RESEARCH ARTICLE

STUDY ON IMPACT OF BRINGING GREEN REVOLUTION TO EASTERN INDIA (BGREI) PROGRAMME ON PRODUCTION OF RICE CROP IN DURG DISTRICT OF CHHATTISGARH

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Abstract: The present study was carried out during 2015-16 in the Durg district of Chhattisgarh state. This study was conducted in randomly selected 18 villages from Durg district. A total of 90 beneficiaries were selected randomly as respondents, for comparison and to know the impact of BGREI programme on production of rice crop, 90 non-beneficiaries were also selected. Thus a total of 180 farmers were chosen for the study. The data were collected from the selected respondents are aimed to know the impact BGREI programme on production of rice crop in Durg district. The data collection was done by the use of well structured pre-tested interview schedule through personal interview. Data were analyzed with help of suitable statistical tools. The findings of the study revealed that the majority of the beneficiaries farmers were agree with improvement in standard of living. To determine the level of difference between the beneficiaries farmers and non-beneficiaries farmers related to their rate of adoption for approved rice production technology.

Keywords: BGREI, Rice production technology, Impact assessment, Durg, Chhattisgarh

INTRODUCTION

Indian agriculture is known for its multi functionalities of providing employment, livelihood, and food, nutritional and ecological securities. Agriculture and allied activities contribute 29.1 per cent to the GDP and employs 69 per cent of the total work force. It has been central to all strategies and planning for the socio-economic development of the country.

The program of Bringing Green Revolution to Eastern India (BGREI) is intended to address the underlying constraints for enhancing productivity of rice and wheat in seven states of eastern India (Assam, Bihar, Chhattisgarh, Jharkhand, Eastern Uttar Pradesh, Orissa and West Bengal) so that agricultural productivity is reasonably enhanced in these areas. These constraints are often described in terms of natural or ecological, technological and economic. In so far as natural or ecological constraints are concerned, these BGREI States are endowed with abundant rainfall needed for agricultural vocation. The program takes care of needed technology in terms of assured provision for incentivized supply of recommended agricultural inputs to the farmer's adopting cluster approach in order to ensure equity amongst farmers across selected locations in the BGREI States. The process of input inducement under BGREI program differs from other crop development programs in respect of the provision of cash doles for "Deep ploughing in rain-fed areas/land preparation & line sowing/transplanting for all ecologies" and making provision of improved seed supply. Besides this, inter-ministerial coordination was ensured to enhance supply of agriculture credit and procurement of agriculture commodities by the public sector agencies at the minimum support prices declared by Government of India in general and in the BGREI districts in particular. The program of Bringing Green Revolution in Eastern India was launched in the year 2010-11 to enhance the agriculture production in the states of Assam, Bihar, Chhattisgarh, Jharkhand, Orissa, Eastern U.P and West Bengal based on action plans developed by these strategies. It was conceived as a lateral to Rashtriya Krishi Vikas Yojna (RKVY).

To determine the impact of Bringing Green Revolution to Eastern India (BGREI) programme on production of Rice crop, the present study was investigated to assess the impact of Bringing Green Revolution to Eastern India (BGREI) among the beneficiaries and non-beneficiaries in Durg district.

RESEARCH METHODOLOGY

The present study was undertaken to assess the impact of BGREI programme on production of rice crop during 2015-16 in 18 randomly selected villages of the Durg district of Chhattisgarh state. For this study a total of 90 beneficiaries were selected randomly as respondents, for comparison 90 non-beneficiaries were also selected. Thus a total of 180 farmers were selected for the study. The data collection was done by the use of well structured pre-tested interview schedule through personal interview. The collected data were analyzed by using appropriate statistical tools i.e. frequency, percentage, correlation and regression analysis etc.

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Impact of BGREI Programme

The dictionary meaning of the term "impact" is a strong impression or outcomes. Thus impact is awareness and behavioral outcome of a person. It refers to desirable changes in targeted population. The impact of any technological development can be assessed in two ways. *Viz* direct and indirect. The direct impact is the direct effect of technology on the productivity, while indirect impact of the programme can be accessed through change in socio-economic status of the programme among the respondents. This procedure followed by Sengar *et al.* (2003).

The direct and indirect impact of BGREI Programme on production and productivity was assessed with help of the following formula:

$$I = \frac{X1 - X2}{X2} \times 100$$

Where,

I = Impact of BGREI programme

X1= Current position of rice production

X2=Pre position of rice production i.e. position before implementation of BGREI programme.

RESULT AND DISCUSSION

Impact of BGREI programme on production and productivity of rice

The data regarding total production and productivity of rice crop in study area presented in Table 1. In year 2014-15, the beneficiaries farmers had total production of 10116.91 Qtl., while total productivity of 3218.36 Qtl. and average productivity of 35.75 Qtl. / ha. In year 2015-16, they had total production of 11606.74 Qtl., while total productivity of 4264.55 Qtl. and average productivity of 47.38 Qtl. / ha. So the difference of production and productivity between both the year was expressed in form of (% change), which was 12.83 per cent (Total Production and Average production) and 24.54 per cent (Total productivity and Average productivity), respectively.

Whereas, in year 2014-15, the non-beneficiaries farmers had total production of 7369.75 Qtl., while total productivity of 2740.50 Qtl. and average productivity of 30.45 Qtl. / ha. In year 2015-16, they had total production of 8265.47 Qtl. , while total productivity of 3597.30 Qtl. and average productivity of 39.97 Qtl. / ha. So the (% change) was 10.84 per cent Total Production and 23.81per cent (Total productivity and Average productivity), respectively. According to above records, it can be express that production and productivity both increased.

Table 1. Impact on Production and productivity of rice crop in study area

Respondent	Category	2014-15	2015-16	% change
Beneficiaries	Total Production (in Qtl.)	10116.91	11606.74	12.83
	Total productivity (in Qtl.)	3218.36	4264.55	24.54
	Average productivity (in Qtl./ha.)	35.75	47.38	24.54
Non-beneficiaries	Total Production (in Qtl.)	7369.75	8265.47	10.84
	Total productivity (in Qtl.)	2740.50	3597.30	23.81
	Average productivity (in Qtl./ha.)	30.45	39.97	23.81

Considerable change was observed in production of beneficiaries' farmers because they were exposes with training on approved (recommended) technologies.

Difference between Beneficiaries farmers and Non-beneficiaries farmers with respect to their production and productivity of rice crop

To determine the level of difference between the beneficiaries farmers and non-beneficiaries farmers related to their rate of adoption for approved rice production technology, "t" test was applied and results were summarized in Table 2. It revealed that the beneficiaries farmers had significantly higher adoption as compared to non-beneficiaries farmers, because the "t" value is 31.53**and was found highly significant. This indicated that BGREI programme played important role in increasing the rate of adoption of the beneficiaries' farmers through proper strategic application of technologies to increase production and productivity of rice.

Table 2. Difference between Beneficiaries and Non-beneficiaries farmers with respect to their productivity of rice

Particular	Beneficiaries farmers	Non-beneficiaries farmers
Frequency	90	90
Mean Qtl./ha.	47.38	39.97

S.D. Qtl./ha.	1.32	1.78
't' value	31.53**	

******Significant at 0.01 level of probability

Benefit Cost Ratio

Table 3. BC ratio of rice crop in study area

Crop	Average Productivity (in Qtl.)	Average Cost of Cultivation(Rs.)	Average Gross Return(Rs.)	Net Return (Rs.)
Rice	47.38	22477.11	66811.28	44334.17
				BC Ratio=2.0

The result of Table 3 showed that average productivity of the rice crop in study area were 47.38 Qtl/Ha. Average Gross return were 66811.28 Rs., Average Cost of cultivation were 22477.11 Rs. And Net return were 44334.17 Rs. The Benefit Cost Ratio were 2.0.of beneficiaries respondents.

Correlation coefficient and multiple regression analysis of independent variables with impact of BGREI programme on production and productivity of rice crop

To determine the relationship of selected independent variables with the productivity of rice, the correlation analysis was worked out and results are present in Table 4. The finding revealed that out of 09 independent variables, 4 variables i.e. land holding, annual income, contact with extension agencies and cropping intensity were found to be positive and highly significantly. 2 variable Land holding and annual income, correlated at 0.01 level of probability, and 2 variables contact with extension agencies and cropping intensity were found to be positive and significantly correlated at 0.05 level of probability with the productivity of rice (beneficiaries). In case of non-beneficiaries farmers, out of 9 variables, 2 variables were found positive and significant towards productivity of rice. One variable i.e. land holding. was correlated at 0.01 level of probability and contact with extension agencies was correlated with 0.05 level of probability with productivity of rice.

Table 4. Correlation coefficient analysis of independent variables with impact of BGREI programme on production and productivity of rice crop

Variable code	Independent variables	Correlation " r" values	
		Beneficiaries	Non-beneficiaries
X1	Occupation	0.158 NS	0.134 NS
X2	Land holding	0.352**	0.213*
X3	Annual income	0.279**	0.118 NS
X4	Contact with extension agencies	0.245*	0.229*
X5	Cafeteria information	0.097 NS	0.114 NS
X6	Cropping intensity	0.210*	0.201 NS
X7	Effect of technical intervention	0.143NS	-
X8	Knowledge about approved rice production technology	0.080NS	0.020NS
X9	Economic Motivation	0.170NS	0.107NS

** Significant at 0.01 level of probability ("r" value = 0.267)
* Significant at 0.05 level of probability ("r" value = 0.205)
NS = Non-significant

The result of multiple regression analysis is presented in Table 5. The data reveals that out of 09 independent variables, the 1 variable *viz*. land holding contributed positively and significant at 0.01 per cent level of probability towards productivity of rice (beneficiaries). And 2 variables annual income and cropping intensity contributed positively and significant at 0.02 per cent level of probability

towards productivity. In case of non-beneficiaries farmers, the 2 variable *viz*. land holding and annual income contributed positively and significant at 0.02 per cent level of probability towards productivity.
All the selected 9 variables which were fitted in regression model explained the 63.00 per cent and 57.01 per cent of the total contribution were explained in the productivity of rice with beneficiaries and non-beneficiaries farmers respectively.

Table 5. Multiple regression analysis of independent variables with impact of BGREI programme on production and productivity of rice crop

Variable code	Independent variables	Beneficiaries		Non-beneficiaries	
		t-value	Regression coefficient "b" value	t-value	Regression coefficient "b" value
X1	Occupation	0.14	0.71 NS	0.01	0.06 NS
X2	Land holding	1.95	3.23**	0.56	2.18*
X3	Annual income	0.983	1.991*	0.29	2.03*
X4	Contact with extension agencies	0.08	0.32 NS	0.00	0.01NS
X5	Cafeteria information	0.08	0.81 NS	0.01	0.13 NS
X6	Cropping intensity	1.076	2.031*	0.00	0.45
X7	Effect of technological intervention	0.06	0.79NS	-	-
X8	Knowledge about approved rice production technology	0.07	0.67 NS	0.10	1.18 NS
X9	Economic Motivation	0.02	0.20 NS	0.02	0.27 NS
		$R^2 = 0.63$		$R^2 = 0.57$	

** Significant at 0.01 level of probability (t value = 0.270)
*Significant at 0.05 level of probability (t value =0.207)
NS = Non-significant

CONCLUSION

From the above finding it can be concluded that the 87.78 per cent of the beneficiaries farmers were agree with improvement in standard of living and the level of difference between the beneficiaries farmers and non-beneficiaries farmers related to their rate of adoption for approved rice production technology. It revealed that the beneficiaries farmers had significantly higher adoption as compared to non-beneficiaries farmers, because the "t" value is 31.53**and was found highly significant. This indicated that BGREI programme played important role in increasing the rate of adoption of the beneficiaries' farmers through proper strategic application of technologies to increase production and productivity of rice.

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