



Work Plan for 2010- 11
and
Activity Milestone for 2007-12 (XIth Plan)



Central Rice Research Institute
Indian Council of Agricultural Research
Cuttack (Orissa) 753 006

PREFACE

The Institute Research Council (IRC) of the Central Rice Research Institute in its meeting held on December 2-4th, 2009 and 14-15, 19-21, 24- 25 May, 2010 critically discussed different areas of rice research and finalized the Technical Programme for the year 2010-11. Kind guidance and advice of the Hon'ble Director General, Dy. Director General (Crop Sciences), recommendations of the Research Advisory Committee (RAC). QRT report and the new initiatives and future thrusts as projected in the XI Five-year Plan document have been taken into consideration while formulating the technical programme. It is a comprehensive research plan for execution during the five years of the XI Plan period.

The research activities of the Institute are grouped under ten multidisciplinary programmes. Total 153 research projects under 48 Sub-programmes and 10 Programmes were finalized for the year 2010-11. As per the guide lines of the council, total 251 projects and 54 Sub-programmes of 2009-10, have been re-organised by merging the projects with similar objectives. This endeavor will improve project management, monitoring and reporting systems as well as optimization of resources. Crop Improvement programme (Prog.1-4) accounted for about 43% of the projects, followed by Crop Production (29%, Prog.5-7), Crop Protection (18%, Prog.8-9) and Social Sciences (10%, Prog.10). Besides, total 50 Externally Aided Projects (EAPs) on different areas of rice improvement and production systems will enrich and support the research programmes. Each of the 10 Research Programmes is comprehensively developed and is evenly balanced with projects of basic nature ranging from 20-50% and the rest of strategic and applied research.

The work plan visualizes a very strong Crop Improvement programme supported with modern breeding approaches and tools of molecular biology in all favourable and unfavourable ecologies. It is adequately supported by frontier research in the areas of genetic resources, seed technology, water and nutrient use efficiency, hybrid rice, new plant types and bio-technology with the aim of sustainable genetic enhancement, durable resistance to abiotic and biotic stresses, conversion of C₃-rice to C₄ (Photosynthesis), genetic improvement of quality rice and value addition. The Crop Production programme includes resilient and balanced approaches on nutrient, water and soil health management and improvement, water saving options, precision farming, and rice-based cropping and diversified farming systems, mechanization and processing for cost-effective, efficient and sustainable production systems in all rice ecologies.

The Crop Protection programme will cope with the management of all major pests and diseases as well as the emerging situations in pests and diseases with respect to global warming through cost-effective and environmentally safe approaches, including IPM. The Socio-economic research programme is well equipped to deal the issues related to socio-economic sustenance of rice production and marketing and a strong transfer of technology programme with efficient training and extension modules. In the year 2010-11, the programme has been further enriched with the inclusion of more projects on the frontline areas like, aerobic rice, management of problem soil, characterization of cropping systems and coastal saline rice areas by modern tools, management of rice nematode and sheath blight disease and impact of climate change on rice economy. The Work Plan of the Institute thus, will address the major issues in rice improvement and production during XI Plan period and will provide a fillip to 'Rice Mission Programme' of the country.

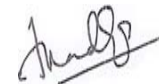
Efforts are being made to obtain more grants from the External Agencies through new project proposals that are being mooted on a regular basis by the research scientists of the Institute.

The research monitoring and evaluation system has been strengthened by constitution of a Research Coordination and management Unit (RCMU) and the IRC has become pro-active in critical evaluation and monitoring of each project.

The Institute also provides guidance/facilities/support to researchers who are awarded financial support by donors and want to work at CRRRI. Besides, the Institute has signed MOU with several State Agricultural Universities for teaching and research activities. The Institute has also opened its facilities to students of leading Universities of the country for their M.Sc. term-papers and project work on bench-fee basis as a revenue generator for the Institute.

Attempts have been made to follow the Project-Based Budgeting (PBB) system in accordance with Council's advice.

Dr. D.P. Sinhababu, Principal Scientist and Member-Secretary, IRC and Chairman RCMU, Dr. S.R. Dhua, Principal Scientist, Secretary, EAP Projects and member, RCMU, Dr. R.N. Rao, Principal Scientist and Member - Secretary, Research Advisory Committee (RAC) have been instrumental in finalizing this technical programme.



(T.K. Adhya)

CHAIRMAN, IRC AND DIRECTOR
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CUTTACK-753 006, ORISSA, INDIA

CENTRAL RICE RESEARCH INSTITUTE CUTTACK-753 006, ORISSA

BUDGET ALLOCATION FOR 2010-11

Sl. No.	Heads	(Rs. In lakhs)	
		Non-Plan	Plan
1.	a) Establishment charges (including LSPC)	220	-
	b) Wages	250	-
	c) O.T.A.	-	-
2.	Traveling Expenses	5	25
3.	HRD	-	4
4.	Other charges including equipments	155	223
5.	Other charges including Inf. Tech.	-	15
6.	Works		
	i) Annual repair and maintenance		
	a) Office buildings	10	189
	b) Residential buildings	5	30
	ii) Minor works	10	-
7.	One time catch-up grant		
	i) Replacement of Equipment	10	-
	ii) Renovation of old buildings & others	4.95	50
	Total	2649.95	536
8.	Pension & Retirement Benefits	300	-
		9	-
9.	Loans & Advances (Interest bearing Advances)		
	Grand Total	2958.95	536

**ABSTRACT PROGRAMME OF WORK
(2010 -11)**

Project No.	Title of the Project	Leader/ Co- Leader	No. of Activities/Sub- programme	No. of Milestones (Projects)	Page No.
PROGRAMMES					
Prog. 1	Genetic resources and seed technology	S.R. Dhua/B.C. Patra	2	10	1-2
Prog. 2	Genetic enhancement of yield	G.J.N. Rao/R.N. Rao	11	34	3-6
Prog. 3	Improvement of grain and nutritional quality	A. Patnaik/S.G. Sharma	2	7	7
Prog. 4	Breeding for resistance/tolerance to biotic, abiotic and environmental stresses	J.N. Reddy/R.K. Sahu	5	14	8-9
Prog. 5	Natural resource management and input use efficiency for improved crop production	A.K. Shukla/ A. Ghosh	5	15	10-12
Prog. 6	Enhancing and sustaining the productivity of rice based farming systems	K.S. Rao/S. Saha	6	21	13-15
Prog. 7	Mechanization for rice production and post harvest systems.	P.C. Mohapatra/P. Mishra	2	9	16
Prog. 8	Strategic research on pathogens/ pest population dynamics, crop losses, forecasting	U. Dhua /S. Sasmal	7	14	17-19
Prog. 9	Developing IPM technologies for different rice ecologies	K.S.Behera/S.N. Tewari	2	14	20-21
Prog. 10	Socio-Economic Research for Sustainable Development	B.N. Sadangi/P. Samal	6	15	22-23
	Total		48	153	
EXTERNALLY AIDED PROJECTS (EAPs)					
EAPs	Externally aided projects	S.R. Dhua	50	48	24-28

Programme 1. Genetic resources and seed technology: S R Dhua/B.C. Patra

Sub-program	Project	Principal Investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
1.1 Genetic resources B.C. Patra	1.1.1 Collection, characterization and conservation of trait specific germplasm	B.C. Patra	H.N. Subudhi B.C. Marndi, A. Patnaik	*	*	*	*	*	1.1.1,1.1.2 merged, & title modified
	1.1.3 Characterization and Rejuvenation of rice germplasm	H.N. Subudhi	B.C. Patra, B.C. Marndi	* *	* *	* *	* *	* *	1.1.2,1.1.3,1.1.4 merged & title modified
	1.1.5 Conservation of germplasm (including wild species) and development of database for genetic resources management and seed supply	B.C. Marndi	B.C. Patra, H.N. Subudhi	* *	* *	* *	* *	* *	1.1.6,2.1.1 merged & title modified
	1.1.6 Characterization and maintenance of landraces, identified donors and pre-breeding lines for upland ecosystem	M.S. Anantha	N.P. Mandal, B.C. Marndi	*	*	*	*	*	1.1.8 completed 1.1.7merged with 2.5.5
1.2 Seed research S.R. Dhua	1.2.1 Seed production including hybrids Maintenance breeding of parental lines and nucleus seed production for hybrids	S.R. Dhua	R.K. Sahu, J.N. Reddy, S.S.C Patnaik, A. Patnaik, A. Prakash, S. Saha, U. Dhua, R.N.Rao, A.Poonam	* *	* *	* *	* *	* *	1.2.1,1.2.2, 1.2.3,1.2.12 merged & title modified
	1.2.4 Use of molecular marker technology for testing purity of parental lines and hybrids and developing new marker	L Behera	R.N. Rao, S.S.C. Patnaik S.R. Dhua	* *	* *	* *	* *	* *	

	1.2.5 Studies on the genetics of seed dormancy and gene mapping	R.K. Sahu	L Behera, S.R.Dhua	* *	* *	* *	* *	* *	
	1.2.6 Management of seed micro flora for quality seed production and storage	U. Dhua	S.R. Dhua	* *	* *	* *	* *	* *	1.2.7,1.2.8 completed
	1.2.9 Effect of different packaging materials on enhancing longevity of rice seeds under ambient condition	P. Mishra	S.R. Dhua	* *	* *	* *	* *	* *	
	1.2.10 Studies on seed invigoration for improving rice productivity	C.V. Singh	R.K. Singh,	*	*	*	*	*	1.2.11 merged with 2.5.5

Programme 2: Genetic enhancement of yield: GJN Rao/R.N. Rao

Sub-Program	Project	Principal Investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
2.1 Varietal improvement for rainfed uplands N. P. Mandal,	2.1.1 Development of varieties suitable for uplands including drought tolerance.	N. P. Mandal,	M.Variar V.D. Shukla, L.K.Bose, O.N. Singh, P. Swain, L.Behera	* *	* *	* *	* *	* *	2.1.1, 2.1.2, 4.4.1 merged & title modified
	2.2.1 Development of high yielding varieties for limited water conditions	O.N. Singh	K. Pande, S.K. Pradhan, A. Ghosh, P. Swain, M.J. Baig, L. Behera, K.M.Das A. rakash,C.D.Mishra S.K.Das	* *	* *	* *	* *	* *	2.2.1,2.2.2 merged & title modified
2.2.Development of aerobic rice for favourable soil condition O.N. Singh	2.2.3 Hybridization, generation, selection and evaluation of breeding materials for rainfed semi-aerobic/favourable uplands	N.P.Mandal	C. V. Singh, M. Variar, R.K. Singh ,V.D.Shukla, M.S.Anantha	* *	* *	* *	* *	* *	
	2.3.1 Development of varieties for different seasons with wider adaptability under direct seeded and transplanted condition	K Pande	S.S.C. Patnaik, M. Kar, G.J.N. Rao, N. Bhakta	* *	* *	* *	* *	* *	
2.3 Varietal improvement for shallow lowland and irrigated ecosystems including high temperature tolerance K. Pande	2.3.2. Development of varieties with high nitrogen use efficiency	J. Meher	O.N. Singh, B.B.Panda	* *	* *	* *	* *	* *	
	2.3.3. Breeding for tolerance to Zn deficiency and iron toxicity in irrigated rice	J. Meher	Md. Shahid	* *	* *	* *	* *	* *	2.3.3,2.4.2 merged & title modified
	2.3.4. Breeding for high temperature tolerance	J.Meher		* *	* *	* *	* *	* *	4.4.2, shifted and sub-prog4.4 merged with 2.3

2.4 Varietal improvement for rainfed unfavourable lowlands (shallow/medium-deep/deep water ecosystems) J.N. Reddy	2.4.1 Development of varieties of medium and mid-late duration with major biotic and abiotic stress tolerance (drought) for unfavorable shallow lowlands	L.K.Bose	O.N. Singh, P. Swain, K.M. Das P.C.Rath, Md. Shahid	* *	* *	* *	* *	* *	
	2.4.3 Development of high yielding varieties suitable for submergence prone and medium deep water logged areas	J.N. Reddy	R.K. Sarkar, P. Swain, K.M. Das, U. Dhua S. Sasmal	* *	* *	* *	* *	* *	2.4.3,2.4.4, 4.4.2 merged & title modified
	2.4.5 Development of suitable varieties for delayed monsoon/early flooding situations	S.S.C. Patnaik	JN Reddy, U Dhua S Sasmal	*	*	*	*	*	
	2.4.6 Development of short duration (100-110 days) varieties with salt tolerance for coastal saline areas in dry season	B.C. Marndi	K. Chattopadhyaya, D.P. Singh K.R. Mahata	* *	* *	* *	* *	* *	2.4.6,4.4.3 merged & title modified
	2.4.7 Varietal development (including genetical basis) for coastal saline areas for wet season	K. Chattopadhyay	B.C.Marndi, D.P. Singh, K.R. Mahata	* *	* *	* *	* *	* *	2.4.7, 2.4.10 merged & title modified
	2.4.8 Breeding high yielding varieties (including genetical basis) for deepwater rice with tolerance to major biotic and abiotic stresses	S.K. Pradhan	N.Bhakta, M.J. Baig, K.M.Das, L.Behera	*	*	*	*	*	2.4.8,2.4.9 merged & title modified
2.5 Breeding for flood prone ecologies N.Bhakta	2.5.1 Development of varieties for pre-flood (Ahu), post flood (Sali) and flash flood situations	N. Bhakta		*	*	*	*	*	2.5.1,2.5.2, 2.5.3,2.5.6 merged & title modified
	2.5.3 Development of varieties for boro season	N. Bhakta		*	*	*	*	*	
	2.5.5 Germplasm, seed maintenance and genotype evaluation through national and international trials	N. Bhakta		*	*	*	*	*	1.1.7, 1.2.11, 2.5.5 merged & title modified

2.6 Hybrid rice technology R.N. Rao	2.6.1. Development of three line hybrids for irrigated and shallow lowlands using different male sterility systems	R.N. Rao	S.S.C Patnaik	* *	* *	* *	* *	* *	2.6.1,2.6.2 merged & title modified
	2.6.3. Development of two line hybrids	S.S.C. Patnaik	R.N. Rao	* *	* *	* *	* *	* *	
	2.6.4. Parental line improvement including Pyramiding of RF genes	R.N. Rao	G.J.N. Rao S.S.C. Patnaik	* *	* *	* *	* *	* *	2.6.4,2.6.5 merged & title modified
	2.6.6. Evaluation of hybrids- Station trials and National trials	S.S.C. Patnaik	R.N. Rao	* *	* *	* *	* *	* *	2.6.7, merged with 4.1.1. & 2.6,8 with 3.2.4.
2.7 Development of super rices for different rice ecologies S.K.Pradhan	2.7.1. Development and evaluation of super rice (NPT)for favourable ecologies	S.K.Dash	S.K.Pradhan, G.J.N.Rao , O.N. Singh, P.Swain, M.J.Baig	* *	* *	* *			2.7.1, 2.7.3 2.10.1 merged & title modified
	2.7.2. Development and evaluation of superior plant types for unfavourable ecologies	S.K. Pradhan	S.K.Das,O.N. Singh G.J.N.Rao, M.S.Anantha	* *	* *	* *	* *	* *	2.7.2, 2.7.4 merged & title modified
2.8 Biotechnological approaches to rice improvement L. Behera	2.8.1 DNA fingerprinting of rice varieties, hybrids and other unique germplasm and development of database	S.Samantaray	R.K. Sahu L. Behera	* *	* *	* *	* *	* *	
	2.8.2 Development of transgenics for biotic and abiotic stresses and nutritional enhancement	B,Bhattacharya	M. Kar, A. Patnaik, G. Bhaktavatsalam, G.J.N.Rao, S.Sahu, L.Behera, A.Prakash	* *	* *	* *	* *	* *	2.8.2, 2.8.10, 2.8.11, 2.8.18, 2.8.19 merged & title modified
	2.8.3 Identification of genes /QTLs for yield and major biotic and abiotic stresses	L Behera	S.K. Pradhan, R.K.Singh, N.P.Mandal, M.Variar, V.D.Shukla, P.Swain, K.Vanitha, S.Samantaray M.S. Anantha	* *	* *	* *	* *	* *	2.8.3, 2.8.13 2.8.14, 2.8.15, 2.8.16, 2.8.17, Merged & title modified

	2.8.4 Application of functional genomics tools for gene discovery against major stresses (high temperature and submergence) and their incorporation	N.,Dwivedi	L.Behera, A Das, J. Meher S.C. Sahu	* * *	* * *	* * *	* * *	* * *	2.8.5 merged with 3.1.1.
	2.8.6 Doubled haploid breeding in rice	G.J.N. Rao	R.N. Rao, M.K.Kar S. Samanataray	* * *	* * *	* * *	* * *	* * *	
	2.8.7 Molecular characterization of insect pest populations	S.C. Sahu	L. Behera M. Jena	* * *	* * *	* * *	* * *	* * *	
	2.8.20. Manipulating reproductive system and ploidy in rice towards induction of apomixes components.	P.Kaushal	B.Bhatachharya, L.Behera, S.K.Pradhan, G.J.N.Rao			* * *	* * *	* * *	2.8.20,2.9.5 merged title modified & title modified
2.9 Genetical and cytogenetical studies P.Kaushal	2.9.1. Phylogenetic relationships in genus <i>Oryza</i> and development of MAALs	D. Swain	M. Kar, K.Vanitha, H.N.Subudhi, S.Samantaray L.K.Bose	* * *	* * *	* * *	* * *	* * *	2.9.1,2.9.2 merged & title modified
	2.9.3. Studies on gene flow from cultivated to wild species using cytogenetical and molecular tools	D. Swain	R.K. Sahu	* * *	* * *	* * *	* * *	* * *	
	2.9.4. Introgression of alien genes tolerance to abiotic stress and its utilization	L.K.Bose	O.N.Singh, P. Swain, B.C.Patra			* * *	* * *	* * *	
2.10 Improving biochemical/ physiological efficiency of varieties P.Swain	2.10.3 Development of New Plant Type with C4 mechanism of photosynthesis	M.J .Baig	P. Swain	*	*	*	*	*	
2.11 Hybridization and off season nursery facility (AICRIP ,INGER) GJN Rao	2.11.1 Hybridization and off season nursery facility and different evaluation trials(AICRIP,INGER)	G.J.N. Rao	O.N.Singh,A. Patnaik,K.Pandey, S.S.C.Pattnaik, J.Meher, M.K.Kar, S.K.Pradhan, J.N.Reddy, B.C.Marandi, S.G.Sharma, P.Swain	* * *	* * *	* * *	* * *	* * *	2.11.1, 2.12.1, 2.12.2, 2.12.3, 2.12.4 merged & title modified

Programme 3 : Improvement of grain and nutritional quality : A Patnaik/S.G. Sharma

Sub-program	Project	Principal Investigator (PI)	Co- PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
3.1 Breeding for quality rice A. Patnaik	3.1.1 Evaluation and Improvement of yield of aromatic (long and short grained) varieties using conventional and molecular approaches (including Gene tagging)	A. Patnaik	G.J.N. Rao, L. Behera, S.G. Sharma	* *	* *	* *	* *	* *	3.1.1,2.8.5, merged & title modified
	3.1.2 Development of high yielding varieties for grain quality ,organic and nutritional enrichment	A. Patnaik	G.J.N. Rao. A.K. Shukla, S.Das, K.S. Behera, P.Mishra, S.N.Tewari Md.Shahid	* *	* *	* *	* *	* *	3.1.2,3.1.3, 3.1.4 merged & title modified
	3.1. 5 Breeding for high protein rice	K.Chattopadhyay ,	A.Das, B.C.Marndi, S.Das			* *	* *	* *	
3.2 Grain quality and biochemistry S.G.Sharma	3.2.1 Biochemistry of specialty rices and value addition	S .G. Sharma	A. Das, S. Das B. C Marndi, P,Mishra	* *	* *	* *	* *	* *	3.2.1,3.2.2,3. 2.3 merged & title modified
	3.2.4 Rice grain quality-evaluation and biochemistry	S. Das	P.Bhattacharya, S.G. Sharma,H.N.Subudhi , J.N.Reddy, A. Das, R.N.Rao, P.N.Mishra S.S.C.Pattnaik	* *	* *	* *	* *	* *	3.2.4,3.2.5,3. 2.6,2.6.8 merged & title modified
	3.2.7 Biochemistry of high protein rice	A. Das	S.G. Sharma, S. Das ,B.C. Marndi	* *	* *	* *	* *	* *	
	3.2.8 Biochemistry of micronutrients in rice	A. Das	S.G. Sharma, S. Das, B.C. Marndi	* *	* *	* *	* *	* *	3.2.8,3.2.9 merged & title modified,

Programme 4: Breeding for resistance/tolerance to biotic, abiotic and environmental stresses: JN Reddy/RK Sahu

Sub-program	Project	Principal Investigator (PI)	Co PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
4.1 Identification of new sources of resistance/tolerance to pests and diseases- M.Jena	4.1.1 Identification of new donors and mechanism of resistance/tolerance to major insect pests	M. Jena	J. Rao, K.S. Behera P.C. Rath K.Vanitha, S.K. Pradhan R.K. sahu,R.N.Rao,G. Bhaktabatchalam, K.M.Das	* *	* *	* *	* *	* *	4.1.1,4.1.6, 2.6.7 merged & title modified
	4.1.2 Identification of new sources of resistance/tolerance and mechanism of resistance/tolerance to major diseases	K.M. Das	U. Dhua, S.N.Tewari, G.Bhaktavatsalam, S.K.Singh, M.K.Kar	* *	* *	* *	* *	* *	4.1.2, 4.1.3, 4.1.4, 4.1.5merged & title modified
	4.1.7 Testing the rice germplasm for resistance against major nematode pests of rice	C.D.Mishra	B.C.Marandi				*	*	New Project
4.2.Breeding for resistance to major insects RK Sahu	4.2.1 Breeding for multiple pest resistance with emphasis on Brown Plant Hopper and YSB and Gall Midge	R.K. Sahu,	S.K. Pradhan, L. Behera, M. Jena, S.C. Sahu, J.Rao, A.Prakash	* *	* *	* *	* *	* *	4.2.1&4.2.2 merged & title modified
4.3.Breeding for resistance to major diseases- MK Kar	4.3.1 Breeding for multiple disease resistance with emphasis on Bacterial blight and Blast	J.N. Reddy	G.J.N. Rao, K.M. Das	* *	* *	* *	* *	* *	
	4.3.2 Breeding for resistance to Sheath Blight	M.K. Kar	G.J.N. Rao ,S.N. Tewari, G. Bhaktavatsalam	* *	* *	* *	* *	* *	
	4.3.3 Breeding for resistance to Rice Tungro Disease	M.K. Kar	G.J.N. Rao, S.K. Singh , J. Rao	* *	* *	* *	* *	* *	4.4.1 merged with 2.1.1 and 4.4.3 with 2.4.6 ;4.4.2 shifted to Prog.2 as 2.3.4

4.5. Physiology of abiotic stress tolerance <i>DP Singh</i>	4.5.1 Mechanism of multiple abiotic stress tolerance in rainfed lowland rice	R.K. Sarkar	D.P. Singh, K.R. Mahata, J.N. Reddy	*	*	*	*	*	*	*	
	4.5.2 Physiological basis of salt tolerance in rice with reference to coastal saline ecosystem.	D.P. Singh	K.R. Mahata, R.K Sarkar B.C. Marndi A.K..Nayak	*	*	*	*	*	*	*	
	4.5.3 Identification of germplasm/breeding lines for drought tolerance at seedling and reproductive stages and mechanism of drought tolerance	P. Swain	M.J. Baig, O.N. Singh, N.P. Mandal	*	*	*	*	*	*	*	
	4.5.4 Physiological basis of grain yield under aerobic condition/AWD	P. Swain	S. Saha	*	*	*	*	*	*	*	
	4.5.5 Photosynthetic efficiency and low light adaptability for higher grain yield in hybrid rice.	M.J. Baig	P. Swain , R.N. Rao	*	*	*	*	*	*	*	
	4.5.6 Mechanism of anaerobic/under water seedling establishment in rice	R.K. Sarkar		*	*	*	*	*	*	*	
4.6. Biophysical studies on global climate change and rice production <i>N.Dwivedi</i>	4.6.3 Impact of elevated CO ₂ and temperature on rice cultivation	N. Dwivedi	P. Bhattacharya M.J. Baig , S. Das			*	*	*	*	*	4.6.1 and 4.6.2 completed

Programme 5: Natural resource management and input use efficiency for improved crop production: A.K.Shukla/ A. Ghosh

Sub-programme	Projects	Principal Investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
5.1 Enhancement of the resource use efficiency - A.Ghosh	5.1.1 Development of management strategies for sustainable crop and soil productivity in irrigated and favourable rainfed low land ecologies	A.Ghosh	K.S.Rao, P.C. Mohapatra, O.N.Singh, A,K.Shukla, S.Mohanty	*	*	*	*	*	5.1.1,5.1.3, 6.1.1 merged & title modified
	5.1.2 Simulation approach for optimization of nutrient use	S.Mohanty	K.S.Rao, P.Bhattacharya	*	*	*	*	*	
	5.1.4 Increasing water use efficiency of crops under rice based cropping system	P.C.Mohapatra	S.Saha, S.P.Patel, M.Din	**	**	**	**	**	
	5.1.5 Standardization management practices for SRI	A.Poonam	P.C.Mohapatra A. Ghosh, S.Saha, M.J.Baig ,S.P.Patel, M.Din C.V.Singh, V.D. Shukla, R.K.Singh, B.S,Satapathy	**	**	**	**	**	5.1.5, 5.1.6, 5.1.7, 5.1.8 merged & title modified
	5.1.9 Standardization of management practices for organic rice production	A.Ghosh	K.S.Behera, S.Das, K.M.Das ,K.S.Rao, M.Jena, P.Bhattacharya, S.N.Tewari	*	*	*	*	*	5.1.9,5.1.10 merged & title modified
	5.1.11 AICRIP Agronomy trials	K.S.Rao	A. Poonam, A. Ghosh, S. Saha	* *	* *	* *	* *	* *	5.1.11 5.2.1,5.2.3 merged & title modified

	5.1.13 Rhizosphere effect on soil chemical environment and nutrient use efficiency for sustainable rice production	P.Bhattacharya	T.K.Adhya	*	*	*	*	*	*
	5.1.15. Maintenance of <i>Azolla</i> and BGA germplasm	D.P. Singh		--	--	*	*	*	*
5.2 Nutrient management strategy for rainfed upland rice <i>R.K.Singh/ C.V.Singh</i>	5.2.2 Effect of phosphorus, lime and organics on soil health in upland ecosystem	R.K.Singh	C.V.Singh	*	*	*	*	*	5.2.2,5.2.4 merged & title modified
5.3 Development of production technologies for aerobic rice <i>K.S.Rao/ B.B.Panda</i>	5.3.1 Development of agro-management practices for enhancing crop and water productivity in aerobic rice	B.B.Panda	K.S.Rao,A.Ghosh, K .R.Mahata., R.Tripathi,R,Raja, P.Samal ,A.Pandit, S.P.Patel M.Din , P.Swain,	*	*	*	*	*	5.3.1,5.3.2, 5.3.3 merged & title modified
	5.3.4 Transformation and availability of N in aerobic rice soils under different nitrogen management strategies	Arvind K.Shukla	B.B. Panda, S.Mohanty			*	*	*	5.1.14 shifted & renumbered
	5.3.5 Transformation and availability of Zn under aerobic rice system	Md.Shahid	A.K.Shukla, A.Kumar				*	*	New project
5.4 Microbial resource management and diversity analysis <i>T.K.Adhya/ T.K.Dangar</i>	5.4.1 Microbial diversity of tropical soils	T.K.Dangar	T.K.Adhya	*	*	*	*	*	5.4.1,5.4.2,5.4.3,5.4.6 merged & title modified; 5.4.4, 5.4.5 completed
	5.5.1 Diversity analysis of entomo-pathogenic microorganisms in rice ecosystems	T.K.Dangar	K.S.Behera	*	*	*	*	*	Sub-prog 5.4 and 5.5 merged; 5.5.1,5.5.2 merged & title modified

5.6 Improving nutrient use efficiency of upland rice through native beneficial soil microorganisms <i>D.Maiti/ R.K.Singh</i>	5.6.1 Development of biofertilizer combining VA-mycorrhiza, Azospirillum and PSB for upland rice and rice based cropping system	D.Maiti	R.K.Singh, C.V.Singh, M.Varia	*	*	*	*	*	5.6.1,5.6.2, 5.6.3 merged & title modified
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Programme 6: Enhancing and sustaining the productivity of rice based farming systems: K.S. Rao/S.Saha

Sub-programme	Projects	Principal Investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
6.1. Development of integrated nutrient management technologies for system productivity and quality <i>A.K. Shukla/ P.Bhattacharya</i>	6.1.2. Zero, reduced and optimum tillage for improved soil physical conditions and productivity of rice based cropping system	R.Tripathy	B.C. Parida K.R.Mahata	*	*	*	*	*	6.6.1 merged with 5.1.1.
	6.1.3. Optimization of organic and inorganic sources of nutrients for enhancing crop productivity and soil fertility	P. Bhattacharya	K.S. Rao, T.K. Adhya	*	*	*	*	*	
	6.1.4. Long term– assessment of soil quality and resilience in rice-rice system	A.K. Shukla	P. Battacharya, A.K.Nayak	* *	* *	* *	* *	* *	
6.2. Management of problem soils <i>A.K.Nayak</i>	6.2.1. Management of coastal saline soils	A.K.Nayak	D.P. Singh ,K.R.Mahata, S. Saha, R.Tripathy	*	* *	* *	* *	* *	
	6.2.2. Management of iron toxicity and Zn deficiency in rice	Md.Shahid	A.K.Nayak, A.K. Shukla, J.Meher.	* *	* *	* *	* *	* *	6.2.2,6.2.3 merged & title modified
	6.2.4 Mapping of saline rice growing areas of east coast of India using RS and GIS	R.Tripathy	A.K.Shukla, R.Raja, Md.Shahid			*	* *	* *	New Project
	6.2.5.Uptake and accumulation of Arsenic and its amelioration in rice and rice soils	A. Kumar	A.K.Nayak, Md.Shahid						New Project

6.3. Development of cropping systems for different rice ecologies. B.B.Panda/ R.Raja	6.3.1. Development and evaluation of rice based cropping systems for soil sustainability and productivity	B.B.Panda	A.Ghosh, K.S. Rao, S.Sasmal A. Poonam,A.K.Shukla, A.Pandit	* *	* *	* *	* *	* *	6.31,6.37 merged & title modified
	6.3.2. Studies on crop weather relationships under rice based cropping systems and developing adaptation strategies	R.Raja	S.Saha, K.S.Rao, A. Poonam K.S.Behera, U.Dhua	* *	* *	* *	* *	* *	6.32,6.3.3 merged & title modified
	6.3.4. Development of agro techniques for direct sown summer rice	S. Saha	K.S. Rao, A. Poonam , P. Battacharya	* *	* *	* *	* *	* *	
	6.3.5. Improvement of rice based cropping system in flood prone areas and crop weather relationship	D.S.Satapathy	S.Lenka	* *	* *	* *	* *	* *	6.3.5, 6.3.6 merged. & title modified
	6.3.8 Cropping system analysis for eastern India using remote sensing and GIS	R. Raja	R.Tripathy, B.B.Panda, A.K.Shukla			*	* *	* *	New project
6.4. Precision farming for rice and rice based production system A.Poonam	6.4.1. Evaluation of site specific management in rice and rice based cropping system	A. Poonam	K.S. Rao, R.Raja, S.Sasmal		* *	* *	* *	* *	
6.5. Ecologically based integrated weed management in rice S.Saha/ M.Jena	6.5.1. Population dynamics, biology and management of weeds through low- dose high-efficacy novel herbicides, bio-agents and allelopathic effects	S. Saha	M. Jena, K.S. Behera, , B.C. Patra, B.C. Marandi	*	*	*	*	*	6.5.1,6.5.2 merged & title modified
	6.5.3. Integrated weed management in upland rice	C.V. Singh	B.C. Patra, S.P.Patel, B.C.parida	*	*	*	*	*	
	6.5.4. Integrated weed management in rainfed upland rice of Orissa	S.M. Prasad	S.Saha			*	*	*	

6.6. Integrated farming systems in different rice ecologies D.P. Sinhababu/ P.K. Nayak	6.6.1. Diversified rice farming systems for favourable and unfavourable upland ecologies	C.V. Singh	R.K. Singh	* *	* *	* *	* *	* *	
	6.6.2. Improvement and popularization of integrated farming system model for small and marginal farmers under irrigated condition	K.S. Rao,	A. Poonam, P. K. Nayak	* *	* *	* *	* *	* *	
	6.6.3. Development of rice-fish-farming system for water logged and deep water areas and studies on rice-fish environment and interactions.	D.P. Sinhababu	P.K. Nayak, M.Jena, T.K.Dangar,S.Saha, T.K.Adhya ,M. Nedunchenzhiyam (RC of CTCRI), M.Das (DWM)	* *	* *	* *	* *	* *	6.6.3, 6.6.4, 6.6.7 merged & title modified
	6.6.5. Development of integrated farming systems for flood prone areas	D.S.Satopathy		* *	* *	* *	* *	* *	
	6.6.6. Development of culture techniques of ornamental fishes in rice field for income generation	P.K. Nayak	D.P.Sinhababu	* *	* *	* *	* *	* *	

Programme 7: Mechanization for rice production and post-harvest systems: PC Mohapatra/P.Mishra

Sub-programme	Projects	Principal Investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
7.1 Development of cost effective machines <i>P.C. Mohapatra/ B.C. Parida</i>	7.1.1 Design, fabrication and testing of self propelled paddy hill seeder power tiller operated multi-crop seed drill	S.P. Patel	P.C. Mohapatra	* *	* *	* *	* *	* *	7.1.1,7.1.2 merged & title modified
	7.1.3 Development, evaluation and improvement of bullock/ power tiller operated and power weeder for rice and rice based cropping system	B.C. Parida	K.S,Rao, S.P. Patel	* *	* *	* *	* *	* *	7.1.3,7.1.7 merged & title modified
	7.1.4 Energy requirement in rice based cropping system	S.P. Patel	P.C. Mohapatra	- *	- *	- *	- *	- *	
	7.1.5. Design, fabrication and testing of power operated 4 row rice transplanter using mat type and root wash seedlings	M. Din	A.K. Choudhury, B.C.Parida	* *	* *	* *	* *	* *	7.1.5,7.1.9 merged & title modified
	7.1.6. Performance evaluation of Biogas plant and rice husk stove	M. Din		* *	* *	* *			
	7.1.8. Ergonomic studies of rice machines for improved work efficiency	B.C. Parida		* *	* *	* *	* *	* *	
	7.1.10 Development and evaluation of power operated pre-germinated paddy seeder	M. Din	P.C. Mohapatra, B.C. Parida , S.P. Patel	* *	* *	* *	* *	* *	
7.2 Product diversification, value addition and post harvest technology <i>P. Mishra</i>	7.2.1. Development and evaluation of solar and biomass fuelled dryer for grain and food products	P. Mishra							
	7.2.2. Design and development of power operated grain cleaner	P. Mishra		* *	* *	* *	* *	* *	

Programme: 8. Strategic research on pathogens/ pest population dynamics, crop losses, forecasting: *U. Dhua /S.Sasmal*

Sub-programme	Projects	Principal Investigator (PI)	Co-PI	Milestone					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
8.1 Studies on pest/ natural enemy population dynamics <i>S. Sasmal</i>	8.1.1. Studies on off-season biology and resurgence of major rice insect pests	K.Vanitha	J.Rao, M.Jena, K.S.Behera, S.Sasmal	* *	* *	* *	* *	* *	8.1.1,8.1.2 merged & title modified
	8.1.3. Seasonal prevalence of rice insect pests and their natural enemies through light traps	C.D.Misra	K.S.Behera	* *	* *	* *	* *	* *	8.1.4 Completed
	8.1.5. Life table and virulence of rice plant hoppers and their management through induced resistance	K.Vanitha		* *	* *	* *	* *	* *	
8.2 Global warming and dynamics of major rice pathogens <i>K.M.Das</i>	8.2.2. Pathogenic dynamics in relation to global warming and synthetic pesticide molecules and monitoring of resistance	K.M.Das	G.Bhaktavatsalam, S.N.Tewari, S.K.Singh	* *	* *	* *	* *	* *	8.2.1,8.2.2 merged & title modified
8.3 Quantitative and qualitative disease severity assessment <i>S. K. Singh</i>	8.3.1. Estimating crop losses caused by major rice diseases (Blast, Sheath blight, False smut BLB and RTD)	S.K.Singh	S.N.Tewari, K.M.Das, S. Das	* *	* *	* *	* *	* *	
	8.3.2 Survey for the incidence of major rice diseases in Assam and other North East Region	S.Lenka	N.Bhakta			* *	* *	* *	

8.4 Development of diagnostic tools under invitro and invivo conditions for quick evaluation of disease incidence and severity S.K.Singh	8.4.2. Quick diagnosis of RTD through molecular marker and other techniques	S.K.Singh	S.C.Sahu	* *	* *	* *	* *	* *	8.4.1, 8.4.2 merged & title modified
	8.4.3 Management of False Smut of rice disease under rainfed ecosystem	D. Maiti	V. D. Shukla	*	*	*	*	*	
8.6 Exploring potentials of renewable botanicals development of formulating agents and efficiency of botanical formulations against rice pathogens S. N. Tiwari	8.6.1. Exploring potentials of renewable botanicals development of formulating agents and efficiency of botanical formulations against rice blast pathogens	S.N.Tewari	B.C.Patra	* *	* *	* *	* *	* *	8.6.1,8.6.2 merged & title modified
8.7 Analysis of population dynamics of blast, brown spot and BLB M. Variar	8.7.1 Development of monogenic differentials and characterization` of <i>P. grisea</i> populations	M. Variar	D. Maiti	* *	* *	* *	* *	* *	
	8.7.2 Characterization of <i>Bipolaris oryzae</i>	V. D. Shukla	S.K.Singh	* *	* *	* *	* *	* *	

8.8 Morpho – physiological and molecular characterization of microflora and development of database U.Dhua	8.8.1 Characterization and interaction with other microbes and rice genotypes for the microflora associated with rice blast lesions, false smut balls, sheath rot infected panicles, rice seeds and storage structures	U. Dhua	L. Behera, A.Das, B.Bhattacharya	* *	* *	* *	* *	* *	8.4.1,8.5.1,8.8.1 merged & title modified
	8.8.2 Characterization and development of data base for bacterial blight	K.M. Das	L. Behera, V.D.Shukla	* *	* *	* *	* *	* *	
	8.8.3 Characterization for sheath blight isolates	S.N.Tiwari							New Project

Programme 9. Developing IPM technologies for different rice ecologies: *K.S.Behera / S.N.Tewari*

Sub-programme	Project	Principal Investigator (PI)	Co-PI	Mile stones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
9.1. Studies on components of IPM A.Prakash	9.1.1. Control of field pests by chemicals and its long term effect in rice environment	P.C.Rath	K.S.Behera, C.D.Mishra, M. Jena, S.Saha T.K.Dangar, S.N.Tewari, A. K.Nayak	* *	* *	* *	* *	* *	9.1.1, 9.1.15 merged & title modified
	9.1.3. Faunal diversity and utilization of predators, parasites and pathogens for management of insect pests of rice	K.S. Behera	S.Sasmal, T.K.Danger, C.D.Mishra , S.Saha	* *	* *	* *	* *	* *	
	9.1.4. Botanicals grain protectants and pheromones against rice storage insects	J.Rao	A. Prakash	*	*	*	*	*	
	9.1.5. Studies on biodiversity and chemical control of rice mites	J. Rao	A. Prakash	*		*	*	*	
	9.1.6. Management of root-knot nematode and ufra disease in rice	C.D. Mishra	S.C.Sahu	*	*	*	*	*	
	9.1.7. Population dynamics, assessment losses and management of rodents	S. Sasmal	P.C. Rath	* *	* *	* *	* *	* *	
	9.1.8. CRRI/AICRIP Trials: On plant protection	A.Prakash	V.D Shukla, S.N.Tewari, K.M.Das, M.Variar M.Jena	* *	* *	* *	* *	* *	9.1.9, 9.1.10, 9.1.11 &9.1.13 merged & title modified

	9.1.12 Testing the efficacy of new molecules of chemicals and other products against the RTD & its vectors	S.K.Singh	J.Rao & A.Prakash	*	*	*	*	*	
	9.1.14. Development of biodegradable polymer – pesticide nano composite for controlled release.	S.Sasmal	A.Prakash, A. Das			*	* *	* *	
	9.1.16. Management of blast and sheath blight diseases in rice through botanicals and bio-control agents	S.Lenka		*	*	*	*	*	9.1.16, 9.1.17 merged & title modified
9.2. Development, evaluation and validation of IPM modules for different rice ecologies S. Sasmal	9.2.1 IPM module for upland rice	P.C Rath	S.N.Tewari, V.D.Shukla, P. Samal, G.A.K.Kumar	*	*	*	*	*	
	9.2.2. Bio-intensive IPM modules for irrigated and rainfed shallow favourable lowland rice with special emphasis on use of botanicals	M.Jena	S.Sasmal, S.K.Singh, K.S.Behera, S. Saha, P. Samal, T.K.Dangar	*	*	*	*	*	9.1.2, 9.2.2, 9.2.3 merged & title modified
	9.2.4. IPM module for rainfed lowland unfavourable (medium and deep water) rice ecology	S. Sasmal	P.C.Rath, U.Dhua, P. Samal , K.M.Das	*	*	*	*	*	9.2.4, 9.2.5 merged & title modified
	9.2.6. IPM package for hybrid rice	K.S.Behera	K.M.Das, A. Poonam, R.N.Rao	*	*	*	*	*	

Programme 10: Socio-Economic Research for Sustainable Development: *B.N.Sadangi/P.Samal*

Sub-Programme	Projects	Principal investigator (PI)	Co-PI	Milestones					Remark
				2007-08	2008-09	2009-10	2010-11	2011-12	
10.1. Data base reation N.P.Jambhulkar	10.1.1. Creation of data base on rice related information in the country and world, including QTLs	N.N.Jambhulkar	A.Pandit, P.Samal , P .Kaushal	* *	* *	* *	* *	* *	Title modified
10.2. Impact analysis and adoption strategies for various ecosystems N.C.Rath	10.2.1. Extension of adoption of rice production technology and there appropriateness and constraints as perceived by growers.	L.Das	N.C.Rath, P.Samal	* *	* *	* *	* *	* *	10.2.1, 10.2.6 merged, & title modified
	10.2.2. Analysis of total factor productivity on rice across the states in India	P.Samal	A.Pandit, K.S.Rao, ,O.N.Singh		* *	* *	* *		
	10.2.4. Prediction of requirement of quality seeds of rice by the farmers of different ecosystem in India	N.C.Rath	L.Das, G.A.K.Kumar , S.R. Dhua	* *	* *	* *	* *	* *	
	10.2.5. Developing entrepreneurial modules of some of the CRRRI technologies for training rural youth: A Process Study	G.A.K.Kumar	N.C.Rath,L.Das, D.P.Sinhababu, R.N.Rao, S.N.Tewari, A.K. Choudhury, B.,N. Sadangi A.Pandit	* *	* *	* *	* *	* *	
	10.2.7. Simulation of adoption of rice production technology	G.A.K.Kumar	L.Das, N.N. Jambhulkar			* *	* *	* *	
	10.2.8 Impact of sea level rise due to climate change on the rice economy of east coast regions of India	A.Pandit	R.Raja, R.Tripathy, P.Samal				* *	* *	New Project
	10.3. Market and Policy Research P.Samal	10.3.1. Impact of WTO on global rice exports with particular reference to India	P.Samal	A.Pandit	* *	* *	* *	* *	* *

	10.3.2. Public-private partnership in rice development	P.Samal	B.N.Sarangi, A.Pandit, N.C.Rath				* * *	* * *	Title Modified
	10.3.3. Marketing and price analysis of rice in eastern India	A.Pandit	P.Samal			* * *	* * *	* * *	
10.4. Participatory Extension and Training Methodology Development for Various Groups B.N.Sadangi	10.4.1. Dissemination of rice production technologies through model village and other programmes and their evaluation	B.N.Sadangi	N.C.Rath, S.M. Prasad, P.Samal, L.Das, B.C. Parida,,K.M.Das, M.Jena, S.S.C. Pattnaik, G.A.K.Kumar	* * *	* * *	* * *	* * *	* * *	10.4.1,10.7 .1,10.9.1, and 10.2.3 merged & title modified
	10.4.2. Assessment of effectiveness of KVK programme on sustainable development of farmers	L.Das	N.C.Rath, S.M.Prasad	* * *	* * *	* * *	* * *	* * *	
	10.4.3 Validation and dissemination of rice and rice based production technologies through FLDs, OFTs and training programme.(New Project)	V.K.Singh					* * *	* * *	
10.5. Gender Issues in Rice Farming L.Das	10.5.1. Income generating opportunities for tribal and disadvantaged farm-women through entrepreneurship development in rice-based farming system	L.Das	N.C.Rath, G.A.K.Kumar	* * *	* * *	* * *	* * *	* * *	Sub-Prog10.6 &project 10.6.1 completed
10.7. Transfer of Technology N.C.Rath	10.7.2. Demonstration of popular CRR1 rice varieties	N.C.Rath	H.N.Subudhi			* * *	* * *	* * *	

Ongoing Externally Aided Projects (EAPs)

SI No.	Project No.	Title of the Project	Principal Investigator	Source of Funding	Date of Start	Date of completion	Amount sanctioned (Rs.)	Budget Code
1	EAP 27	Revolving fund scheme for seed production of upland rice varieties at CRURRS, Hazaribagh	N.P.Mandal	AP Cess	1.4.97	Continuing	600,000 (Basic amount refunded)	9027
2	EAP 36	National Seed Project (Crops)	S.R.Dhua	NSP	1.4.98	31.3.2012	315,000	9036
3	EAP 49	Revolving fund scheme for breeder seed production	S.R.Dhua	NSP/Mega Seed	27.3.98	Continuing	500,000 (Refunded) + 10,00,000	9049
4	EAP 60	Front line Demonstration under Macro-Management scheme of Ministry of Agriculture – New High Yielding Varieties	V.D.Shukla	DAC	1.6.00	31.3.10	1,25,000	9060
5	EAP 80	Upland shuttle breeding network program at Hazaribagh (coordinating unit)	N.P.Mandal	ICAR-IRRI	1.1.01	Continuing	300,000	9080
6	EAP 93	Network project on Gene Pyramiding for resistance to Multiple Biotic Stress in crops	G.J.N.Rao	ICAR Network	2005	12.5.09	15,83,000	9093
7	EAP 98	FLD of self propelled rice transplanter, Tractor operated rotary (lug wheel) puddler and animal drawn lug wheel puddler	S.P.Patel	Central Sector Scheme of DAC	2.12.05	Continuing	12,000	9098
8	EAP 99	Transgenic in crops	G.J.N.Rao	ICAR Network	2005	Continuing	64,82,000	9099
9	EAP 100	Seed Production in Agricultural Crops and Fisheries – “Mega Seed Project”	S.R.Dhua	ICAR	2005-06	Continuing	2,80,00,000	9100
10	EAP 102	FLD under Macro-Management Scheme of Ministry of Agriculture - New high yielding rice varieties	S.R.Dhua	AICP	June 2010	March, 2011	96,000	9102
11	EAP 104	Microbial diversity and identification	T.K.Adhya (CCPI – T.K.Dangar)	ICAR Network	August 2006	Continued as plan project	14,62,000	9104

12	EAP 105	Nutrient management	T.K.Adhya	ICAR Network	August 2006	Continued as plan project	12,62,000	9105
13	EAP 106	Microbial bioremediation	T.K.Adhya	ICAR Network	August 2006	Continued as plan project	15,52,000	9106
14	EAP 108	Developing and disseminating resilient and productive rice varieties for drought prone areas on India - Hazaribagh	N.P.Mandal	IRRI (Rockefeller Foundation & Generation Challenge Program) - ICAR	1.1.06	Continuing	Rs6,00,000	9108
15	EAP 113	Bio-intensive management of rice pests with emphasis on botanicals	Mayabini Jena K.S.Behera S.Saha Lipi Das T.K.Dangar	DST	30.4.07	June, 2011	Rs.16,19,200	9113
16	EAP 114	Iron metabolism in rice (<i>Oryza sativa</i> L) plant with emphasis on its translocation and assimilation	Avijit Das S.G.Sharma	DST	24.4.07	April, 2010	Rs.25,29,000	9114
17	EAP 119	Soil organic carbon dynamics vis'-a'-vis' anticipatory climatic changes and crop adaptation strategies	T.K. Adhya	ICAR (NAIP)	July, 2008	March, 2012	Rs.4,80,01,000	9119
18	EAP 120	Towards development of a single cell C4 photosynthetic system in rice	M.J. Baig	ICAR (NAIP)	Sept., 2008	March, 2012	Rs.1,26,54,100	9120
19	EAP 121	Developing Sustainable Farming System Models for Prioritized Micro Watershed in Rainfed Areas in Jharkhand	R.K. Singh	ICAR (NAIP)	Sept., 2007	March, 2012	Rs.31,10,000	9121

20	EAP 122	Allele Mining and Expression Profiling of Resistance and Avirulence genes in Rice Blast Pathosystem for Development of Race Non-Specific Disease Resistance	M. Variar	ICAR (NAIP)	Jan., 2008	March-2012	Rs. 86,19,730	9122
21	EAP 123	Enhancing and stabilizing productivity of salt affected areas through incorporation of genes for tolerance of abiotic stresses in rice	D.P. Singh	IRRI (BMZ) – ICAR	Jan., 2008	Dec., 2011	US\$21,000	9123
22	EAP 124	Microbiological and chemical characterization of water before and after treatment with rice husk ash (RHA) filters of different quality	P. Mishra	DST, GOI	26.9.08	September, 2010	Rs.12,94,120	9124
23	EAP 125	Stress tolerant rice for poor farmers of Africa and South Asia – Drought prone rain-fed rice areas of South Asia – Hazaribagh Centre	N.P.Mandal	ICAR - IRRI (BMGF)	January, 2008	December 2010	US\$8000	9125
24	EAP 126	Stress tolerant rice for poor farmers of Africa and South Asia- Drought prone areas- CRRRI Centre	O.N.Singh P.Swain	ICAR - IRRI- (B&MGF)	January, 2009	30 October 2010	US\$3,000	9126
25	EAP 127	Stress tolerant rice for poor farmers of Africa and South Asia- Submergence and Flood prone areas	J.N.Reddy S.S.C.Patnaik	ICAR – IRRI (B&MGF)	January, 2009	30 October 2010	US\$10,000	9127
26	EAP 128	Stress tolerant rice for poor farmers of Africa and South Asia- Saline prone areas	D.P.Singh	ICAR – IRRI (B&MGF)	January, 2009	30 October 2010	US\$10,000	9128
27	EAP 129	Stress tolerant rice for poor farmers of Africa and South Asia- Socio-economic survey and impact assessment	P.Samal	ICAR-IRRI (B&MGF)	January, 2009	30 October 2010	US\$3,000	9129
28	EAP 130	All India Network Project on Soil Biodiversity-Biofertilizers	T.K.Adhya, D.Maiti	ICAR Network Project	1.4.09	Continued as plan project	Rs.20,20,000	9130
29	EAP 131	Research into development of decision support system for major insects pests or rice and cotton	Mayabini Jena	NAIP	17.7.08	31.3.12	Rs.1,07,000	9131

30	EAP 132	Gender issues of rice based production system and refinement of selected technologies in women perspective	Lipi Das A.Poonam	ICAR Network Project	9.3.09	31.3.12	Rs.9,00,000	9132
31	EAP 133	Capitalization of prominent landraces of rice in Orissa through Value Chain Approach	A.Patnaik	NAIP	25.2.09	2012	Rs.53,15,000	9133
32	EAP 134	Development and maintenance of rice knowledge management Portal	G.A.K.Kumar	NAIP	20.4.09	19.10.11	Rs.53,29,000	9134
33	EAP 135	Bioprospecting of genes and allele mining for abiotic stress tolerance	G.J.N.Rao	NAIP	4.5.09	31.3.12	Rs.1,78,00,000	9135
34	EAP 137	Establishment of National Rice Resources Database	B.C.Patra	DBT	August,09	March,14	Rs.76,80,000	9137
35	EAP 138	Connecting performance under drought with genotype through phenotype association	P.Swain	IRRI-ICAR	August,09	March,12	US\$ 30,000	9138
36	EAP 139	Renewable Energy Sources for Agriculture and Agro-based Industries	P.N.Mishra	AICRP	April,2009	March,12	Rs.12,10,000	9139
37	EAP 140	Intellectual Property Management and Transfer/commercialization of agricultural technology Scheme	S.R.Dhua	ICAR	April,2008	March,2012	Rs.23,52,000	9140
38	EAP 141	DUS Testing and documentation	S.R.Dhua	PPV&FRA	1.4.08	31.3.11	500,000	9141
39	EAP 142	National Invasive Weed Surveillance Program	K.S.Rao S.Saha (Area Coordinator)	DAC	July,2009	31.3.11	Rs.40,84,720	9142
40	EAP 143	Identification of molecular markers for enhanced <i>Arbuscular mycorrhiza</i> (AM) response and marker assisted selection of high am responsive varieties for efficient phosphorus nutrition of upland rice	Dipankar Maiti A.Das, BCKV R.K.Singh N.P.Mandal	DBT	11.9.09	31.3.12	Rs.14,09,000	9143
41	EAP 144	Livelihood promotion through integrated farming system in Assam	N.Bhakta	NAIP	26.9.08	2011	Rs11,44,000	9144

42	EAP 145	Identification and functional analysis of genes related to yield and biotic stresses	S.C.Sahu M.Jena L.Behera R.K.Sahu	DBT	18.9.09	17.9.14	Rs.40,30,000	9145
43	EAP 146	Confidence building and facilitation of large scale use of fly ash as an ameliorant and nutrient source for enhancing rice productivity and soil health	K.S.Rao A.K.Shukla R.Raja	DST	3.2.10	2.2.13	Rs.66,26,000	9146
44	EAP 147	Agro-techniques for sustaining productivity of wet direct sown summer rice in flood prone lowlands	Sanjoy Saha K.S.Rao, K.Pande K.S.Behera,B.B. Panda,L.Das	DST	26.2.10	25.2.13	Rs.16,77,000	9147
45	EAP 148	Strategies to enhance adaptive capacity to climate change in vulnerable regions	K.S.Rao B.B.Panda S.Mohanty A.Pandit	NAIP	8.4.10		Rs.161,91,900	9148
46	EAP 149	Awareness cum surveillance programme for management of major pest in Paddy	Anand Prakash	Directorate of Agriculture & Food Production , Orissa, Bhubaneswar	10.6.10	March,2011	Rs.6,40,000	9149
47	EAP 150	Development, dissemination and popularization of location specific IPM strategies in different rice agro-ecosystems	Anand Prakash	NCIPM, ICAR	19.05.10	March, 2011	Rs.1,50,000	9150
48	EAP 151	Hybrid Rice Research network	R.N.Rao	AICRP	July,2010	31.3.13	Rs.9,00,000	9151
49	EAP 152	Mapping and Marker Assisted selection for RTV resistant genes	M.K.Kar, GJNRao J Rao	AICRP	1.4.2010	31.3.2012	Rs.1400000	9152
50	EAP 153	Development of molecular markers linked to genes for resistance to Brown Planthopper	R.K.Sahu M Jena L Behera	AICRP	1.4.2010	31.3.2012	Rs.1400000	9153