Project Team

Project Director : Dr. Basant Kumar Jha

Director, AERC

Project Leader : Dr. Ranjan Kumar Sinha

Research Officer, AERC

Joint Project Leader : Dr. Rajiv Kumar Sinha

Research Associate, AERC

Data Collection : Mr. Rambalak Choudhary

Research Officer, AERC

Mr. Ashish Kumar Investigator (Temp.)

Mr. Divya Priyadarshi Investigator (Temp.)

Mr. Rakesh Kumar Investigator (Temp.)

Ms. Boby Kumari Investigator (Temp.)

Data Processing & Tabulation : Dr. Chandra Prakash Azad

Technical Assistant (Temp.)

Mr. Raghuwar Nath Jha Computer Assistant (Temp.)

Computer Typing : Mr. Jai Shankar Choudhary, AERC

Secretarial Assistance : Mr. Anil Kumar Saraf, AERC

Contents

Ch	apter	Particulars	Page Nos.
		Preface	iv
		Acknowledgement	v
		List of tables	vi-vii
l.	Introducti	· · · ·	
	l.1	Background	1-4
II.	Rationale	, Objectives and Methodology of Evaluation	
	of BGREI	Programme	5-9
	II.1	Rationale of Evaluation Study of BGREI	
	II.2	Objectives of the Study	
	II.3	Database and Research Methodology	
	11.4	Statistical Analysis of Primary Data	
	II.5	Statistical Analysis of Secondary Data	
	II.6	Limitations	
III.	Rainfall a	nd Growth in Area, Production and Yield of	
••••	Rice and		10-42
	III.1	Bihar	
		A Brief Profile of the State Rainfall	
		Area, Production and Yield (APY) of Rice Crop in BGREI Districts	
		Area, Production and Yield (APY) of Wheat Crop in BGREI Districts	
	III.2	Jharkhand	
		A Brief Profile of the State	
		Rainfall	
	III.2.3	Area, Production and Yield (APY) of Rice Crop in BGREI Districts	
	III.3	Variability in APY of Rice and Wheat in BGREI & NFSM Districts in	
		Bihar & Jharkhand	
	IV. Results	and Discussion	43-72
	IV.1	Setting	
	IV.2	Adequacy of BGREI Programme	
	IV.2.1	= · · · · ·	
	IV.2.2	Jharkhand	
	IV.3	Structure of BGREI Programme in 2011-12	
	IV.4	Performance Index of Technical Backstopping	
	IV.4.1	— ····	
		Jharkhand Extent of Change in Cropping Bettern	
	IV.5 IV.5.1	Extent of Change in Cropping Pattern	
		Jharkhand	
	IV.6	Yield Gap in Rice	
	IV.6.1		
		Jharkhand	
	IV.7	Educational Qualification Possessed by Progressive Farmers	
	IV.8	Concentration Ratio of Block Demonstration Clusters of Rice	
	IV.9	Adoption Level of Deep Ploughing and Land Preparation by beneficiaries	
		of Block Demonstrations of rice and non-beneficiaries in BGREI Districts	
	IV.10	Perception of beneficiaries	
	IV.10.1	Adequacy of Input packs for Block Demonstrations	
	IV.10.2	BGREI beneficiary farmers' perception towards rating of	
		BGREI Programme	

Refere	nces	89
VI.2	Jharkhand	
VI.1	Bihar	01-00
	nendations and Policy Suggestions	87-88
	Monitoring by Central Steering Committee (CSC) Conclusion	
V.8.9	Monitoring Status	
V.8.8	Progress of Financial Utilization under BGREI during 2011-12	
	Jharkhand	
V.8.7 V.8.7.1	Determination of the Impact of Inputs on Total Yield	
V.8.6	Perception of Beneficiaries	
V.8.5	Concentration Ratio of Block Demonstration Clusters of Rice	
V.8.3 V.8.4	Change in Cropping Intensity Yield Gap in Rice	
V.8.2	Performance Index of Technical Backstopping	
V.8.1	Structure of BGREI Programme in 2010-11 & 2011-12	
V.8	Results & Discussion	
v . /	Bihar & Jharkhand	
V.6.2.3 V.7	Area, Production and Yield of Rice Crop in BGREI Districts Variability in APY of Rice & Wheat in BGREI & NFSM Districts in	
	Rainfall	
_	A Brief Profile of the State	
	Jharkhand	
	Area, Production and Yield of Rice Crop in BGREI Districts Area, Production and Yield of Wheat Crop in BGREI Districts	
	Rainfall Area Breduction and Viold of Rica Crop in BCREL Districts	
	A Brief Profile of the State	
V.6.1	Bihar	
v.0	Wheat in Bihar & Jharkhand	
V.5 V.6	Limitations Rainfall and Growth in Area, Production and Yield of Rice and	
V.4	Methodology	
V.3	Objectives of the Study	
V.2	Rationale of the Study	
V.1	Background	75-00
Summa	y & Conclusion	73-86
IV.17	Conclusions	
IV.16	Monitoring by Central Steering Committee (CSC)	
IV.15	Monitoring Status of the programme by CRRI, Cuttack	
17.14	Progress of allocation and utilization under BGREI during 2010-11 and 2011-12	
_	Jharkhand Progress of allocation and utilization under PCPEI during	
IV.13.1		
	Determination of the impact of inputs on total yield	
	income in Bihar & Jharkhand	
IV.12	BGREI beneficiaries versus non-beneficiaries during 2011-12 Impact of BGREI Programme in terms of grain yield and farmers	
IV.11	Input package for block demonstrations of rice adopted by	
	faced in Marketing of agricultural produce	
IV.10.6	BGREI beneficiary farmers' perception towards problems	
IV.10.5	BGREI beneficiary farmers' perception towards preference for source of inputs	
	"which guided the best."	
IV.10.4	BGREI beneficiary farmers' perception towards the agency	
IV.10.3	BGREI beneficiary farmers' perception towards adequacy of Technical backstopping	
11/100	DODELL C: () C: () C	

٧.

VI.

Preface

The Bringing Green Revolution to Eastern India (BGREI) Programme is the outcome of the recommendations of the Task Force (TF) constituted by the Government of India in pursuance of the decisions taken in the meeting of the committee of Secretaries held on 29th November, 2009 to make short and medium-term recommendations for efficient management of water, power and other inputs, as well as; subsidy to maximize agricultural production on a sustainable basis. Initially, the programme, as a sub-scheme of RKVY, was launched in the year 2010-11 in seven (07) states of Eastern India including Bihar & Jharkhand based on strategic action plans developed by the concerned states. The objective of the programme is to increase the productivity of rice based cropping system in the resource rich eastern India by intensive cultivation through promotion of recommended agriculture technology relating to water asset building in conjunction with rice and wheat crop production technologies by addressing the underlying ecological constraints in non-NFSM districts. Initially, in the beginning states were given free hand to choose the activities as per their requirements in conformity with the agreed framework under RKVY. However, in subsequent year (2011-12), focused interventions were tailored in cluster mode for convenience in its implementation.

After completion of two years of its implementation, the Ministry of Agriculture, Government of India decided to evaluate the programme through its Agro-Economic Research Centres. Accordingly, this Centre was assigned to conduct the study entitled "End-term Evaluation of the Implementation of BGREI Programme in Bihar & Jharkhand." The study has been undertaken, as per the commonly circulated study design by the Co-ordinator of this study, i.e., Agro-Economic Research Centre, Visva-Bharati, Santiniketan (WB).

The study reveals that all the demonstrations organized in Bihar were SRI demonstration devoid of ecological consideration in dispersed mode, whereas these were adopted in cluster approach in Jharkhand. It further reveals that BGREI programme has narrowed down the yield gap in rice in both the states, but it is still away from the potential yields of popular varieties adopted in both the states. Extension workers have played significant role in technical backstopping of the programme in Bihar, whereas in Jharkhand, progressive farmers did so. Monitoring of BGREI programme is needed for effective outcome as found in the study. Suggestions, as perceived from the sample beneficiaries, are also given in the report, which are required to be attended by the SDA & BGREI Cell of the respective states. It is hoped that findings of the study will be useful for the policy managers and other stakeholders.

I have immense pleasure in putting on record the crucial work done by the co-ordinator, namely Professor (Dr) Debasish Sarkar, Ex-Director and Dr. Saumya Chakrabarti, Hon. Director, AER Centre, Visva-Bharati, Santiniketan & his team members and all the members of the Project Team led by Dr. Ranjan Kumar Sinha, Research Officer of this Centre. They all indeed deserve my appreciation.

AER Centre T M Bhagalpur University Bhagalpur – 812 007 BIHAR Basant Kumar Jha Director

Acknowledgement

We have indeed great pleasure to undertake this study assigned by the Ministry of Agriculture, Government of India. We deem it our duty to acknowledge and appreciate the guidance and co-operation extended by all those, who have greatly helped us to complete this study. First of all, we express our heartfelt gratitude to Professor (Dr) Debashish Sarkar, Ex-Director, AER Centre, Visva-Bharati, Santiniketan (WB) for his regular guidance and cooperation in completion of this study. We are grateful to Dr. Somuya Chakravarty, Director, AER Centre Visva-Bharati for providing us valuable comments and suggestions on the draft report, which have been duly incorporated while finalizing this report. We are also grateful to Dr. S Bhawani, Principal Adviser, Dr. J S Sandhu, Agriculture Commissioner and Dr. B S Bhandari, Adviser (AER Division), MoA, GoI for giving us valuable comments and suggestions during presentation of Draft Consolidated Report at AER Centre, Visva-Bharati, Santiniketan (WB) on 11-12 July, 2013. Mr. Debanshu Mazumdar, Research Associate, AER Centre, Visva-Bharati deserves our special thanks for repeatedly seeking comments from us on Bihar & Jharkhand states, which we have communicated to him. We express our heartfelt gratitude to Dr. S V Singh, Consultant, BGREI Cell, Government of India, New *Delhi, for his sincere guidance and co-operation in conduct of the study.*

We record our gratitude to our Director, namely Professor (Dr.) Basant Kumar Jha, for his overall guidance and supervision. We also express our gratitude to the Directors, Agriculture, Government of Bihar and Government of Jharkhand. Our sincere thanks are due to all the concerned DAOs, Government of Bihar & Government of Jharkhand for extending their full co-operation to the research team in collection of field and official level data.

Our sincere thanks are also to be inscribed for all the respondents of the study for sparing their valuable time, providing precious inputs and necessary information, without which the study would not have been completed.

Since the present work is the outcome of the research team, so we take this opportunity to thank all of them.

Ranjan Kumar Sinha Rajiv Kumar Sinha

Dated: 20/07/2013 AER Centre Bhagalpur – 812 007

List of Tables, Annexures & Appendixes

<u>Table N</u>	Nos. Description of the Table	Page Nos.
0.4		_
2.1	Distribution of Sample of Ecologies, States, Districts & Blocks	7
3.1	District wise monthly rainfall data during the year 2010 & 2011 in Bihar	12-15
3.2	District wise per cent CGR of rice area during 2010-11 & 2011-12 in Bihar (Base year: QE: 2009-10 = 100)	20-21
2.2		20-21
3.3	District wise per cent of CGR of rice production during 2010-11 & 2011-12 in Bihar	22-23
2.4	(Base year: QE: 2009-10 = 100)	22-23
3.4	District wise per cent of CGR of rice yield during 2010-11 & 2011-12 in Bihar	04.05
2.5	(Base year: QE: 2009-10 = 100)	24-25
3.5	District wise per cent of CGR of wheat area during 2010-11 & 2011-12 in Bihar	00.00
	(Base year: QE: 2009-10 = 100)	28-29
3.6	District wise per cent of CGR of wheat production during 2010-11 & 2011-12 in Bihar	22.22
	(Base year: QE: 2009-10 = 100)	29-30
3.7	District wise per cent of CGR of wheat yield during 2010-11 & 2011-12 in Bihar	
	(Base year: QE: 2009-10 = 100)	31-32
3.8	District wise monthly rainfall data during the year 2010-11 in Jharkhand	34-36
3.9	District wise per cent of CGR of rice area during 2010-11 & 2011-12 in Jharkhand	
	(Base year: QE: 2009-10 = 100)	39
3.10	District wise per cent of CGR of rice production during 2010-11 & 2011-12 in Jharkhand	
	(Base year: QE: 2009-10 = 100)	40
3.11	District wise per cent of CGR of rice yield during 2010-11 & 2011-12 in Jharkhand	
	(Base year: QE: 2009-10 = 100)	41
3.12	CGR of Area, Production & Yield of Rice Crop in BGREI & NFSM Districts	
	during 2010-11 & 2011-12 in Bihar & Jharkhand States	
	(Base year: QE: 2009-10 = 100)	42
3.13	CGR of Area, Production & Yield of Wheat Crop in BGREI & NFSM Districts	
	during 2010-11 & 2011-12 in Bihar (Base year: QE: 2009-10 = 100)	42
4.1	Component specific structure of BGREI Programme during the year	
	2010-11 based on percentage share in total expenditure in Bihar & Jharkhand	43
4.2	Intervention specific composition of BGREI Programme during the 2011-12	
	in Bihar & Jharkhand	45
4.3	Performance Index (%) of the access of the participating farmers to technical	
	Backstopping in Bihar state under BGREI Programme during 2011-12	<mark>47</mark>
4.4	Performance Index (%) of the access of the participating farmers to technical	
	backstopping in Jharkhand state under BGREI Programme during 2011-12	49
4.5	Consolidated performance Index (%) of agency specific access to Technical	
	backstopping under BGREI in 2011-12 in Bihar & Jharkhand	50
4.6	Change in Cropping Intensity in BGREI districts in Bihar in 2011-12 over 2010-11	51
4.7	Change in Cropping Intensity in BGREI districts in Jharkhand in 2011-12 over 2010-11	52
4.8	Yield Gap in Paddy compared with farmer's yield and potential yield in Bihar	53
4.9	Yield Gap in Paddy compared with farmer's yield and potential yield in Jharkhand	54
4.10	Educational Qualification of the Progressive Farmers (%) engaged during 2011-12 in	0.
0	Bihar & Jharkhand	55
4.11	Activities carried out by Progressive Farmers & Status of Payment in Kharif during	00
7.11	2011-12 in Bihar & Jharkhand	<mark>56</mark>
4.11 (A)		50
4 .11 (A)	Gram Panchayats & Village at a Glance in Jharkhand under BGREI	
	in Kharif, 2011-12	<mark>57</mark>
4.11 (B)	·	31
4.11 (D)	Cropped Area under BGREI in 2011-12 in Bihar & Jharkhand	57
4.40	Adoption level of Deep Ploughing and Land Preparation by	37
4.12		
	beneficiaries of Block Demonstrations of Rice in BGREI districts and	50
	non-beneficiaries during kharif – 2011 in Bihar & Jharkhand	58
4.40	Described Destile of DODEL has distingted by the Description (0/)	
4.13	Perception Profile of BGREI beneficiaries about the Programme (%)	
	in Bihar & Jharkhand	59
4.14	Productivity and Net Returns/ha in rice during kharif (2011) in Bihar	63-65
4.15	Productivity and Net Returns/ha in rice during kharif (2011) in Jharkhand	66-68
4.16	Mean Difference test of grain yield of paddy in Bihar & Jharkhand	<mark>69</mark>

		during 2011-12	10.
<mark>Append</mark>	lix – XII:	Jharkhand during 2011-12. Visit of State Officials/Scientists to Review BGREI Programme in Jharkhand	10
<mark>Append</mark>	lix – XI:	Status of Monitoring of Programme by CRRI, Cuttack/Others under BGREI in	10
- тррени	21,	Bihar and Decisions taken during 2011-12	104-0
<mark>Append</mark>	lix - X:	Number of SLMTs meetings/visits conveyed/undertaken under BGREI in	
тррспи	171,	Development Programme under BGREI Programme during 2010-11 in Jharkhan	10.
Annend	lix – IX:	Physical and Financial Targets and Achievements for Maize and Wheat Crops	10.
Appena	ux - V 111:	Physical and Financial Targets and Achievements for Pulse Crops under BGREI Programme during 2010-11 in Jharkhand.	102
	lix –VII:	Test of Homogeneity of the respondent farmers: beneficiary versus non-beneficiary. Physical and Financial Taxoets and Achievements for Pulse Crops under BCRFL	10
Ammond	liv VIII		
<i>1</i> 1ppenu	ux -VI:	during 2011-12 in [harkhand.	10
<mark>Append</mark>	liv -VI	Physical and Financial Targets and Achievements under BGREI Programme	99
Appena	ux - v:	during 2011-12 in Bihar.	99
Appena Append		Physical and Financial Targets and Achievements under BGREI Programme	
Append	lix _IV·	Determination of the Impact of inputs in the total yield of paddy in kharif – 2011.	98
търени	ux −111.	Dept. of Agriculture	97
<mark>Append</mark>	liv_III	Circular No. NFSM-2/2011-270/Krishi, Patna dated 15/04/2011 of Govt. of Bihar,	96
Appena	ux- 11:	during 2010-11 in [harkhand.	96
<mark>Append</mark>	liv_ II•	Physical and Financial Targets and Achievements under BGREI Programme	95
Appena	ux -1:	during 2010-11 in Bihar	95
Append	liv_I·	Physical and Financial Targets and Achievements under BGREI Programme	
ATTREAU	10 17.	Action Parish Report of the Comments dated 11-12/07/2015.	34
Annexu	re-IV·	the presentation of Draft of Consolidated Report on BGREI dated 11/07/2013. Action Taken Report of the Comments dated 11-12/07/2013.	92-93 94
<u>Annexu</u> ı	re- III:	Comments from Experts Dr. S Bhawani, Dr. B S Bhandari & Dr. J Sandhu in	02.02
Annexu		Action Taken Report (ATR) 91	
Annexu		Coordinator's Comments on the Draft Report	90
	KHAHI .	2011 III DIIIAI & JIIAI KIIAIIU	00
5.11		its by BGREI Cell for Monitoring of BGREI Programme during 2011 in Bihar & Jharkhand	<mark>86</mark>
E 11		Jharkhand	85
5.10		its Undertaken by the Scientists of ICAR-SAU during 2011-12 in	
	In Bihar	& Jharkhand	84
5.9	Determination of the Impact of Inputs in the Total Yield of Paddy in Kharif – 2011		03
5.7 5.8		p in Paddy Compared with Farmers' Yield in Bihar & Jharkhand on Profile of BGREI Beneficiaries about the Programme in Bihar & Jharkhand	82 83
- -		over 2010-11	81
5.6	Change	in Cropping Intensity in BGREI Districts in Bihar & Jharkhand in	
0.0		pping under BGREI in 2011-12 in Bihar & Jharkhand	81
5.5		& Jharkhand (In %) lated Performance Index (%) of Agency Specific access to Technical	80
5.4		tion Specific Composition of BGREI Programme during the Year 2011-12	00
	On % sh	nare in total expenditure in Bihar	80
5.3	Compon	ent Specific Structure of BGREI Programme during the Year 2010-11 based	
J.Z		& 2011-12 in Bihar & Jharkhand	79
5.2		& 2011-12 in Bihar & Jharkhand Area, Production and Yield of Wheat Crop in BGREI & NFSM Districts during	79
5.1		Area, Production and Yield of Rice Crop in BGREI & NFSM Districts during	7.0
4.19	Timeline	ss for Implementation of the BGREI in Bihar for 2010-11 & 2011-12	72
4.18		its by BGREI Cell for monitoring BGREI in Bihar & Jharkhand programme harif 2011.	<mark>72</mark>
/ 1Q	Jharkha Field vis		71
4.17		its undertaken by the Scientists of ICAR-SAU during 2011-12 in Bihar &	