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RESEARCH ARTICLE :

Association between selected personal variables of the respondents with their level of adoption of improved rice production technology by the farmers in Dungarpur district of Rajasthan

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SUMMARY : India is the second leading producer of rice in the entire world, preceded by China. Rice remains a staple food for the majority of the world's population. More than two-thirds of the world relies on the nutritional benefits of rice. Rice is naturally fat, cholesterol and sodium free. It is a complex carbohydrate containing only 103 calories per one half- cup serving. Rice is primarily a high energy or high calorie food. It contains less protein than wheat. The protein content of rice is usually 6 to 7 per cent. In Rajasthan rice is grown on an area of 131126 Lakh hectares with a production of 265545 lakh tones (Anonymous, 2010-11). The major rice growing districts in Rajasthan are Banswara, Dungarpur, Kota, Bundi, Sriganganagar and Hanumangarh. The present study was conducted in Dungarpur district of Southern Rajasthan. There are total four tehsils in Dungarpur district of Rajasthan, out of which two tehsil namely Simalwara and Dungarpur have been selected on the basis of maximum area under cultivation of rice. Five villages from each identified tehsil were selected on the basis of maximum area under rice cultivation. Thus, in all 10 villages were selected for present investigation. For selection of respondents total 120 rice growers (60 small and 60 marginal farmers) were selected on the basis of random sampling method from the identified villages for the present study. It was found that personal characteristics *viz.*, age, education, family income, size of land holding, extension contacts, cosmopolitan outlook and economic motivation were not significantly associated with adoption of improved rice production technology. It means that there was no effect of these personal variables on adoption of improved rice production technology.

KEY WORDS :
Improved rice production, Economic motivation, Cosmopolitan outlook

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BACKGROUND AND OBJECTIVES

India is the second leading producer of rice in the entire world, preceded only by China. Rice is grown extensively in India in about 42.56 m ha area with an annual production of 95.33 mt having an average yield

of 2240 kg per hectare (Anonymous, 2010-11). Annual consumption is around 85 million tonnes. In India, Rice is cultivated in both seasons - winter and summer. West Bengal, Uttar Pradesh, Andhra Pradesh, Punjab, Tamil Nadu, Bihar, Orissa, Assam, Karnataka and Haryana are the major rice producing states. More than 50 per cent of total production comes from the first four states. Food Corporation of India purchases around 20 to 25 per cent of the total rice production in the country both under levy from the rice mills and directly in the form of paddy from the farmers at Minimum Support Prices announced by the Government. More than 4000 varieties of rice are grown in India.

In Rajasthan rice is grown in an area of 131126 lakh hectares with a production of 265545 lakh tonnes (Anonymous, 2010-11). The major rice growing districts are Banswara, Dungarpur, Kota, Bundi, Ganganagar and Hanumangarh. Dungarpur district contributes maximum production in the southern Rajasthan, while the productivity is far below (660 kg/ha) as against the state average of 2025 kg/ha (Vital statistics, 2010-11). This is due to cultivation of poor yielding local genotypes under rainfed and irrigated conditions. The soil and climatic conditions of Dungarpur district is suitable for rice cultivation. The improved cultivation practices have been defused among the farmers by scientific community in the reason but level of adoption of rice technology by the farmers is not yet known. Likewise the constraints that hinders the adoption needs to be known by research and extension systems for its improvements. The production of rice can be increased through timely adoption of recommended improved rice production technology by the farmers.

Considering these facts in view, the present study entitled "Association between selected personal variables of the respondents with their level of adoption of improved rice production technology by the farmers in Dungarpur district of Rajasthan" was taken up with following specific objectives:

– To study the association between selected personal variables of farmers towards rice cultivation technology.

– To see the significant difference between small and marginal farmers with respect to association between selected personal variables of improved rice cultivation technology.

RESOURCES AND METHODS

The present study was conducted in Dungarpur district of Southern Rajasthan. There are total four tehsils in Dungarpur district of Rajasthan, out of which two tehsil namely Simalwara and Dungarpur have been selected on the basis of maximum area under cultivation of rice. A complete list of all the major rice growing villages was prepared in consultation with the personnel of revenue and agriculture department from the identified tehsils. From the list so prepared, five villages from each identified tehsil were selected on the basis of maximum area under rice cultivation. Thus, in all 10 villages were selected for present investigation. For selection of respondents, a comprehensive list of rice growers was prepared with the help of village Patwari and agricultural supervisor of respective village and was categorized into small and marginal farmers category. Total 120 rice growers (60 small and 60 marginal farmers) were selected on the basis of random sampling method from the identified villages for the present study.

OBSERVATIONS AND ANALYSIS

This section of the chapter deals with the association between the level of adoption and selected personal variables *viz.*, age, education, size of land holding, income level, extension contacts, cosmopolitan outlook and economic motivation of rice growers. To find out the association between these personal characteristics and level of adoption, chi-square test was applied. The results regarding association have been presented in subsequent tables.

Association between age and level of adoption of the respondents:

Hypotheses:

NH_{04} : There is no association between age of respondents and adoption of improved rice production technology.

$RH_{4:}$ There is an association between age of respondents and adoption of improved rice production technology.

An analysis of Table 1 shows that out of total 29 respondents in age below 33 years, 9, 10 and 10 were having low, medium and high level of adoption about improved rice cultivation technology, respectively. In the age of 34 to 42 years group, 33.34, 27.28 and 39.40 per

cent farmers had low, medium and high level of adoption, respectively. While, in the age group of above 42 years, 22, 9 and 27 respondents possessed low, medium and high level of adoption towards improved practices of rice, respectively.

Table 1 further shows that the calculated chi- square value (4.31) was less than tabulated value at 5 per cent level of significance and at 4 d.f., therefore, the null hypothesis (NH_{04}) was accepted. This non- significant value support the preposition that there is no association between age of respondents and adoption of improved rice production technology. It means age did not play a significant role in adoption level of respondents.

The present findings are in contradictory with the findings of Sharma (2003) who reported that there was a positive and significant relationship between the age of respondents and adoption of improved cultivation technology of wheat.

Association between education and level of adoption of the respondents:

Hypotheses:

NH_{05} : There is no association between education of respondents and adoption level of improved rice production technology.

RH_5 : There is an association between education of respondents and adoption level of improved rice production technology.

An analysis of Table 2 shows that out of total 48 rice growers in illiterate group, 19, 10 and 19 were having low, medium and high level of adoption about improved rice cultivation technology, respectively. In the group of upto primary, 26.82, 19.52 and 53.66 per cent farmers had low, medium and high level of adoption, respectively. While, in the group of above primary level of education, 12, 10 and 09 respondents possessed low, medium and high level of adoption towards improved practices of rice, respectively.

Table further shows that the calculated chi- square value (5.28) was less than tabulated value at 5 per cent level of significance and at 4 d. f., therefore, the null hypothesis (NH_{05}) was accepted. This non- significant value support the preposition that there is no association between education of respondents and adoption of improved rice production technology. It means education did not play a significant role in adoption level of

Table 1 : Association between age and level of adoption of improved rice production technology **(n=120)**

Age category	Adoption level			Total	Chi-square value
	Low	Medium	High		
Upto 33 years	9 (31.04)[1] (21.43)[2]	10 (34.48) (35.71)	10 (34.48) (20.00)	29 (100) (24.17)	4.31 NS
34 to 42 years	11 (33.34) (26.19)	9 (27.28) (32.14)	13 (39.40) (26.00)	33 (100) (27.50)	
Above 42 years	22 (37.94) (52.38)	9 (15.52) (32.14)	27 (46.55) (54.00)	58 (100) (48.33)	
Total	42 (35.00) (100)	28(23.34) (100)	50 (41.66) (100)	120 (100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

Table 2 : Association between education and level of adoption of improved rice production technology **(n=120)**

Education level	Adoption level			Total	Chi-square value
	Low	Medium	High		
Illiterate	19 (39.58) (45.24)	10 (20.84) (35.71)	19 (39.58) (38.00)	48 (100) (40.00)	5.28 NS
Upto primary	11 (26.82) (26.20)	8 (19.52) (28.58)	22 (53.66) (44.00)	41(100) (34.16)	
Above primary	12 (38.70) (28.58)	10 (32.26) (35.71)	9 (29.04) (18.00)	31(100) (25.84)	
Total	42 (35.00) (100)	28 (23.34) (100)	50 (41.66) (100)	120 (100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

Table 3 : Association between the income and level of adoption of the improved rice production technology **(n=120)**

Income level	Adoption level			Total	Chi-square Value
	Low	Medium	High		
Low (Upto Rs. 25000/ year)	11 (35.48)[1] (26.20)[2]	12(38.71) (42.86)	8 (25.81) (16.00)	31(100) (25.84)	9.01 NS
Medium (Rs.25000 to 50000/ year)	25 (39.68) (59.53)	10(15.88) (35.72)	28(44.44) (56.00)	63(100) (52.50)	
High (Above Rs.50000/ year)	6 (23.08) (14.28)	6 (23.08) (21.42)	14(53.84) (28.00)	26(100) (21.66)	
Total	42 (35.00) (100)	28(23.34) (100)	50(41.66) (100)	120(100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

respondents.

The results are contradictory with the findings of Shriram (1999) who observed that education of the farmers had significant association with adoption of improved technology of wheat cultivation.

Association between income and level of adoption of the respondents:

Hypotheses:

NH_{06} : There is no association between income of respondents and adoption of improved rice production technology.

RH_6 : There is an association between income of respondents and adoption of improved rice production technology.

It can be observed from the Table 3 that out of 31 rice farmers from low income group, 11 (35.48 %), 12 (38.71 %) and 08 (25.81 %) respondents were found in low, medium and high adoption level, respectively. Whereas, in the medium income group, 28, 10 and 25 farmers possessed high, medium and low adoption level, respectively. In case of high income group, 23.08, 23.08 and 53.84 per cent rice growers had medium, low and high adoption level, respectively about improved rice production technology.

Further analysis of data presented in Table 3 indicates that the calculated chi-square value (9.01) is less than its tabulated value at 4 degree of freedom at 5 per cent level of significance. Therefore, null hypothesis (NH_{06}) "there is no association between income of rice farmers and adoption of improved rice production technology" was accepted and alternative hypothesis (RH_6) was rejected. It means that there is no association between income level and adoption of improved rice production technology.

Similar findings have been reported by Sharma (2008) who revealed that income level of farmers had no significant association with adoption of soybean production technology.

Association between size of land holding and level of adoption of the respondents:

Hypotheses:

NH_{07} : There is no association between size of land holding of respondents and adoption of improved rice production technology.

RH_7 : There is an association between size of land holding of respondents and adoption of improved rice production technology.

Table 4 reveals that out of total 60 respondents in the small farmers group (1 to 2 ha), 40.00, 16.66 and 43.34 per cent respondents were to be noted in low, medium and high level of adoption group, respectively. In the marginal farmers group (less than 1 ha), 18 respondents possessed low level of adoption, 18 and 24 respondents had medium and high level of adoption about improved rice production technology, respectively. In the large farmers were not found in the study area.

Analysis of Table 4 further shows that the calculated of chi-square value (3.22) was less than its tabulated value at 4 degree of freedom and 5 per cent level of significance. Therefore, null hypothesis (NH_{07}) "there is no association between land holding of rice farmers and adoption of improved rice production technology" was accepted and alternative hypothesis (RH_7) was rejected. It means that there is no association between size of land holding and adoption of improved rice cultivation technology.

The present findings are in contradictory with the findings of Shriram (1999) who found that size of land holding of the farmers had significant association with adoption of improved technology of wheat cultivation.

Association between extension contacts and level of adoption of the respondents:

Hypotheses:

NH_{08}: There is no association between extension contacts and adoption of improved rice production technology.

RH_8 : There is an association between extension

Table 4 : Association between the size of land holding and level of adoption of the improved rice production technology (n=120)

Land holding	Adoption level			Total	Chi-square value
	Low	Medium	High		
Small farmers (Upto 1- 2 ha)	24 (40.00)[1] (57.14)[2]	10(16.66) (35.72)	26(43.34) (52.00)	60(100) (50.00)	
Marginal farmers (Less than 1 ha)	18 (30.00) (42.86)	18(30.00) (64.28)	24(40.00) (48.00)	60(100) (50.00)	3.22 NS
Total	42 (35.00) (100)	28(23.34) (100)	50(41.66) (100)	120(100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

contacts and adoption of improved rice production technology.

The data incorporated in Table 5 shows that out of 44 rice growers from low extension contacts group, 10 (22.73 %) had medium level of adoption, while 12 (27.27 %) and 22 (50.00%) rice farmers were found in low and high level of adoption group, respectively. In medium extension contacts group, 18, 12 and 20 respondents possessed high, medium and low level of adoption, respectively. In case of high extension contacts group, 38.46, 23.08 and 38.46 per cent rice growers were reported in low, medium and high adoption level, respectively about improved rice production technology.

Further analysis of Table 5 shows that the calculated chi-square value (2.39) is less than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, null hypothesis (NH_{08}) "there is no association between extension contact of rice farmers and adoption of rice production technology" was accepted and alternative hypothesis (RH_8) was rejected. It means that there is no association between extension contacts and adoption of improved rice production technology.

The present findings are in contradictory with the findings of Nandwana (2004) who found that there was significant association between extension contacts with adoption of improved soybean cultivation technology.

Association between cosmopolitan outlook and adoption of the respondents:

Hypotheses:

NH_{09} : There is no association between cosmopolitan outlook and adoption of improved rice production technology.

RH_9 : There is an association between cosmopolitan outlook and adoption of improved rice production technology.

Data presented in Table 6 reveals that out of total 23 rice growers from the low cosmopolitan group, 04 (17.40 %) had medium level of adoption, while, 11 (47.82 %) had high level of adoption and 8 (34.78 %) respondents had low level of adoption, respectively. In the middle cosmopolitan group, 23, 14 and 17 rice farmers were found in low, medium and high level of adoption, respectively. In the case of high cosmopolitan group, 23.25, 25.58 and 51.17 per cent respondents possessed medium, low and high level of adoption about improved rice

Table 5 : Association between extension contacts and level of adoption of the improved rice production technology **(n=120)**

Level of extension contacts	Adoption level			Total	Chi-square value
	Low	Medium	High		
Low (< 3 score)	12(27.27)[1] (28.58)[2]	10 (22.73) (35.72)	22 (50.00) (44.00)	44 (100) (36.66)	2.39[NS]
Medium (3 to 5 score)	20(40.00) (47.62)	12 (24.00) (24.00)	18 (36.00) (36.00)	50 (100) (41.67)	
High (> 5 score)	10(38.46) (23.80)	6 (23.08) (21.43)	10 (38.46) (20.00)	26 (100) (21.67)	
Total	42(35.00) (100)	28 (23.34) (100)	50 (41.66) (100)	120 (100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

Table 6 : Association between cosmopolitan outlook and adoption of rice production technology **(n=120)**

Cosmopolitan outlook	Adoption level			Total	Chi-square value
	Low	Medium	High		
Low (< 6 score)	8 (34.78)[1] (19.04)[2]	4 (17.40) (14.28)	11(47.82) (22.00)	23 (100)(19.16)	4.96 [NS]
Medium (6-10 score)	23 (42.60) (54.76)	14 (25.92) (50.00)	17(31.48) (34.00)	54 (100) (45.00)	
High (>10 score)	11 (25.58) (26.20)	10 (23.25) (35.72)	22(51.17) (44.00)	43 (100) (35.84)	
Total	42 (35.00) (100)	28 (23.34) (100)	50(41.66) (100)	120(100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

Table 7 : Association between economic motivation and level of adoption of improved rice production technology **(n=120)**

Economic motivation	Adoption level			Total	Chi-square value
	Low	Medium	High		
Low (<25 score)	8 (30.75)[1] (19.04)[2]	6 (23.07) (21.42)	12 (46.15) (24.00)	26 (100) (21.67)	8.10 [NS]
Medium (25-28 score)	22 (43.13) (52.38)	15 (29.42) (53.58)	14 (27.45) (28.00)	51 (100) (42.50)	
High (>28 score)	12 (27.90) (28.57)	7 (16.28) (25.00)	24 (55.82) (48.00)	43 (100) (35.83)	
Total	42 (35.00) (100)	28 (23.34) (100)	50 (41.66) (100)	120 (100) (100)	

NS = Non-significant 1 = Percentage of row 2 = Percentage of column

production technology, respectively.

Further analysis of Table 6 shows that the calculated chi-square value (4.96) is less than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, Null hypothesis (NH_{09}) "there is no association between cosmopolitan outlook of rice farmers and adoption of improved rice cultivation technology" was accepted and alternative hypothesis (RH_9) was rejected. It means that there is no association between cosmopolitan outlook and adoption of improved rice production technology. Similar findings have been reported by Sharma (2008).

Association between economic motivation and level of adoption of the respondents:

Hypotheses:

NH_{010} : There is no association between economic motivation and adoption of improved rice production technology.

RH_{10} : There is an association between economic motivation and adoption of improved rice production technology.

Table 7 shows that out of total 120 respondents, 26 rice growers who had low economic motivation level, 6 (23.07%) had medium level of adoption, while 12 (46.15%) and 8 (30.75%) rice growers had high and low level of adoption, respectively. In the medium motivation group, 22, 15 and 14 farmers possessed low, medium and high level of adoption, respectively. In case of high economic motivation category of rice farmers, 27.90, 16.28 and 55.82 per cent rice growers had their adoption level low, medium and high, respectively about improved rice production technology.

Further analysis of data incorporated in Table 7 clearly indicates that the calculated chi-square value (8.10) was less than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, Null hypothesis (NH_{010}) "there is no association between economic motivation of rice farmers and adoption of improved rice production technology" was accepted and alternative hypothesis (RH_{10}) was rejected. This reveals that there was no association between economic motivation and adoption of improved rice production technology

The present findings are reported by the findings of Deshmukh *et al*. (1997) who found that the economic motivation of respondents was not significantly correlated with adoption of recommended package of practices for summer groundnut.

Conclusion:

It was found that personal characteristics *viz.*, age, education, family income, size of land holding, extension contacts, cosmopolitan outlook and economic motivation were not significantly associated with adoption of improved rice production technology. It means that there was no effect of these personal variables on adoption of improved rice production technology.

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