

# Knowledge and adoption of improved practices in rice cultivation by farmers of Odisha

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## ABSTRACT

*A study was undertaken for assessing the knowledge and adoption level of farmers on various practices in rice cultivation. Information were collected from 208 farmers from two blocks each of Baragarh and Khurda district of Odisha during 2007. It was revealed that majority of the farmers were adopting various improved practices except the use of herbicide in rice cultivation. Since, holding size, possession of implements, annual income and extension contact significantly influenced the knowledge and adoption level, it is suggested for more exposure of the rice growers through extension approaches in enriching their knowledge and experience so that the farmers could be able to adopt all recommended practices for increasing production and productivity.*

**Key words:** rice, cultivation, knowledge, adoption, improved practice

Rice is the most important cereal crop grown in India. Many high yielding varieties have been evolved and successfully cultivated in different agro-climatic zones. Future increase in rice production will have to be achieved from less land with less labour, limited water as well as reducing the consumption of costly inputs like fertilizers and pesticides to maintain natural resource base. Emphasis therefore, has been made for popularizing system of rice intensification (SRI) and hybrid rice cultivation. In spite of all efforts, rice productivity remains constant over the years with marginal deviations in both the sides. Unless the farmers are equipped with knowledge and adopt recommended practices, the targeted level of production may not be achieved Khush(1995). Therefore, an attempt was made to assess the extent of knowledge gained and adoption of improved practices by the rice growers in Odisha. Extent of knowledge and adoption of improved practices in rice, influence of socio-economic variable in knowledge and adoption of various practices.

Gradual replacement of traditional varieties by improved ones have a dynamic effect on growth of output in major rice growing countries. Maraty *et.al.*(1998) stated that majority of the respondents had medium adoption(61,6%) followed by low(21.7%) and

high (16.7%) in rice production practices. Srivastava (2002) stated that lack of knowledge was observed in some of the practices like varieties, seed treatment and plant protection measures which restricted adoption of improved farming.

## MATERIALS AND METHODS

The study was undertaken in coastal Odisha (Khurda district) and western Odisha (Baragarh district) during 2006-07. Balipatna and Baliana block in Khurda district; Attabira and Padampur in Baragarh district were chosen for the purpose of investigation. A schedule was developed considering the important aspects of rice cultivation on the basis of pilot study and focus group discussion which was finalized after pre-testing. Information collected personally from 208 respondents in equal proportion from each block were analyzed and discussed. Knowledge level of respondents on different parameters of rice cultivation and nutrient management was received on scale point of full knowledge, partial knowledge and not knowledge were analysed by assigning score of 3.2 and 1, respectively. Regarding use of some selected practices in rice cultivation, information were collected on the scale point of regularly, occasionally and never.

## RESULTS AND DISCUSSION

It was observed that the respondents of both the district had similar knowledge about different parameters of rice cultivation (Table 1). The respondents of both the

exposure of the farmers in use of manures and fertilizers in rice cultivation.

It was observed that the respondents had good knowledge about the diseases and pests attack

**Table 1. Knowledge level of farmers on different parameters of rice cultivation**

Parameters	Khurda district		Baragarh district		Pooled	
	Mean score	Gap(%)	Mean score	Gap(%)	Mean score	Gap(%)
Transplanting gives better yield	2.35	21.67	2.30	23.33	2.33	22.33
Line sowing controls weeds	2.15	28.33	2.15	28.33	2.15	28.33
Seed treatment essentially required	2.38	20.67	2.32	22.67	2.36	21.33
Seedling treatment minimize pest attack	2.04	32.00	2.06	31.33	2.05	31.67
Less water during tillering	2.42	19.33	2.46	18.0	2.44	18.67
More water during maturity	1.46	51.33	1.58	47.33	1.52	49.33
Drying field 10days before harvesting.	2.38	20.67	2.37	21.00	2.38	20.67

Maximum obtainable score - 3

district had little knowledge about water requirement during maturity and seedling treatment minimizes pest attacks in comparison to other parameters. Though the respondents had better knowledge about other parameters, but the significant gap of around 20% in each of the parameters stated for more exposure of the growers on rice cultivation.

Nutrient management is the determinant of healthy growth, more and effective tillering, panicle size as well as yield for which the farmers should have good knowledge on rice cultivation. Responses revealed that the respondents in both the district had better knowledge in use of nitrogenous and to some extent potassic fertilizers (Table-2). But poor knowledge was

**Table 2. Knowledge about use of manures and fertilizers**

Fertilizer	Khurda		Baragarh		Pooled	
	Mean score	Gap (%)	Mean score	Gap (%)	Mean score	Gap (%)
Manures	1.31	56.33	1.36	54.66	1.33	55.67
Nitrogen	2.38	20.67	2.27	24.33	2.34	22.0
Phosphorous	1.23	59.0	1.33	55.66	1.28	57.33
Potash	2.19	27.0	1.97	34.33	2.10	30.0

Maximum obtainable score - 3

observed in use of manures and phosphoric fertilizers. The pooled data indicating more than 55% knowledge gap in use of manures and 22% gap in nitrogen as well as 30% gap in potassic fertilizer suggested for more

in rice crop (Table 3). The respondents of both the districts indicated that stem borer and brown planthopper were the major insect pests while bacterial blight as well as blast and sheath blight were very

**Table 3. Knowledge about disease and pest attack**

Disease/Pest	Khurda		Baragarh		Pooled	
	Mean score	Rank	Mean score	Rank	Mean score	Rank
Blast	2.08	III	2.11	V	2.09	IV
Sheath blight	2.04	IV	2.0	VI	2.0	VI
Helminthosporium	1.31	VII	1.33	VIII	1.32	VIII
Bacterial blight	2.23	II	2.18	III	2.21	III
Stem borer	2.65	I	2.70	I	2.67	I
Gall midge	1.69	VI	1.70	VII	1.70	VII
Brown planthopper	2.65	I	2.65	II	2.65	II
Gundhi bug	2.00	V	2.15	IV	2.07	V

Maximum obtainable score - 3

serious in rice crop. The respondents also stated that gundhi bug was serious insect pest. The pooled data indicated that stem borer and brown plant hopper attack are very serious in comparison to other pests and diseases.

It was observed that majority of the respondents of both the districts were using recommended practices (Table 4). Majority of the respondents also stated that they preferred to use quality seeds. But herbicides were not used by majority of the respondents. On the whole, majority of the respondents

**Table 4. Extent of use of selected practices in rice**

Disease/Pest	Khurda		Baragarh		Pooled	
	Mean score	Rank	Mean score	Rank	Mean score	Rank
Use of implements	2.38	V	2.36	VI	2.38	VII
Seed treatment	2.42	IV	2.49	III	2.45	V
Use of own seed	1.84	VIII	1.61	IX	1.74	X
Sowing quality seed	2.50	II	2.49	III	2.49	III
Optimum plant population	2.04	VII	2.04	VII	2.04	IX
Herbicide application	1.58	IX	1.88	VIII	1.71	XI
Water management	2.46	III	2.40	V	2.43	VI
Nutrient management	2.73	I	2.80	I	2.76	I
Disease and pest management	2.73	I	2.77	II	2.75	II
Harvesting by machine	2.50	II	2.45	IV	2.48	IV
Control of stored grain pest	2.19	VI	2.04	VII	2.13	VIII
Maximum obtainable score - 3						

practised water, nutrient, disease and pest management along with seed treatment and used small implements as well as machineries in rice cultivation.

Knowledge and adoption of various practices is a function of multiple factors particularly of socio-psychological, economic and communication variables. Zero order coefficient of correlation analysis revealed that age, education and caste had no association with knowledge and adoption of various practices in rice cultivation (Table-5). It is revealed from the study that majority of the farmers of Khurda and Baragarh districts of Odisha are adopting various recommended practices in rice cultivation except herbicide application.

**Table 5. Influence of socio-economic variables on knowledge and adoption of practices in rice.**

Variable	Khurda		Baragarh	
	'r' value	't' value	'r' value	't' value
Age	-0.219	2.226	0.090	0.817
Education	-0.087	0.882	0.308**	2.861
Caste	0.036	0.364	0.040	0.353
Extension contact	0.383**	4.186	0.352**	3.324
Holding size	0.397**	4.214	0.310**	2.881
Possession of farm implements	0.345**	3.667	0.448**	4.390
Annual income	0.648**	8.589	0.452**	4.470

\*\* Significant at 0.01 level.

But, they were not having good knowledge about various aspects of rice cultivation. Personal variables like holding size, possession of various farm implements; annual income and contact with extension agencies greatly influenced their knowledge and adoption level. The study therefore, suggested for more exposure of the farmers on various developments of in rice cultivation through extension approaches so that the farmers will develop competency in adopting various recommended practices in rice cultivation.

## REFERENCE

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