

# ATTITUDE OF FARMERS REGARDING ADOPTION OF CONTROL MEASURE PRACTICES OF VARIOUS WEEDS OF RICE CROP IN CHHATTISGARH STATE

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**Abstract :** Rice plays a vital role in the national food security. India is the second largest producer of rice after China. Chhattisgarh is popularly known as the “Rice Bowl of India”. The extent of yield reduction of rice due to weeds is estimated to be 15-90 per cent. Now a days timely unavailability of labours make weed control difficult, but the mechanical weeding and new pre and post emergence herbicides/weedicides for rice give an effective alternative to labour expensive way of weed control. A research was organised to determine the attitude of farmers regarding adoption of control measure practices of various weeds of rice crop. In all one hundred and sixty rice growing farmers were randomly selected from purposively chosen Dhamtari and Nagri blocks of Dhamtari district of Chhattisgarh and personally interviewed with the help of structured interview schedule to collect the relevant information from the respondents. The data were statistically analysed and logically presented in tabular form. The results of the study revealed that majority of the respondents were found to possess moderately favourable attitude regarding adoption of control measure practices of various weeds of rice crop. The variables education, size of family, social participation, land holding, annual income, contact with extension personnel, sources of information, scientific orientation and knowledge were found positively and significantly related with attitude regarding adoption of control measure practices of rice crop.

**Keywords :** Rice crops, Weeds, Chhattisgarh

## INTRODUCTION

Rice (*Oryza sativa* Linn.) is the most consumed cereal grain in the world, constituting the dietary staple food for more than half of the planets human population. In Asian countries, rice is the major staple crop covering about ninety per cent of rice grown in the world, with two countries, China and India, growing more than half of the total crop. Rice being the main source of livelihood for more than 120-150 million rural household is the backbone of the Indian Agriculture. Chhattisgarh popularly known as “rice bowl of India” occupies an area of around 3610.47 thousand hectares with the production of 5.48 million tones and productivity of 1517 kg per hectare (Anonymous 2008-09). The prime causes of low productivity of rice in Chhattisgarh state are limited irrigation, lack of improved varieties suitable to different ecosystems low imbalance use of fertilizer and insufficient weed management. The production and productivity of the rice can be increased by considering the various factors, among them weed control is one of the main factor. Weed management is considered as a positive factor in tapping the production potential. Among the major problems involved in management of rice for high economic yield, weed control is one of the main important constraints. The extent of yield reduction of rice due to weeds is estimated to be 15-95% (Gogai *et al.* 1996). Weeds not only cause quantitative, but also hamper the quality of produce due to competition for nutrients, moisture, light, and some extent for space. They harbour many insects, pests and pathogens resulting in poor crop growth

and yield. Distribution of weeds is greatly influenced by soil and the prevailing climatic condition and hence they differ at different place. Now a days timely unavailability of labours make weed control difficult, but the mechanical weeding and new pre and post emergence herbicides for rice give an effective alternative to labour expensive way of weed control. Rice is grown by different cultures, viz. direct seeded rice upland dry sown rainfed, direct seeded rice under puddled conditions and transplanted rice under puddled and non-puddled conditions. Weed competition varies with the type of rice growing. The extent of yield losses due to weed is estimated to be around 15-20% in transplanted rice, 30-35% in direct seeded rice under puddled conditions and more than 50-60% in upland rice, as evident from the data collected from many locations in India (Mani *et al.* 1968, Gill and Brar 1975). The available information also shows that first 3-4 weeks period after sowing or transplanting is the most critical period in which weeds causes maximum damage to the crop.

Paddy crop is attacked by more than thirty weeds, out of which nine weeds are of major economic importance, extent of losses due to damages of these weeds vary greatly from area to area and season to season.

In Chhattisgarh region the major weeds of rice are sawa (*Echinochloa colona* L.), motha (*Cyperus spp.*), badauri (*Ischaemum rugosum* L.), kaua keni (*Commelina benghalensis* L.), machharia (*Corchorus aestuans* L.), sole grass (*Aeschynomene indica* L.), pickreral weed (*Monochoria vaginalis*), reshamkata (*Alternanthera sessilis* L.) and bhrangraj (*Eclipta*

*prostrata* L.). *Echinochloa colona* L. and *Cyperus* spp. are most serious weeds in rice crop.

There are so many control measure practices utilized by the farmers such as preventive methods, mechanical methods, cultural methods, chemical methods and biological methods but still they are not able to reduce the losses of yield due to various weeds. There is an urgent need to introduce the innovative practices to manage the weeds as well as reduce the economic losses and enhance the ecological balance. Adopting integrated weed management strategies will avoid upsetting of balance in nature. Hence, to assess the attitude of farmers regarding adoption of control measure practices of various weeds of rice crop in Chhattisgarh state, with the above points reference in view a study was organised on the following specific objectives:

To determine the attitude of rice growers regarding adoption of various methods for controlling the weeds in rice crop.

To analyse the relationship between socio-personal, socio economic, socio psychological and communicational characteristics of rice growers and their attitude towards adoption of different control measures practices of rice weeds.

## MATERIAL AND METHOD

The study was conducted in Dhamtari district of Chhattisgarh state. There are 4 blocks in Dhamtari district namely, Dhamtari, Nagri, Kurud, and

Magarlod. Out of these, two blocks namely Dhamtari and Nagri were selected purposively for this study. Eight villages from each of the selected blocks were randomly selected and ten farmers from each of the villages were randomly selected as respondents for the study. Thus total sample size was 160. A pre-tested and structured interview schedule was used as a data collection instrument and the primary data were collected by personal interview technique. Attitude can be defined as an enduring system of positive and negative evaluation, emotional feeling pre and con action tendencies with respect to social objects. For this study it was operationally defined as the degree of positive or negative reaction of farmers toward the use of control measure practices of various weeds of rice crop. Attitude of farmers was measured with the help of an index consisting of positive and negative statements. The responses of the respondents were elicited to each statement on a five point continuum viz. strongly agree, agree, undecided, disagree and strongly disagree. The responses to positive statement were assigned the score of 5, 4, 3, 2, 1 Whereas, reverse scoring i.e. 1, 2, 3, 4, 5 was followed for negative responses. The sum of scores of all the 12 statements indicated the attitude score of the individual respondent towards control measure practices of various weeds of rice crop. The score of each respondent on the statement was added together and taken as attitude score. This attitude score of each individual was converted into attitude index with the help of following formula :

$$\text{Attitude index} = \frac{\text{Attitude score actually obtained by the respondent}}{\text{Maximum obtainable attitude score by the respondent}} \times 100$$

The respondents were then categorized in to three categories on the basis of using following formula :

$$AI = \text{Mean } (\bar{X}) \pm \text{S.D. (Standard Deviation)}$$

Attitude	
Less favourable	( $< \bar{X} - \text{S.D.}$ )
Moderately favourable	(Between $\bar{X} \pm \text{S.D.}$ )
Favourable	( $> \bar{X} + \text{S.D.}$ )

The coefficient of correlation was worked out to find out the relationship between socio-personal, socio-psychological and communicational characteristics of the respondents' attitudes towards control measure practices of various rice weeds. Similarly the multiple regression analysis was done to know the partial and complete influence of independent variables. For the present study linear model of regression equation was used as follow:

$$Y_1 = a + b_1x_1 + b_2x_2 + \dots + b_nx_n$$

Where,

$Y_1$  = Dependent variable

$x_1 \dots x_n$  = Independent variables

$a$  = Constant value

$b_1 \dots b_n$  = The regression coefficient for respective independent variables

**Table 1:** Distribution of respondents according to their attitude regarding adoption of control measure practices of various weeds of rice crop  
(n=160)

S.N.	Attitude	Frequency	Per cent
1.	Unfavourable (up to 46 score)	21	13.13
2.	Moderately favourable (47-51 score)	123	76.86
3.	Favourable (above 51score)	16	10.01
	Total	160	100.00

$$\bar{X} = 48.68$$

$$S.D. = 2.36$$

## RESULT AND DISCUSSION

It could be seen from Table 1 that majority of the respondents (76.86%) were found to possess moderately favourable attitude regarding adoption of control measure practices of various weeds of rice crop. Only 13.13 per cent respondents were found to have unfavourable attitude towards adoption of

control measure practices of various weeds of rice crop. The remaining 10.01 per cent respondents showed favourable attitude regarding adoption of control measure practices of various weeds of rice crop.

**Table 2:** Correlation analysis of independent variables with attitude of rice growers towards adoption of control measure practices of various weeds of rice crop

S.N.	Independent variables	Coefficient of correlation "r" value
01.	Age	0.090
02.	Education	0.176*
03.	Caste	-0.059
04.	Size of Family	0.272**
05.	Social participation	0.159*
06.	Land Holding	0.255**
07.	Occupation	0.026
08.	Annual income	0.167*
09.	Credit acquisition	0.047
10.	Contact with extension personnel	0.165*
11.	Sources of information	0.243**
12.	Scientific orientation	0.156*
13.	Knowledge	0.235**

\*\* Significant at 0.01 level of probability

\* Significant at 0.05 level of probability

It is obvious from the finding in Table 2 that the variables education, size of family, social participation, land holding, annual income, contact with extension personnel, sources of information, scientific orientation and knowledge were found positively and significantly related with attitude. The significant relationship shows that when the level of the above variables viz. education, size of family, social participation, land holding, contact with extension personnel, sources of information, scientific orientation and knowledge increases then the attitude of the respondents will be more positive regarding use of control measure practices of various weeds of rice crop.

Among the variables size of family, land holding, sources of information and knowledge were highly and significantly correlated for the attitude of respondents regarding adoption of control measure practices of various weeds of rice crop at 0.01 per cent level of significance. Whereas, the variables education, social participation, annual income, contact with extension personnel and scientific orientation were found to be positively and significantly related at 0.05 per cent level of significance. The variables age, caste, occupation and credit acquisition were found non-significantly correlated with the attitude of respondents.

**Table 3:** Multiple regression analysis of independent variables with attitude of rice growers towards adoption of control measure practices of various weeds of rice crop

S.N.	Independent variables	Regression coefficient "b" value	"t" value
01.	Age	0.006	0.405
02.	Education	1.024*	2.144
03.	Caste	-0.134	-0.654
04.	Size of Family	0.326**	3.034
05.	Social participation	0.595*	2.015
06.	Land Holding	0.549*	2.046
07.	Occupation	0.152	0.915
08.	Annual income	0.146*	2.059
09.	Credit acquisition	0.120	0.757
10.	Contact with extension personnel	0.211	0.099
11.	Sources of information	1.036*	2.166
12.	Scientific orientation	0.147*	2.342
13.	Knowledge	1.010**	2.706

\*\* Significant at 0.01 level of probability

R<sup>2</sup> = 0.591

\* Significant at 0.05 level of probability

F value of R = 11.864

The data presented in table 3 reveals that out of the thirteen variables two variables viz. size of family and knowledge had positive and highly significant contribution towards the attitude at 0.01 per cent level of significance and six variables viz. education, social participation, land holding, annual income, sources of information and scientific orientation had positive and significant contribution towards the attitude at 0.05 per cent level of probability. The remaining variables age, caste, occupation, credit acquisition and contact with extension personnel had non significant contribution towards attitude. It is also seen that all the 13 variables jointly explained the variation to the extent of 59.1 per cent towards attitude regarding adoption of control measure practices of various weed of rice crop.

## CONCLUSION

Majority of the respondents had moderately favourable attitude regarding adoption of control measure practices of various weeds of rice crop. The reason for moderately favourable attitude may be the lack of detailed knowledge about adoption of control measure practices of various weeds of rice crop. The lack of knowledge might have resulted in lack of interest and conviction. There is a need to modify the attitude of the respondents through guidance, persuasion and conducting skill demonstration on adoption of control measure practices of various weeds of rice crop in the farmer's field to show their effectiveness in crop production to the farmers. Among these variables size of family, land holding, sources of information and knowledge played highly

significant role in the formation of the attitude of respondents regarding adoption of control measure practices of various weeds of rice crop.

The coefficient of correlation between education, size of family, social participation, land holding, annual income, contact with extension personnel, sources of information, scientific orientation and knowledge were found positively and significantly related with attitude. The significant relationship shows that when the level of the above variables viz. education, size of family, social participation, land holding, contact with extension personnel, sources of information, scientific orientation and knowledge increases then the attitude of the respondents will be more positive regarding use of control measure practices of various weeds of rice crop.

The results of multiple regression reveals that out of the thirteen variables two variables viz. size of family and knowledge had highly significant contribution towards attitude and six variables viz. education, social participation, land holding, annual income, sources of information and scientific orientation had positive and significant contribution towards attitude.

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