# Adoption of Improved Paddy Cultivation Practices among the Farmers in Durg District, Chhattisgarh, India

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*Authors' contributions*

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

*Original Research Article*

## ABSTRACT

The present study was conducted in Durg district of Chhattisgarh state during the years 2022–23 to study the farmers' adoption of improved paddy cultivation practices. One hundred twenty respondents were randomly selected based on the criteria that no previous study had been undertaken. Farmers were personally interviewed using a pre-tested interview schedule. The majority of respondents had a high (15.83%), medium (53.34%) and low (30.83%) adoption level, hence, there is a necessity to provide training programs through Krishi Vigyan Kendras (KVKs) and the Agricultural Departments to improve paddy cultivation methods so that the farmers can enhance their adoption levels of paddy production technology. The independent variables, namely age, education, annual income, farming experience, social participation, extension contacts, land holding, economic motivation and risk orientation were positively and significantly correlated with the adoption behaviour of paddy growers towards improved paddy production practices.

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## 1. INTRODUCTION

"Rice *(Oryza sativa)* is the most sustainable food, accounting for more than half of the world's population. The importance of rice as a staple food stems from the recognition that rice-based industries are essential for food security, poverty reduction, and health improvement. Rice is grown during summers and winters in India and other countries. Rice is the most important food in terms of human nutrition and caloric intake, accounting for more than one-fifth of all calories consumed by people worldwide. Rice is a monocotyledonous plant usually grown annually, but it can also survive as a perennial plant in tropical regions.World cultivation reaches 164.19 million hectares and annual production reaches approximately 505.4 million tons. Asia is the world's largest continent and produces and consumes more than 90% of the world's rice" [1].

"Chhattisgarh, one of India's largest paddy producer states, has ideal climate conditions and soil for developing paddy. The central plains of Chhattisgarh are known as Rice Bowl of Central India. With an average yearly precipitation of around 1,207 mm, the state's entire cultivated zone (all crops) is 47.75 lakh hectares, which is 34 percent of the state's total geographical area" [2].

The present investigation was subsequently planned to consider the farmers' adoption behavior towards improved paddy production practices. Such an examination will be valuable for agricultural colleges, research stations, state government, marketing departments, and district administration, as well as for better production and creating a conducive environment for paddy cultivation within Chhattisgarh.

## 2. METHODOLOGY

The research methodology must have a theoretical foundation for its success. The present study was conducted in Durg district of Chhattisgarh state from 2022–23. There are three blocks in the Durg district, and Durg and Patan blocks were chosen out of those. A total of 20 villages were randomly chosen from these two blocks for primary data collection. A total of 120 respondents were selected randomly from the selected villages. A pretested interview schedule was used for the collection of data. The collected data were classified, tabulated and analyzed in light of the objectives. Descriptive research design was followed and the variables were measured by utilizing appropriate scales and methods adopted by different researchers in the past with few adjustments. The statistical tests used in the present study for analysis of data were Frequency, Percentage, Mean, Standard deviation and Coefficient of correlation.

### 2.1 Adoption

Adoption is a decision to make full use of an innovation as the best course of action available.

In this study, the adoption of different paddy cultivation practices were listed. A total of 8 statements from land preparation up to harvesting were recorded by consulting with experts. The responses were measured by giving 3–1 scores for fully adopted, partially adopted and not adopted separately for each practice. Hence, the maximum possible score of the respondent that could be ideal was 24 and the least score was 8. Based on respondents for each statement, frequency and percentage were calculated to clarify things about adoption. The overall adoption of the respondents was grouped into three categories: low, medium, and high, using mean and standard deviation as a degree of the check. The results were explained in frequency and percentage. According to these data, adoption levels such as low, medium and high were described.

## 3. RESULTS AND DISCUSSION

The results of the present research study have been presented based on the analysis of data using suitable statistical tools and techniques such as Frequency, Percentage, Mean, Standard deviation and Coefficient of correlation and concerning the specific objective of the research study.

The data presented in Table1 indicated that majority (60.83%) of the rice cultivators belonged to middle age group, followed by young and old age (21.67%) and (17.50%) groups, respectively. The main possible reason is that the major population is actively engaged in paddy cultivation practices. Similar findings were also reported by Anil et al., [1]. It was observed that 30.83 percent of the respondents were illiterate(34.17%) followed by primary school (29.17%). 23.34% were educated up to

**Table 1. Distribution of respondents according to their socio-economic profile**

| Category | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| Young age(<35 years) | 26 | 21.67 |
| Middle age(36-63 years) | 73 | 60.83 |
| Old age(>64 years) | 21 | 17.50 |
| **Education** | | |
| Illiterate | 41 | 34.17 |
| Primary | 35 | 29.17 |
| Secondary | 28 | 23.34 |
| High school | 8 | 6.67 |
| Above high school | 5 | 4.17 |
| Graduate and above | 3 | 2.50 |
| **Annual income** | | |
| Low (<75,000 rs) | 29 | 24.16 |
| Medium(75,001 – 2,00,000rs) | 59 | 49.18 |
| High (> 2,00,000 rs ) | 32 | 26.66 |
| **Land holding** | | |
| Marginal ( <1 ha ) | 27 | 22.50 |
| Small (1-2 ha) | 39 | 32.50 |
| Medium (2-4 ha) | 35 | 29.17 |
| Semi- medium (4-10 ha) | 11 | 9.17 |
| Large (> 10 ha) | 8 | 6.66 |
| **Farming experience** | | |
| Low (<10 years) | 11 | 9.17 |
| Medium (10-20 years) | 75 | 62.50 |
| High (> 20years) | 34 | 28.33 |
| **Social participation** | | |
| Non member | 40 | 33.34 |
| Member of one organization | 61 | 50.83 |
| Member of two  organization | 13 | 10.83 |
| Member of more than two organization | 6 | 5.00 |
| **Extension contact** | | |
| Low | 44 | 36.67 |
| Medium | 64 | 53.33 |
| High | 12 | 10.00 |
| **Economic motivation** | | |
| Low | 20 | 16.67 |
| Medium | 54 | 45.00 |
| High | 46 | 38.33 |
| **Risk orientation** | | |
| Low | 44 | 36.67 |
| Medium | 54 | 45.00 |
| High | 22 | 18.33 |

secondary school, 6.67% went to high school, 4.17% were educated above high school and 2.50% who were graduate and above. Similar finding were also also reported by Prajapati et al., [3]. It was reported that the majority (49.18%) of respondents were found to be in the medium income earning group, with annual earnings ranging between 75,001- 2,00,000 rupees, it was followed by 26.66% of the respondents who reported a high income level of above 2, 00,000 rupees. The low earnings below 75,000 rupees was observed among 24.16% of the respondents. Similar findings was also reported by Sumon et al., [4]. It was found that majority of the respondents belonged to the small landholding group, which accounted for 32.50% of the total sample population. Furthermore a significant proportion of the respondents, 29.17%, belonged to the medium landholding group, 22.50% of the population belonged to the

marginal landholding group, while 9.17% belonged to the semi-medium landholding group. Only a small proportion, i.e. 6.66% of the respondents reported owning more than 10 hectares. Similar findings were also reported by Channamallikarjuna et al., [5]. It was observed that majority of the respondents, specifically 62.50% had medium farming experience ranging between 10-20 years. The second highest category was observed among 28.33% of the respondents who reported a high farming experience of more than 20 years. The low experience below 10 years was observed among 9.17% of the respondents. Similar findings was also reported by Anil et al., [1]. It was found that a significant majority of the respondents were members of any one of the organization which constituted about 50.83% of the sample population, it is followed by non-members population which was 33.34% of the population and members of any one of the organization of about 10.83% of the population, the least were the members of more than two organizations with only 5.00% of the population. Similar findings was also reported by Patel et al., [6]. It was found that majority of the respondents (53.33%) had medium level of extension contact, followed by low level (36.67%) and 10.00% of them had high level of extension contact. Similar findings was also reported by Dub et al., [7]. It was found that the majority (45.00%) of respondents had a medium level of economic motivation, followed by high level of economic motivation (38.33%) and 16.67% of them had low level of economic motivation. Similar findings was also reported by Khating et al., [8]. It was observed that majority of the respondents (45.00%) had medium level of extension contact, followed by low level (36.67%) and 18.33% of them had high level of extension contact. Similar findings was also reported by Khating et al., [8].

Table 2 represents the Distribution of respondents according to their level of adoption. The different levels are divided as fully adopted, partially adopted and not adopted according to the individual respondent, the results are discussed practices wise in the following paragraphs. It was found that majority (48.34%) of the respondents had not adopted the crop rotation practice, it was followed by 28.33% who had fully adopted the practice, and 23.33% of the respondents who had partially adopted the practice. It was observed that majority (37.50%) of the respondents had not adopted the integrated farming system practices, it was followed by 35.00% who had partially adopted

the practice, and 27.50% of the respondents who had fully adopted the practice. It was reported that majority (60.83%) of the respondents had not adopted the precision agriculture practice, it was followed by 21.67% who had fully adopted the practice, and 17.50% of the respondents who had partially adopted the practice. It was found that majority (44.17%) of the respondents had not adopted the SRI method of transplanting, it was followed by 28.33% who had fully adopted the practice, and 27.50% of the respondents who had partially adopted the practice. It was observed that majority (44.17%) of the respondents had partially adopted the bio-fertilizers application practice, it was followed by 33.33% who had not adopted the practice, and 22.50% of the respondents who had fully adopted the practice. It was reported that majority (40.83%) of the respondents had not adopted the bio-pesticides application practice, it was followed by 40.00% who had partially adopted the practice, and 19.17% of the respondents who had fully adopted the practice. It was found that majority (39.17%) of the respondents had not adopted the use of machine thresher, it was followed by 35.00% who had partially adopted the practice, and 25.83% of the respondents who had fully adopted the practice. It was observed that majority (54.17%) of the respondents had not adopted the parboiling method of post-harvest management practice, it was followed by 30.83% who had partially adopted the practice, and 15.00% of the respondents who had fully adopted the practice.

Table 3 clearly represents the overall Distribution of the respondents according to their level of adoption. The majority of the respondents had a medium level of adoption, i.e., 53.34%, followed by 30.83% of the respondents who had a low level of adoption, and finally 15.83% of the respondents who had a high level of adoption. This findings were similar with Pujari et al., [9].

Table 4 shows that the independent variables, namely age, education, annual income, farming experience, social participation, extension contacts and risk orientation were positively and significantly correlated with the adoption behaviour of paddy growers towards improved paddy production practices at 0.01% probability, while the independent variables, land holding and economic motivation were significantly correlated at 0.05% probability. Therefore, the null hypothesis for these variables was rejected. This findings were similar with Patel et al., [6].

**Table 2. Activity-wise Distribution of respondents according to their level of adoption**

| S. No. | Particulars | FA | PA | NA |
|---|---|---|---|---|
| | | F (%) | F (%) | F (%) |
| **Farming Practices** | | | | |
| 1. | Crop Rotation Method | 34 (28.33) | 28 (23.33) | 58 (48.34) |
| 2. | Integrated Farming System | 33(27.50) | 42(35.00) | 45(37.50) |
| **New Technology** | | | | |
| 3. | Precision Agriculture | 26(21.67) | 21(17.50) | 73(60.83) |
| 4. | SRI Method of Planting | 34(28.33) | 33(27.50) | 53(44.17) |
| **Management Practices** | | | | |
| 5. | Bio-fertilizers | 27(22.50) | 53(44.17) | 40(33.33) |
| 6. | Bio-pesticides | 23(19.17) | 48(40.00) | 49(40.83) |
| **Post-Harvest Technology** | | | | |
| 7. | Machine Thresher | 31(25.83) | 42(35.00) | 47(39.17) |
| 8. | Parboiling Method | 18(15.00) | 37(30.83) | 65(54.17) |

*FA= Fully Adopted, PA= Partially Adopted, NA= Not Adopted, F= Frequency, % = Percent*

**Table 3. Overall Distribution of respondents according to their level of adoption**

| S. No. | Category | Frequency | Percentage |
|---|---|---|---|
| 1. | Low | 37 | 30.83 |
| 2. | Medium | 64 | 53.34 |
| 3. | High | 19 | 15.83 |
| | **Total** | **120** | **100.00** |

**Table 4. Association between selected independent variables with adoption level of respondents**

| S. No. | Variables | Correlation coefficient(r) |
|---|---|---|
| 1. | Age | 0.948* |
| 2. | Education | 0.989* |
| 3. | Annual income | 0.877* |
| 4. | Land holding | 0.552** |
| 5. | Farming experience | 0.717* |
| 6. | Social participation | 0.993* |
| 7. | Extension contact | 0.969* |
| 8. | Economic motivation | 0.335** |
| 9. | Risk orientation | 0.946* |

*\*=Correlation is significant at the 0.01 level of probability*
*\*\*= Correlation is significant at the 0.05 level of probability*
*NS=Non-significant*

## 4. SUMMARY AND CONCLUSION

It was concluded that the socio-economic profile of the sample group was medium level. It was concluded that the farmers adopted improved paddy production practices at a medium level. The majority of the farmers had partially adopted most of the practices. Hence, universities, agricultural departments, KVKs, and other institutes are responsible for motivating the farmers to adopt the cultivation practices better, leading to a better income and, in turn, an improved standard of living for the paddy farmers. The independent variables, namely age, education, annual income, farming experience, social participation, extension contacts, land holding, economic motivation, and risk orientation, were positively and significantly correlated with the adoption behaviour of paddy growers towards improved paddy production practices.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Anil Shubham, Meshram Rajeshwar, Sunildutt Jakkawad, Giakwad Ayodhya. Knowledge level of recommended rice cultivation practices among the cultivators. The Pharma Innovation Journal. 2023; 12(5):3982-3987.
2. Gupta Swaminath. Chhattishgarh: Rice bowl of central India; 2009.
   Available:https://krepl.in/chhattishgarh-rice-bowl-of-central-india/
3. Prajapati Mona, Singh KY, Patel Pushpak, Jay Prakash Bishi. Association of knowledge level with socio-economic profile of women (onion grower) Rewa district of Madhya Pradesh. The Pharma Innovation Journal. 2023;SP-12(8):657-659.
4. Sumon SMM, Shovon SC, Mahjuba A, Mehraj H, Uddin AFM jamal adoption of improved rice cultivation practices by farmers in relation to their characteristics. Int. J. Bus. Soc. Sci. Res. 2014;2(1):13-19.
5. Channamallikarjuna D, Sadaqath syed knowledge and adoption of SRI method paddy growers. Agric. Update. 2017;12(2):277-280.
   DOI: 10.15740/HAS/AU/12.2/277-280
6. Patel Rambha, Mazhar H, Syed Bose, Kumar Dipak. Adoption of integrated disease management practices of rice crop in Lailunga block of Raigarh District (Chhattisgarh). Journal of Pharmacognosy and Phytochemistry. 2017;6(4):1782-1784.
7. Dub Rajvik, Ahmad Jahanara. Knowledge of Farmers towards Improved Wheat Production Technology in Kathua District of Jammu and Kashmir. International Journal for Research Trends and Innovation. 2023;8(4).
   ISSN: 2456-3315
8. Khating MS, Kapse SP, Kausadikar KH. Correlates of knowledge and adoption of recommended cultivation practices of onion among the growers. Int. J. Curr. Microbiol. App. Sci. 2018;Special Issue-6:2487-2491.
9. Pujari Rekha, Dipti Chandhana, Bhumireddy, Mondal Sagar. Adoption of package of practices of paddy cultivation by the farmers of Odisha under BGREI programme. Biological Forum – An International Journal. 2022;14(2):552-554.

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