Agriculture Update
Volume 7 | Issue 3 & 4 | August & November, 2012 | 436-440

Research Article

Adoption of organic farming practices in paddy cultivation by tribal farmers of Chhattisgarh

■ **S.K. VERMA, R.S. SENGAR, M.K. CHATURVEDI AND LEKH RAM VERMA**

ARTICLE CHRONICLE :
Received:
08.09.2012;
Revised :
08.10.2012;
Accepted:
05.11.2012

SUMMARY : The higher production target of farmers has led to higher consumption of inorganic inputs like chemical fertilizers, pesticides, fungicides, etc., which results several unwanted problems for the humans. Organic farming plays an important role in Indian agriculture. The study was conducted in Kanker district of Chhattisgarh state during 2008-09. Kanker district has 7 blocks, out of which, 3 blocks namely Kanker, Narharpur, Antagarh, were selected purposively because the majority of tribal farmers are practicing organic farming in these blocks. From each block 40 tribal farmers were randomly selected hence, a total 120 respondents were interviewed personally through well structured interview schedule. Data were analyzed through using appropriate statistical methods *viz*., average, mean, frequency, percentage, standard deviation, correlation and multiple regression etc. Majority (55.00%) respondents had medium level of overall adoption, under the practices wise adoption, maximum 25.00 per cent of the respondents had high level of adoption of selection of land and land preparation, majority (90.00%) had medium level of adopted recommended seed sowing method and seedling preparation, maximum (41.67%) number of the respondents had low level of adoption regarding storage practices of paddy.

How to cite this article : Verma, S.K., Sengar, R.S., Chaturvedi, M.K. and Verma, Lekh Ram (2012). Adoption of organic farming practices in paddy cultivation by tribal farmers of Chhattisgarh. *Agric. Update*, **7**(3&4): 436-440.

KEY WORDS:
Organic farming, Adoption, Tribal farmers

Author for correspondence :
S.K. VERMA
Department of Agricultural Extension, Indira Gandhi Krishi Vishvidyalaya, RAIPUR (C.G.) INDIA
Email:skumars.verma4@gmail.com
See end of the article for authors' affiliations

BACKGROUND AND OBJECTIVES

Organic farming is a specialized form of diversified agriculture that not only aims to produce nutritious food of high quality but also lead to the generation of more income and employment opportunities for rural population. Organic farmers shift food production system from high volume to high volume. (Srivastava and Kallo, 2004) Market value of organic produces was 25 per cent higher than the conventional produces due to the perceived health benefits of organic food, about 66 per cent parents preferring organic food for the health of children (Chandrashekar, 2010).

India's food production is a success story green revolution in the late 1960s. After the green revolution in India, significant higher increase in the production of food grains was achieved by use of higher levels of inputs such as fertilizers and plant protection chemicals. During the post green revolution period, the production of food grains has increased four fold from 50.82 million tones in 1950-51 to 230.00 million tones in 2007-08. The fertilizer consumption increased 250 times from 69000 tones during 1950-51 to 17.4 million tones NPK nutrients during 2001-02 and in terms of kg/ha from 0.5 kg/ha to 91 kg/ha has also increased sharply.

Although green revolution has played a leading role in making the country self sufficient in food grains but has created some adverse effects which are matter of serious concerns. The negative impact of green revolution includes-

– Disparity in consumption of fertilizer where the district wise fertilizer consumption in the country varies from 50-200 kg/ha.

– Excessive use of chemical fertilizers (150-200 kg/ha) as reported from some states like Punjab and Haryana causing destruction of useful micro-organisms insects and worms in soil.

– Imbalance in nutrients status causing significant deficiency of N, P, K, Zn, S, Mo and B disturbance of soil texture and its physio-chemical

properties.

– Environment degradation like depletion of stratospheric ozone, nitrate toxication etc. causing health hazards like cancer, methamoglobinemia respiratory illness, hypertension etc.

– Pollution with heavy metals and pesticide chemicals causing serious damage of food quality from safety point of view (Bhattacharyya and Bihari, 2003).

The average fertilizer consumption of the state is about 40 kg/ha./annum. In certain area like Bastar/ Dantewada the fertilizer consumption is as low as 2-5 kg/ha/annum. Even the low usages of external inputs the farmers of the state have a unique advantage of adopting sustainable agriculture practices by defaults. This situation can be favourably exploited and the farmers of the state can derive maximum benefit from the situation. This study is an attempt to know the type of farmers engaged in organic farming, reaction of the farmers regarding organic farming, reasons for adopting organic farming and to identify the problem faced by the farmers along with the reasons for practicing organic farming.

Objectives of the study:

– To determine the extent of adoption of organic farming practices in paddy cultivation among the tribal farmers.

– To find out the relationship between selected characteristics of tribal farmers and their level of adoption of organic farming practices.

RESOURCES AND METHODS

The investigation was conducted in Kanker district of Chhattisgarh state during 2008-09. From out of seven blocks three blocks namely Kanker, Narharpur, Antagarh, were selected purposively because the majority of farmers practicing organic farming in these blocks. List of organic farmers of the selected three blocks was prepared by taking the help of SADOs ADOs and RAEOs, from each selected block, 40 tribal farmers who are practicing organic farming were selected randomly. Thus total 4X40 = 120 tribal farmers were considered as respondents for present study. The data were collected trough a well-structured and pre tested interview schedule. The researcher personally met with the respondents and explained to them about the purpose of the study to build the rapport because "adoption is mental process through which an individual passes from hearing about an innovation to final adoption" (Rogers, 1995)

It is operationalized as the degree of use of recommended practices. Adoption refers to the extent of use of organic farming practices in paddy cultivation by the tribal farmers. The procedure followed by Sengupta (1966) for calculation of adoption quotient was utilized to measures the general adoption level of respondents.

The Adoption index (A.I.) was worked out by using the following formula:

$$\text{A.I.} = \frac{\text{Sum of adoption score actually obtained by the respondents}}{\text{Maximum possible obtainable adoption score by the respondents}} \times 100$$

The researcher ascertained the extent of adoption in terms of selected organic farming practices adopted in paddy cultivation. The respondents were classified into three categories by using following formula:

Mean ($\overline{X}$) ï S.D. (Standard Deviation)	
Categories	
Low level of adoption	(< $\overline{X}$ - S.D.)
Medium level of adoption	(In between $\overline{X}$ ± S.D.)
High level of adoption	(> $\overline{X}$ + S.D.)

OBSERVATIONS AND ANALYSIS

The observations of the present study as well as relevant analysis have been summarized under the following heads:

Overall extent of adoption of organic farming practices:

It is clearly indicated from the Table 1 that majority (55.00%) respondents had medium level of overall adoption followed by low level of overall adoption category which comprised of 36.67 per cent respondents. While, only 08.33 per cent of the respondents were found in high level of overall adoption category about organic farming practices in paddy cultivation.

Practice wise extent of adoption of organic farming practices in paddy cultivation:

The data presented in Table 2 show that among the selected practices of organic farming in paddy cultivation. Maximum 25.00 per cent of the respondents had high level of

Table 1 : Distribution of respondents according to their overall extent of adoption regarding organic farming practices

Sr. No.	Extent of adoption	Frequency	Per cent
1.	Low adoption (upto18 score)	44	36.67
2.	Medium adoption (19 to 21 score)	66	55.00
3.	High adoption (above 21 score)	10	08.33
	Total	120	100.00

Table 2 : Distribution of respondents according to their practice wise extent of adoption of organic farming practices in paddy cultivation

Sr. No.	Organic farming practices	Extent of adoption		
		Low f (%)	Medium f(%)	High f (%)
1.	Selection and land preparation of land	00 (00.00)	90 (75.00)	30 (25.00)
2.	Selection of paddy varieties and seed treatment	05 (04.17)	100 (83.33)	15 (12.50)
3.	Seed sowing method and seedling preparation	00 (00.00)	108 (90.00)	12 (10.00)
4.	Fertilizer and nutrition management	12 (10.00)	103 (85.83)	05 (04.17)
5.	Weed management practices	14 (11.67)	88 (73.33)	18 (15.00)
6.	Water management practices	04 (03.34)	106 (88.33)	10 (08.33)
7.	Plant protection measures	12 (10.00)	106 (88.33)	02 (01.67)
8.	Market facility and market value of organic produce	15 (12.50)	97 (80.83)	08 (6.67)
9.	Storage practices of paddy	50 (41.67)	68 (56.67)	02 (01.67)

f = Frequency % = Per cent

adoption of selection of land and land preparation followed by weed management practices (15.00%), selection of paddy varieties and seed treatments (12.50%), seed sowing method and seedling preparation (10.00%), water management practices (08.33%), market facility and market value of organic produce (06.67%), fertilizer and nutrition management (04.17%) and only 1.67 per cent respondents had high level of adoption towards recommended plant protection measures and recommended storage practices of paddy.

While under medium level of adoption category, it was found that most of the respondents (90.00%) adopted recommended seed sowing method and seedling preparation, followed by water management practices and recommended plant protection measures (88.33%), were nutrition management (85.83%), selection of paddy varieties and seed treatments (83.33%), market facility and market price (80.83%), selection of land and land preparation (75.00%), weed management practices (73.33%) and storage practices of paddy were moderately adopted by the respondents (56.67%).

Maximum number of the respondents (41.67%) had low level of adoption regarding storage practices of paddy followed by market facility and market value (12.50%), weed management practices (11.67%), recommended fertilizer and nutrition management and recommended plant protection measures (10.00%). Whereas, 04.17 per cent and 03.34 per cent respondents had low adoption of recommended selection of paddy varieties and seed treatment and water management practices, respectively. The reasons for low adoption rate of recommended organic farming practices might be the lack of knowledge about recommended organic farming practices.

Correlation analysis of independent variables with extent of adoption of organic farming practices:

It can be seen from Table 3 that out of all selected characteristics, four traits *viz.*, education, training programme attended, social participation and sources of information were found to be positively and significantly correlated with adoption at 0.01 level of probability. Whereas, the variables *viz.*, total number of family members involved in farming, annual income, extension contact, cosmopoliteness, infrastructure facility and risk bearing capacity were found to be positively and significantly correlated with adoption at 0.05 level of probability. The remaining variables *viz.*, age, organic farming experience, land holding, live stock possession, scientific orientation and attitude towards organic farming practices showed non-significant relation with extent of adoption of organic farming practices.

It can be concluded that the farmers with higher education would have easily understood about the

Table 3 : Correlation analysis of independent variables with extent of adoption regarding organic farming practices

Sr. No.	Independent variables	Correlation co-efficient (r)
		Adoption
1.	Age	0.002NS
2.	Education	0.232**
3.	Total number of family members involved in farming	0.198*
4.	Social participation	0.329**
5.	Organic farming experience	0.002NS
6.	Training programme attended	0.370**
7.	Land holding	-0.034NS
8.	Annual income	0.179*
9.	Livestock population	0.062NS
10.	Extension contact	0.182*
11.	Sources of information	0.308**
12.	Cosmopoliteness	0.189*
13.	Infrastructure facility	0.179*
14.	Scientific orientation	0.067NS
15.	Attitude towards organic farming practices	0.030NS
16.	Risk bearing capacity	0.191*

* and ** indicate significance of values at P=0.05 and 0.01, respectively
NS= Non-significant

Table 4 : Multiple regression analysis of independent variables with extent of adoption of organic farming practices

Sr. No.	Independent variables	Regression coefficient (b)	't' value
1.	Age	0.591NS	0.539
2.	Education	0.921*	1.991
3.	Total number of family members involved in farming	0.122*	2.561
4.	Social participation	0.189**	2.797
5.	Organic farming experience	0.728NS	-0.348
6.	Training programme attended	0.844*	2.043
7.	Land holding	0.133NS	-1.515
8.	Annual income	0.471NS	0.724
9	Livestock population	0.901NS	-0.125
10.	Extension contact	0.795*	2.312
11.	Sources of information	0.520NS	0.645
12.	Cosmopoliteness	0.469**	2.728
13.	Infrastructure facility	0.603*	2.507
14.	Scientific orientation	0.930NS	0.088
15.	Attitude towards organic farming practices	0.840NS	-0.202
16.	Risk bearing capacity	0.104**	2.636

* and ** indicate significance of values at P=0.05 and 0.01, respectively
NS= Non-significant R^2=0.552

environmental pollution due to application of inorganic fertilizers and pesticides, hence, the farmers with higher education would have easily adopted the organic farming practices. It is also concluded that if the respondents who had, more family members involved in farming, more social participation, more number of training programme attended, farmers had more annual income, more contact with extension personnel and agencies, use more information sources, more cosmopoliteness, adequate infrastructure facility and risk bearing capacity would help to enhance to extent of adoption of organic farming practices in paddy cultivation. Similar trends were also observed by Maraddl *et al.* (2007), Limje (2000), Verma *et al.* (2000) in adoption of recommended technology by the farmers regarding different crops.

Multiple regression analysis of independent variables with extent of adoption of organic farming practices:

The result of regression analysis in Table 4 shows that, out of 16 independent variables, the three variables *viz.*, social participation, cosmopoliteness and risk bearing capacity contributed positively and significantly towards adoption at 0.01 level of probability. Whereas, education, total no. of family member involved in farming, training programme attended, extension contact and infrastructure facility contributed positively and significantly towards adoption at 0.05 level of probability.

From the significant 't' value of the variables it could infer that if there is one unit increase in education, social participation, training programme attended, extension contact, cosmopoliteness, infrastructure facility and risk bearing capacity there would be 0.921, 0.189, 0.844, 0.795, 0.469, 0.603 and 0.104 unit increase, respectively in adoption of organic farming practices in paddy cultivation. The variables age, organic farming experience, land holding, annual income, live stock possession, sources of information, scientific orientation and attitude towards organic farming had non significant contribution in adoption of organic farming practices. The R square value of 0.552 indicates that all the 16 independent variables were jointly contributed towards adoption of organic farming practices in paddy cultivation to the extent of 55.20 per cent.

Authors' affiliations :

R.S. SENGAR, M.K. CHATURVEDI AND LEKH RAM VERMA, Department of Agricultural Extension, Indira Gandhi Krishi Vishwavidyalaya, RAIPUR (C.G.) INDIA

REFERENCES

Bhattacharya, P. and Bihari, Krishna (2003). Scope of organic farming in India. *Yojana*, 27-30.

Chandrashekar, H.M. (2010). Changing scenario of organic farming in India: An Overview. *Internat. NGO J.*, 5 (1) : 34-39.

Limje, S. (2000). A study on adoption of recommended Soybean production technology among the farmers of Rajanandgaon district of M.P. M. Sc. (Ag.) Thesis, IGAU, Raipur, M.P. (INDIA).

Maraddl, G.N., Vhirevenkanagoudar, L.V., Angadi, J.G. and Babalad, H.B. (2007). Extent of adoption of selected suitable cultivation practices by sugarcane growers. *Karnataka J. Agric. Sci.*, **20**(3): 560-563.

Rogers, E.M. (1995). *Diffusion of innovation*. The Free Press, New York, U.S.A.

Sengupta, T. (1966). A simple scale for selection of farmers for high yielding variety programmes on rice. *Indian J. Extn. Edu*., **3**: 107-115.

Srivastava, U. and Kallo, G. (2004). Organic farming- concepts, Stipulations and practices. National conference on organic farming for sustainable production.

Verma, V.K., Wankhede, A.K., Sharma, T.R. and Rai, B.D. (2000). Knowledge and awareness about improved technology of soybean. *Madhya J. Extn. Edn.*, **2** (3): 19-21.