		
1	Sources of information	0.2027*
<b>C) Psychological characteristics</b>		
1	Risk preference	0.1144NS
2	Economic motivation	0.2762**
3	Knowledge	-0.0639

**\*\* Significant at 0.01 level of probability**

\* Significant at 0.05 level of probability  
NS- Non significant

It could be seen from Table 3 amongst the selected variables age, annual income, area under paddy has negatively and significantly also sources of information positively and significantly correlated with adoption at .05 level of probability. Therefore the null hypothesis was rejected for these characteristics stating that there exists significant relation between these characteristics and social participation and economic motivation has positively and significantly correlated with adoption at 0.01 level of probability Therefore the null hypothesis was rejected adopted by farmers about integrated pest management practices of paddy.

It could be therefore be interpreted that the paddy growers with higher level of education with moderate social participation and medium sources of information and higher level of economic motivation will to develop deeper insight and pos-

essed the adoption in respect to integrated pest management practices of paddy.

### CONCLUSIONS

The findings of the present study with regards to overall adoption of integrated pest management practices of paddy by paddy growers were observe that majority of the paddy growers were having medium level of adoption. This tends to implied that efforts should be done by the extension personnel to aware about the integrated pest management practices of paddy by organization of demonstration, field visit and tours. It was further observed that under cultural practices nearly one fourth of the paddy growers were unaware about the stage of paddy seedling transplanted and was not adopting them. On the basis of this finding, the extension personnel at grass root level should try to provide requisite details about the stage of paddy seedling transplanted and promote their adoption to increase the yield of paddy.

### REFERENCE

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