

NRRI Newsletter

ICAR-NATIONAL RICE RESEARCH INSTITUTE, CUTTACK

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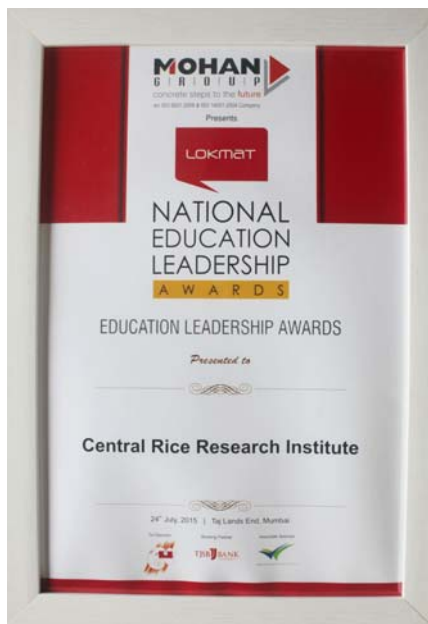
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ICAR-NRRI conferred with Lokmat National Education Leadership Award

ICAR-National Rice Research Institute, Cuttack was honoured with the Lokmat National Education Leadership Award in recognition of significant contribution in the area of leadership development in rice farming in the country. On behalf of the Institute, Dr. T Mohapatra, Director received the award during the World Education Congress on 24 July 2015 at Taj Lands End, Mumbai. The programme was organized by Mohan Group, India.

एनआरआरआई लोकमत राष्ट्रीय शिक्षा नेतृत्व पुरस्कार से सम्मानित

राष्ट्रीय चावल अनुसंधान संस्थान, कटक को देश में चावल की खेती में नेतृत्व विकास के क्षेत्र में महत्वपूर्ण योगदान करने के लिए लोकमत राष्ट्रीय शिक्षा नेतृत्व पुरस्कार से सम्मानित किया गया। संस्थान की ओर से डॉ. टी. महापात्र, निदेशक ने २४ जुलाई २०१५ को ताज लैंड्स एंड, मुंबई में विश्व शिक्षा कांग्रेस के दौरान आयोजित कार्यक्रम में पुरस्कार प्राप्त किया। कार्यक्रम का आयोजन भारत के मोहन ग्रुप द्वारा किया गया था।



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ICAR-NRRI adjudged the Best Performing Institute under NICRA

The NRRI was judged as one of the best performing institutes at the NICRA annual workshop at CMFRI, Cochin, Kerala during 13-14 August 2015. The DG, along with Dr. Virmani, DDG, Crop Science, Director CRIDA, CMFRI congratulated the NICRA team and felicitated them.



Dr. P. Bhattacharya, Principal Scientist receiving the award

एनआईसीआरए के अंतर्गत एनआरआरआई को श्रेष्ठ प्रदर्शन संस्थान से सम्मानित

सीएमएफआरआई, कोचीन, केरल में १३ से १४ अगस्त २०१५ के दौरान आयोजित एनआईसीआरए की वार्षिक कार्यशाला में परिषद के विभिन्न संस्थानों में से एनआरआरआई को एक श्रेष्ठ संस्थान के रूप में चुना गया। परिषद के महानिदेशक सहित डॉ. वीरमणि, उप महानिदेशक (फसल विज्ञान), निदेशक, सीआरआईडीए, निदेशक, सीएमएफआरआई ने एनआईसीआरए

दल को सम्मानित किया एवं बधाई दी।

MAIN INSTITUTE CAMPUS

EVENTS

Independence Day

The NRRI celebrated the 69th Independence Day at its main campus in Cuttack. Dr. T Mohapatra, Director unfurled the National Flag and addressed the staff of NRRI and students of NRRI school. The Independence Day was marked by patriotic songs in *Hindi* and *Odia* sung by school children. In his address, Dr. Mohapatra highlighted the significant achievements of NRRI and the need to meet the challenges in future.



9th Dr. TD Biswas Memorial Lecture

The Cuttack Chapter of Indian Society of Soil Science, NRRI, Cuttack organized "9th Dr. TD Biswas Memorial Lecture-2015" on 17 August 2015 at NRRI, Cuttack.

Prof. BS Das, IIT, Kharagpur delivered the memorial lecture on "Digital Soil Mapping: Future in India". He emphasized on opportunities and challenges for rapid soil assessment in India through Digital Soil Mapping. Currently, most of soil analyses have been done through chemical analysis. There are about 1049 soil testing labs

मुख्य संस्थान परिसर

घटनायें

स्वतंत्रता दिवस

एनआरआरआई ने अपने मुख्य परिसर कटक में ६९वां स्वतंत्रता दिवस मनाया। डॉ. टी. महापात्र, निदेशक ने राष्ट्रीय ध्वज फहराया तथा एनआरआरआई के कर्मचारियों एवं एनआरआरआई हाई स्कूल के विद्यार्थियों को संबोधित किया। स्वतंत्रता दिवस के अवसर पर स्कूल के विद्यार्थियों ने हिंदी एवं ओड़िया में देशभक्ति गीत गाये। डॉ. महापात्र ने अपने संबोधन में एनआरआरआई के

महत्वपूर्ण उपलब्धियों को रेखांकित किया तथा भविष्य की चुनौतियों को सामना करने की आवश्यकताओं के बारे में कहा।

डॉ. टी. डी. विश्वास यादगार व्याख्यान

भारतीय मृदाविज्ञान संघ के कटक चैप्टर, एनआरआरआई, कटक में ९वां डॉ. टी. डी. विश्वास यादगार व्याख्यान-२०१५ का आयोजन १७ अगस्त २०१५ को संपन्न हुआ। प्रोफेसर बी एस दास, आईआईटी, खडकपुर ने 'डिजिटल सॉइल मैपिंग: फ्यूचर इन इंडिया' विषय पर स्मारक व्याख्यान प्रदान किया। उन्होंने डिजिटल सॉइल मैपिंग के माध्यम से शीघ्र मृदा मूल्यांकन हेतु असवर एवं चुनौतियों पर जोर दिया। वर्तमान में अधिकांश मृदा विश्लेषण रासायनिक विश्लेषण के माध्यम से किया जा रहा है। हमारे

operating in our country with an annual analyzing capacity of 10.7 million samples. However, there are approximately 138 million agricultural fields and the capacity of soil testing labs simply lags far behind the requirement. Under such conditions, very high spectral, spatial and temporal resolutions of diffuse reflectance spectroscopy (DRS) and hyper spectral remote sensing (HRS) technology offer attractive alternative to do soil testing in a rapid and non-invasive fashion. With the help of DRS and HRS technologies, digital soil mapping could be done more efficiently.

Earlier, Dr. AK Nayak, President, Cuttack chapter of ISSS welcomed and introduced the speaker. Dr. ON Singh, I/c, Director NRRI, Presided over the meeting and addressed the gathering by emphasizing the importance of modern soil science to cope up with climate change and natural resource management. Dr. P Bhattacharyya, Secretary, Cuttack chapter of ISSS delivered the vote of thanks. More than 80 scientists and researchers from NRRI and OUAT, Bhubaneswar participated in the event.



Prof. BS Das, IIT, Kharagpur delivering the 9th Dr. TD Biswas Memorial Lecture-2015

एचआरएस प्रौद्योगिकियों की मदद से डिजीटल सॉइल मैपिंग अधिक कारगर तरीके से हो सकती है। आरंभ में डॉ.ए.के.नायक, अध्यक्ष, भारतीय मृदाविज्ञान संघ, कटक चैप्टर ने सभी का स्वागत किया तथा व्याख्याता का परिचय वर्णन किया। डॉ.ओ.एन.सिंह, कार्यकारी निदेशक, एनआरआरआई ने बैठक की अध्यक्षता की एवं सभा को अपने संबोधन में जलवायु परिवर्तन एवं प्राकृतिक संसाधन प्रबंधन की समस्याओं से निपटने के लिए अत्याधुनिक मृदाविज्ञान की महत्ता पर जोर दिया। डॉ.पी.भट्टाचार्या, सचिव, भारतीय मृदाविज्ञान संघ, कटक चैप्टर ने धन्यवाद ज्ञापन किया। एनआरआरआई तथा ओयूएटी, भुवनेश्वर के ८० से अधिक वैज्ञानिक एवं अनुसंधानकर्ताओं ने इस कार्यक्रम में भाग लिया।

देश में लगभग १०४९ मृदा परीक्षण प्रयोगशालायें कार्यरत हैं जिनमें सालाना १०.७ मिलियन नमूनों को परीक्षण करने की क्षमता है। किंतु, देश में लगभग १३८ मिलियन खेत हैं और मृदा परीक्षण प्रयोगशालाओं की क्षमता आवश्यकता से बहुत कम है। इन परिस्थितियों में, डीफ्यूज रिफ्लेक्टेंस स्पेक्ट्रोस्कोपी (डीआरएस) के अत्यधिक स्पेक्ट्रल, स्पातियल एवं टेंपोरल रिजोल्यूशन तथा हाइपर स्पेक्ट्रल रिमोट सेंसिंग प्रौद्योगिकी (एचआरएस) मृदा परीक्षण को शीघ्र एवं बिन-खुदाई तरीके से करने के लिए एक अच्छा विकल्प उपलब्ध कराता है। डीआरएस एवं

Hindi Workshop

A one day Hindi Workshop titled “Compliance of Section 3 (3) of the Official Language Act” was organized at National Rice Research Institute, Cuttack on 27 August 2015 for the Assistant Administrative Officers of the Institute. Dr. T Mohapatra, Director, NRRI inaugurated the workshop and presided over it. Shri Surendranath Samal, Assistant Director, (OL) All India Radio Prasar Bharati, Cuttack was invited as the speaker for the workshop. All seven AAOs of the institute participated in the one day workshop.



Hindi Workshop in progress

Hindi Fortnight

The Hindi Fortnight-2015 was celebrated at National Rice Research Institute, Cuttack from 14 to 29 September 2015. During this period five Hindi Competitions i.e.

हिंदी कार्यशाला

राष्ट्रीय चावल अनुसंधान संस्थान, कटक में २७ अगस्त २०१५ को संस्थान के सहायक प्रशासनिक अधिकारियों के लिए ‘राजभाषा अधिनियम धारा ३(३) का अनुपालन’ विषय पर एक दिवसीय हिंदी कार्यशाला का आयोजन किया गया। डॉ.टी.महापात्र, निदेशक, एनआरआरआई ने इस कार्यशाला का उद्घाटन किया एवं अध्यक्षता की। श्री सुरेंद्रनाथ सामल, सहायक निदेशक (राजभाषा), आकाशवाणी, कटक इस कार्यशाला के व्याख्याता थे। संस्थान

के सभी सातों सहायक प्रशासनिक अधिकारियों ने इस कार्यशाला में भाग लिया।

हिंदी पखवाड़ा

राष्ट्रीय चावल अनुसंधान संस्थान, कटक में १४ से २९ सितंबर २०१५ के दौरान हिंदी पखवाड़ा मनाया गया। इस पखवाड़े के दौरान संस्थान के कर्मचारियों एवं अधिकारियों के लिए पांच प्रतियोगितायें- १६ सितंबर को शुद्ध

Correct & Speed Hindi Writing, Hindi Reading, Hindi Word Translation, Hindi Shabdantakshari, and General Knowledge Competitions were organized on 16th, 18th, 19th, 21st and 23rd of September, respectively for the officers/employees of the Institute. A total of 72 staff members enthusiastically participated in the above competitions. The closing ceremony of Hindi Fortnight-2015 was organized on 30 September 2015 in the Auditorium of the Institute. On this occasion Shri Tapas Ranjan Ray, Station Manager, Air India, Bhubaneswar was the Chief Guest of the function. The winners of the various Hindi Competitions were honored with prizes and certificates by the Chief Guest. Dr. ON Singh, Director, NRRI expressed his satisfaction for organizing successfully the Hindi Fortnight and appreciated the members of the organizing Committee. Dr. MJ Baig, Dr. GAK Kumar, Dr. Rahul Tripathi and Shri BK Mohanty coordinated all the activities related to the Fortnight.



Chief Guest giving away prizes to winners

एवं शीघ्र हिंदी लेखन, १८ सितंबर को हिंदी पाठ-पठन, १९ सितंबर को हिंदी शब्दानुवाद, २१ सितंबर को हिंदी शब्दांतकरी एवं २३ सितंबर को सामान्य ज्ञान आयोजित की गई। कुल ७२ कर्मचारियों ने बहुत उत्साहपूर्वक इन प्रतियोगिताओं में भाग लिया। हिंदी पखवाड़ा का समापन समारोह ३० सितंबर २०१५ को संस्थान के सभागार में संपन्न हुआ। इस समारोह में श्री तापस रंजन राय, स्टेशन प्रबंधक, एयर इंडिया, भुवनेश्वर मुख्य अतिथि थे। मुख्य अतिथि ने विभिन्न प्रतियोगिताओं के विजेताओं को पुरस्कार एवं प्रमाणपत्र से सम्मानित किया। डॉ. ओ एन सिंह, निदेशक, एनआरआरआई ने हिंदी पखवाड़ा के सफल आयोजन पर प्रसन्नता प्रकट की तथा आयोजक समिति के सदस्यों को इस सफलता के लिए सराहना की। डॉ.एम जे बेग, डॉ.जी ए के कुमार, डॉ.राहुल त्रिपाठी एवं श्री बी के महांती ने पखवाड़े से संबंधित सभी कार्यकलापों का समन्वयन किया।

Annual Workshop

One day Annual Workshop of NRRI-NCIPM Collaborative Project on 'Development and Validation of IPM module for Rice' was organized at NRRI, Cuttack on 24 September 2015. The workshop was chaired by Dr. AK Nayak, Director (I/c) of the institute. Dr. C Chattopadhyay, Director, NCIPM, New Delhi, Dr. (Mrs) Mayabini Jena, Head, Crop Protection Division, Dr. KB Pun, Head, RRLRRS, Gerua along with collaborative scientists of the project and scientists of Crop Protection Division participated the workshop. Dr. SD Mohapatra, PI of the project presented the research findings of the project for NRRI main centre and Dr. K Saikia presented for Gerua centre. Based on the research finding, the technical programme for the next season was finalized in the workshop. Dr. M Jena in her welcome address highlighted the importance of the IPM in rice pest management and emphasized the location



Participants gathered for a group photograph with the Director, NCIPM and Director, NRRI

वार्षिक कार्यशाला

राष्ट्रीय चावल अनुसंधान संस्थान, कटक में २४ सितंबर २०१५ को 'चावल के लिए आईपीएम माड्यूल का विकास एवं मान्यकरण' विषय पर एनआरआरआई-एनसीआईपीएम सहयोगात्मक परियोजना का वार्षिक कार्यशाला आयोजित की गई। डॉ.ए के नायक, प्रभारी निदेशक ने कार्यशाला की अध्यक्षता की। डॉ.सी चट्टोपाध्याय, निदेशक, एनसीआईपीएम, नई दिल्ली, डॉ.(श्रीमती) मायाबिनी जेना, अध्यक्ष, फसल सुरक्षा प्रभाग, डॉ.के बी पुन, अध्यक्ष, आरआरएलआरआरएस, गेरुआ, सहयोगात्मक परियोजना तथा फसल सुरक्षा प्रभाग के वैज्ञानिकों ने इस कार्यशाला में भाग लिया। डॉ.एस डी महापात्र, परियोजना के प्रधान अन्वेषक ने सीआरआरआई के प्रमुख केंद्र के लिए परियोजना के अनुसंधान निष्कर्षों को प्रस्तुत किया तथा डॉ.के साइकिया ने गेरुआ केंद्र के निष्कर्षों को प्रस्तुत किया। अनुसंधान निष्कर्षों के आधार पर, परवर्ती मौसम के लिए कार्यशाला में तकनीकी कार्यक्रम को अंतिम रूप दिया गया। डॉ.जेना ने अपने स्वागत भाषण में चावल नाशककीट प्रबंधन में समन्वित नाशककीट प्रबंधन के महत्व को उजागर किया तथा नाशककीटों के सफल प्रबंधन

specific IPM module as a key to successful pest management. The chairman appreciated the effort made by Director, NCIPM for this collaborative research project and emphasized on the development of holistic IPM module to tackle the insect pests and diseases problems in rice. Director, NCIPM appreciated the nicely conducted experiment on IPM in rice at both Cuttack and Gerua and enlighten that the data generated from the experiment is very high importance. Dr. S Lenka, Co-PI of the project proposed the vote of thanks.

Tribal Sub-Plan (TSP)

The institute is implementing Tribal Sub-Plan (TSP) in three tribal blocks in Mayurbhanj, Balasore and Jajpur districts of Odisha during *khari* 2015 with the major objective of bridging the gap between Scheduled Tribe (ST) population and others by accelerating their development through rice-based technological interventions. Rice demonstration with HYV/ rice hybrids of the institute namely, Sahbhagidhan, Naveen, CR Dhan 303, CR Dhan 304, Pooja, Ajay and Rajlaxmi in about 180 acres area have been conducted including some method demonstrations like mechanized line transplanting and drum seeding adopted by over 180 tribal farmers. The beneficiaries were provided with free seeds and other critical inputs like need-based pesticides. Three training programmes on "Improved Rice Production Technology" were conducted in these locations during July-August 2015 with the participation of all the adopted farmers. In addition, an exposure visit to the institute was organized for them on 10 July 2015.



Farmers' Exposure Visit to the institute under TSP on 10 July 2015

ICAR-NRRI signs MoU with Private Company

The ICAR- National Rice Research Institute, Cuttack entered into a Memorandum of Understanding (MoU) on 15 September 2015 with a Multinational company E.I. DuPont India Private Limited for contract research. The purpose of this MoU is



DuPont India Pvt. Ltd. representative with Director and other Officials of NRRI

के लिए एक कारगर उपाय के रूप में स्थान विशिष्ट आईपीएम माड्यूल पर जोर दिया। अध्यक्ष ने एनसीआईपीएम के निदेशक द्वारा इस सहयोगात्मक अनुसंधान परियोजना के लिए किए गए प्रयासों की प्रशंसा की तथा चावल की खेती में नाशककीटों एवं रोगों से मुकाबला करने के लिए एक प्रभावी आईपीएम माड्यूल विकसित करने पर जोर दिया। एनसीआईपीएम के निदेशक ने कटक एवं गेरुआ केंद्रों में आईपीएम पर हुए परीक्षणों की सरहाना की तथा इन परीक्षणों से उत्पन्न आंकड़ों को रेखांकित किया। डॉ.एस लेंका, परियोजना के प्रधान सह-अन्वेषक ने धन्यवाद ज्ञापन किया।

अनुसूचित जनजाति उप-योजना

चावल आधारित प्रौद्योगिकीय हस्तक्षेपों के माध्यम से अनुसूचित जनजाति के एवं अन्य लोगों के बीच के अंतर को कम करने के प्रमुख लक्ष्य से उनके विकास में तेजी लाते हुए २०१५ के खरीफ के दौरान ओडिशा के मयूरभंज, बालासोर एवं जाजपुर जिलों के तीन अनुसूचित जनजाति प्रखंडों में संस्थान द्वारा अनुसूचित जनजाति उप-योजना का कार्यान्वयन किया जा रहा है। संस्थान द्वारा विकसित अधिक उपज देने वाली/ संकर किस्मों जैसे नवीन, सहभागीधान, सीआरधान ३०३, सीआर धान ३०४,

पूजा, अजय एवं राजलक्ष्मी का १८० एकड़ क्षेत्र में प्रदर्शन किया गया है जिसमें यांत्रिक कतार रोपाई एवं ड्रम बुआई शामिल किया गया था और जिसे १८० अनुसूचित जनजाति किसानों ने अपनाया। लाभार्थियों को मुफ्त में बीज एवं आवश्यकता आधारित कीटनाशकों की आपूर्ति की गई। २०१५ के जुलाई-अगस्त के दौरान इन स्थानों में 'उन्नत चावल उत्पादन प्रौद्योगिकी' विषय पर तीन प्रशिक्षण कार्यक्रम आयोजित किया गया जिसमें सभी १८० किसानों ने भाग लिया। इसके अतिरिक्त, उन किसानों के लिए इस संस्थान में १० जुलाई २०१५ को एक भ्रमण कार्यक्रम का आयोजन किया गया।

भाकृअपुन-एनआरआरआई का निजी कंपनी के साथ समझौता

भाकृअपुन-राष्ट्रीय चावल अनुसंधान संस्थान, कटक ने एक बहुराष्ट्रीय कंपनी ईआई ड्यूपोंट इंडिया प्राइवेट लिमिटेड के साथ अनुबंध अनुसंधान करने के लिए एक समझौते पर हस्ताक्षर किया। इस समझौते का लक्ष्य धान में स्कीरपोफागा

to facilitate productive, contract scientific research on “Multilocation monitoring of Rynaxypyr™ 20SC against *Scirpophaga incertulas* in rice and Rice hopper susceptibility survey in India for DPX-RAB55 106SC against *Scirpophaga incertulas* & *Sogatella furcifera*.”

Training

A five-day Women Trainers’ Training Programme on “Rice Production Technology for Sustaining National Food Security” was organized by ICAR-NRRI, Cuttack from 3 to 7 July 2015 for 23 Kisan Saathis and Block Technology Managers (BTMs) from Valsad district of Gujarat.

A Trainers’ Training Programme on “Improved Rice Production Technology for enhancing Productivity” was organized by ICAR-NRRI, Cuttack from 13 to 17 July 2015 for 26 Kisan Mitras from Patna district of Bihar and was sponsored by ATMA, Patna.

A Trainers’ Training Programme on “Skill Development in Improved Rice Cultivation Practices” was organized by ICAR-NRRI, Cuttack from 25 to 28 August 2015 with the participation of 25 Kisan Sathis/ Kisan Mitras from nine blocks of Kendrapara district of Odisha, which was sponsored by ATMA, Kendrapara.

A five-day Trainers’ Training Programme on “Improving Livelihood through Technological Advances in Rice Production” was organized by ICAR-NRRI, Cuttack from 6 to 10 September 2015 for 23 Kisan Saathis and ATMA officials from four blocks of Valsad district, Gujarat.

Under the project ‘National Innovation in Climate Resilient Agriculture’ a training programme was organized on the general awareness of proper selection of rice varieties under changing climatic scenario at village Chhoto Sehera (Block- Sandeshkhali -1) on 2 December 2014 in which around 70 farmers attended. Dr. RK Sarkar, Chairman of the Organizing committee, told about the objectives of the project and emphasized on the importance of conducting such meetings to educate farmers about cli-

इंसरतुलास के विरुद्ध राइनाक्सीपिर २०एससी के बहुस्थानीय निगरानी तथा स्कीरपोफागा इंसरतुलास एवं सोगाटेला फरसीफेरा के विरुद्ध डीपीएक्स-आरबी५५ १०एससी के लिए भारत में धान माहू कीट ग्राह्यशीलता सर्वेक्षण के लिए अनुबंध अनुसार वैज्ञानिक अनुसंधान की सुविधा प्रदान करना है।

प्रशिक्षण

‘राष्ट्रीय खाद्य सुरक्षा को कायम रखने के लिए चावल उत्पादन प्रौद्योगिकी’ विषय पर गुजरात के वल्साद जिले के महिला प्रखंड प्रौद्योगिकी प्रबंधकों तथा २३ किसान साथियों के लिए ३ से ७ जुलाई के दौरान पांच दिवसीय प्रशिक्षण कार्यक्रम आयोजित किया गया।

‘चावल उत्पादकता में वृद्धि के लिए उन्नत चावल उत्पादन प्रौद्योगिकी’ विषय पर प्रशिक्षकों के लिए १३ से १७ जुलाई २०१५ के दौरान एनआरआरआई, कटक में एक प्रशिक्षण कार्यक्रम का आयोजन किया गया जिसमें बिहार के पटना जिले के २६ किसान मित्रों ने भाग लिया एवं ‘आत्मा’, पटना द्वारा प्रायोजित किया गया था।

‘उन्नत चावल खेती के तौर तरीकों में कौशल विकास’ विषय पर प्रशिक्षकों के लिए २५ से २८ अगस्त २०१५ के दौरान एनआरआरआई, कटक में एक प्रशिक्षण कार्यक्रम का आयोजन किया गया जिसमें केंद्रापाड़ा जिले के नौ प्रखंडों से २५ किसान साथियों/किसान मित्रों ने भाग लिया एवं जिसे ‘आत्मा’, केंद्रापाड़ा द्वारा प्रायोजित किया गया था।

‘चावल उत्पादन में प्रौद्योगिकीय विकास के माध्यम से आजीविका में सुधार’ विषय पर प्रशिक्षकों के लिए ६ से १० सितंबर २०१५ के दौरान एनआरआरआई, कटक में पांच

दिवसीय प्रशिक्षण कार्यक्रम का आयोजन किया गया जिसमें गुजरात के वल्साद जिले के चार प्रखंडों से २३ किसान साथियों एवं ‘आत्मा’ अधिकारियों ने भाग लिया।

‘राष्ट्रीय जलवायु अनुकूल कृषि पहल’ नामक परियोजना के तहत बदलते जलवायु परिवेश में उपयुक्त चावल किस्मों के चयन पर साधारण जागरूकता हेतु २ दिसंबर २०१४ को संदेशखाली प्रखंड के छोटो सेहेरा गांव में प्रशिक्षण कार्यक्रम का आयोजन किया गया जिसमें लगभग ७० किसानों ने भाग लिया। डॉ.आर के सरकार, अध्यक्ष, आयोजन समिति ने इस परियोजना के लक्ष्यों के बारे में वर्णन किया तथा जलवायु अनुकूल चावल किस्मों के बारे में किसानों को जागरूक बनाने के लिए इस तरह की बैठकों के आयोजन के



Participants, Director and Resource Persons of the training programme on ‘Rice Production Technology for Sustaining National Food Security’



Participants, Director and Resource Persons of the training programme on ‘Improving Livelihood through Technological Advances in Rice Production’

mate resilient rice varieties. Dr. K Chattopadhyay, as Organizing Secretary, conveyed about the essentiality of cultivation of climate resilient rice varieties under changing climatic condition. He also mentioned that 300 kg seeds of four climate resilient NRRI varieties, namely Luna Suvarna (CR Dhan 403), Luna Barial (CR Dhan 406), Varshadhan and Swarna Sub 1 were distributed among 80 farmers in that village in June 2014 for cultivation in *kharif* season under waterlogging, submergence and salinity conditions. Dr. SK Mishra told about the adaptation of the distributed varieties and circulated a questionnaire to assess varietal adaptation and its impact. Dr. AK Mukherjee delivered a talk on the insect-pests and diseases of rice and their effective management. All experts interacted with the farmers to understand the probable yield gain of farmers for cultivating NRRI varieties as compared to their own varieties and also about the problems faced by them, specially due to biotic stresses.



A farmers' training programme on 2 December 2014 at Sandeshkhali block (Sundarban)

Visitors

During the period under report, a total of 819 visitors including 738 farmers, 42 farmwomen, 26 students and 13 Agriculture Officers from different states of India viz., Odisha, Jharkhand, West Bengal.

NRRI REGIONAL STATION, HAZARIBAG

Front Line Demonstrations (FLD)

Ten Front Line Demonstrations (FLDs) have been planted using two rice varieties viz., CR Dhan 40 (DSR) and Sahabghadidhan (both DSR & TP) in the district Hazaribag covering about 10 ha area. Crop stands are being monitored which are now in late tillering to pre-PI stages.

Kisan mela & farmers' training

Mid-kharif workshop was organized on 7 September 2015 in Joki Tola (Hamlet) of village Dasokhap (Dt. Hazaribag) under TSP. The tribal *tola* has been adopted by CRURRS under the project with an objective to improve livelihood of the tribal community in a convergence mode involving different ICAR institutes, KVK and line departments. The workshop was attended by about 115 farmers and 16 resource persons from CRURRS (6), ICAR-IINRG (1), ICAR-RCER, Ranchi Centre (3), KVK Koderma (1) and KVK, Mandu (5). Training on various mid-season

महत्व पर जोर दिया। डॉ.के चट्टोपाध्याय, आयोजक सचिव ने बदलते जलवायु परिवेश में जलवायु अनुकूल चावल किस्मों की खेती की आवश्यकता को रेखांकित किया। उन्होंने यह सूचना दी कि जलवायु अनुकूल एनआरआरआई की चार चावल किस्मों जैसे लुणा सूवर्णा (सीआर धान ४०३), लुणा वरियल (सीआर धान ४०६), वर्षाधान तथा स्वर्णा सब१ के ३०० किलोग्राम बीज उसी गांव के ८० किसानों को खरीफ

में जलाक्रांत, जलनिमग्नता तथा लवणता परिस्थितियों में खेती के लिए वितरित किया गया। डॉ.एस के मिश्र ने वितरित किस्मों के अनुकूलन पर वर्णन किया तथा किस्मों को अपनाने एवं इसके प्रभाव के मूल्यांकन के लिए एक प्रश्नावली जारी की। डॉ.ए के मुखर्जी ने धान के नाशककीटों एवं रोगों तथा उनके प्रभावी प्रबंधन पर एक व्याख्यान दिया। सभी विशेषज्ञों ने किसानों के किस्मों की तुलना में एनआरआरआई की किस्मों की खेती के लिए संभावित उपज लाभ को समझने के लिए तथा जैविक दबावों के कारण उनके द्वारा सामना किए जा रहे समस्याओं के बारे में किसानों के साथ विचार-विमर्श किया।

आगंतुक

इस अवधि के दौरान, भारत के विभिन्न राज्यों जैसे ओडिशा, झारखंड, पश्चिम बंगाल के ७३८ किसानों, ४२ महिला किसानों, २६ विद्यार्थियों तथा १३ कृषि अधिकारियों सहित कुल ८१९ आगंतकों ने एनआरआरआई का दौरा किया।

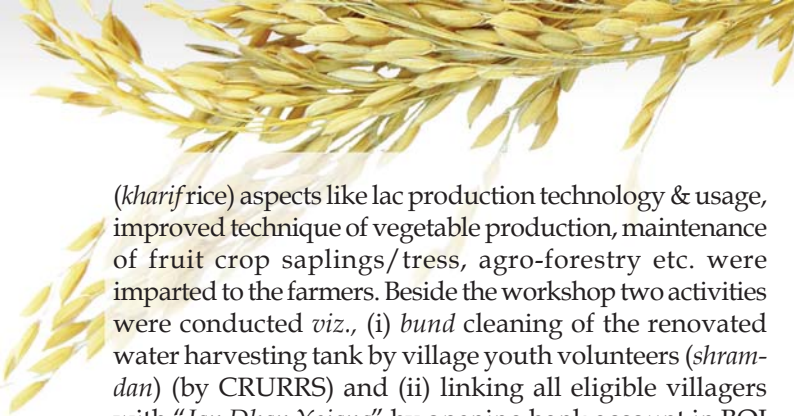
एनआरआरआई क्षेत्रीय केंद्र, हजारीबाग

अग्रिम पंक्ति प्रदर्शन

हजारीबाग जिले में दो चावल किस्मों सीआर धान ४० तथा सहभागीधान की खेती का लगभग १० हेक्टेयर की भूमि में सीधी बुआई एवं प्रतिरोपण दोनों स्थितियों में अग्रिम पंक्ति प्रदर्शन आयोजित किया गया। फसल स्थापना की निगरानी की जा रही है जो विलंबित दौजियां से बाली निकलने के पूर्व अवस्था में हैं।

किसान मेला एवं किसान प्रशिक्षण

अनुसूचित जनजाति उप-योजना के तहत हजारीबाग जिले के दासोखाप गांव के जोकी टोला में ७ सितंबर २०१५ को मध्य-खरीफ कार्यशाला आयोजित किया गया। परिषद के विभिन्न संस्थानों, कृषि विज्ञान केंद्रों तथा संबंधित विभागों को शामिल करते हुए अनुसूचित जनजाति समुदाय की आजीविका में सुधार लाने के उद्देश्य से इस टोला को सीआरयूआरआरएस द्वारा परियोजना के तहत ग्रहण किया गया है। इस कार्यशाला में लगभग ११५ किसानों तथा सीआरयूआरआरएस से ६, आईआईएनआरजी से १, आरसीआईआर, रांची केंद्र से ३, कृषि विज्ञान केंद्र, कोडरमा से १ एवं कृषि



(*khari*rice) aspects like lac production technology & usage, improved technique of vegetable production, maintenance of fruit crop saplings/tress, agro-forestry etc. were imparted to the farmers. Beside the workshop two activities were conducted viz., (i) *bund* cleaning of the renovated water harvesting tank by village youth volunteers (*shram-dan*) (by CRURRS) and (ii) linking all eligible villagers with “*Jan Dhan Yojana*” by opening bank account in BOI with the help of BOI officials at the village. Dr. D Maiti coordinated and conducted the day-long events at Dasokhap.

Farmers’ meeting and field visit (demonstration of hybrid DRRH 2 under BGREI) was organized by Dr. CV Singh in Urvaa cluster of Chandwara block of Koderma District on 9 September 2015.

BGREI meeting

BGREI meeting at Koderma was arranged by Dr. CV Singh with PD & Deputy PD ATMA and BTMs. Several issues related to inputs provided to farmers, area covered, condition of the crop and pest & diseases infestation status being monitored in farmers’ field were discussed in the meeting. As reported by state agricultural officials, rice hybrid DRRH-2 has been planted in 150 ha area in blocks Chandwara, Markachcho and Domchanch, rice cv Naveen in 110 ha area in Satganva and Jainagar blocks and rice cv Abhishek in an area of 100 ha in Koderma and Jainagar blocks. Total coverage under BGREI in Koderma district is about 360 ha. Few incidences of stem borer attack in few patches were reported by the BTMs of concerned blocks.

KRISHI VIGYAN KENDRA

Santhapur, Cuttack

Training Programmes

Two on-campus training programmes and seven off-campus training programmes were organised on scientific nursery management of paddy for healthy seedlings, Integrated weed management in rice, IPM in rice, Mushroom cultivation, Nutritional garden management, Parasitic infestations and their management in livestock at Gopalpur and Jhadeswarpur (Mahanga), Lokanathpur (N. Koili) Sundarda (Niali), Juanga (Niali) involving 225 farmers, farmwomen and rural youth.

Frontline Demonstrations

FLDs on rice varieties like Poornabhog (0.4 ha), Varsadhan (0.4 ha), Sahabthagidhan (2 ha) have been conducted at Indranipatna, Andhoti, Jodum and Haridapal villages of Cuttack district.

FLDs on rice varieties CR Dhan 303 (4 ha), CR Dhan 304 (4 ha), CR Dhan 201 (1 ha) has been conducted at Indranipatna, Mangarajpur, Tentuliragadi, Gamai,

विज्ञान केंद्र, मांडू से ५ समेत १६ संबल व्यक्तियों ने भाग लिया। मध्य-मौसम (खरीफ चावल), लाख उत्पादन प्रौद्योगिकी एवं प्रयोग, सब्जी उत्पादन के उन्नत तकनीक, फल फसलों के पौद के रखरखाव, कृषि वानिकी आदि पर प्रशिक्षण प्रदान दिए गए। कार्यशालाओं के अलावा, सीआरयूआरआरएस दो कार्यक्रम आयोजित किए गए जैसे गांव के युवकों द्वारा जल संरक्षण जलाशय के बांध की सफाई एवं गांव में बैंक ऑफ इंडिया के अधिकारियों द्वारा जन धन योजना के तहत पात्र ग्रामवासियों का बैंक खाता खोलना। डॉ.डी मैती ने दासोखाप गांव में सभी कार्यक्रमों का समन्वयन किया।

डॉ.सी वी सिंह ने कोडरमा जिले के चंदवाड़ा प्रखंड के उरवा में ९ सितंबर २०१५ को किसान बैठक तथा बीजीआरईआई के तहत संकर किस्म डीआरआरएच २ के प्रदर्शन कार्यक्रम का आयोजन किया।

बीजीआरईआई बैठक

डॉ.सी वी सिंह ने परियोजना निदेशक एवं उप परियोजना निदेशक, ‘आत्मा’ तथा प्रखंड प्रशिक्षण प्रबंधकों के सहयोग से बीजीआरईआई बैठक आयोजित की। इस बैठक में किसानों को प्रदान की गई सामग्री, दौरा किया गया क्षेत्र, किसान के खेत में निगरानी की गई फसल की स्थिति, नाशककीट एवं रोग संक्रमण स्थिति आदि कई विषयों पर विचार-विमर्श किया गया। राज्य कृषि अधिकारियों द्वारा किए गए रिपोर्ट के अनुसार चंदवाड़ा, मारकाछो तथा डोमचांच के प्रखंडों के १५० हेक्टेयर क्षेत्र में संकर डीआरआरएच-२ चावल किस्म की खेती की गई, संतगनवा एवं जयनगर प्रखंडों के ११० हेक्टेयर क्षेत्र में नवीन तथा कोडरमा एवं जयनगर प्रखंडों के १०० हेक्टेयर क्षेत्र में अभिषेक की खेती की गई। बीजीआरईआई के तहत खेती किया गया कुल क्षेत्र लगभग ३६० हेक्टेयर है। कुछ प्रखंड प्रशिक्षण प्रबंधकों ने रिपोर्ट किया कि कुछ क्षेत्रों में तना पीला छेदक का प्रकोप हुआ था।

कृषि विज्ञान केंद्र

संथपुर, कटक

प्रशिक्षण कार्यक्रम

महांगा के गोपालपुर एवं झाड़ेश्वरपुर तथा निश्चिंतकोइली के लोगनाथपुर, निआली के सुंदरदा, जुआंग गांवों के २२५ किसानों, महिला किसानों एवं ग्रामीण युवकों को शामिल करते हुए ‘स्वस्थ बिचड़े उगाने के लिए वैज्ञानिक नर्सरी प्रबंधन, धान में समन्वित खरपतवार प्रबंधन, धान में समन्वित नाशककीट प्रबंधन, मशरूम खेती, पौषणिक वाटिका प्रबंधन, पशुओं में परजीवी संक्रमण एवं उनका प्रबंधन’ पर दो परिसर प्रशिक्षण कार्यक्रम तथा सात गैर परिसर प्रशिक्षण कार्यक्रम आयोजित किए गए।

अग्रिम पंक्ति प्रदर्शन

कटक जिले के इंद्राणीपाटणा, आंधोती, जोडुम एवं हरिडापाल गांवों के ०.४ हेक्टेयर में पूर्णभोग, ०.४ हेक्टेयर में वर्षाधान, २ हेक्टेयर में सहभागीधान चावल किस्मों पर अग्रिम पंक्ति प्रदर्शन कार्यक्रम आयोजित किया गया।

एनआरआरआई के वैज्ञानिकों के सहयोग से कटक जिले के इंद्राणीपाटणा, मंगराजपुर, तेंतुलीरगड़ी, गमई, हरिडापाल, जोडुम एवं अभयपुर गांवों के ४ हेक्टेयर में सीआरधान ३०३, ४ हेक्टेयर में सीआरधान ३०४, १ हेक्टेयर में

Haridapal, Jodum and Abhayapur villages of Cuttack district in collaboration with the scientists of NRRI.

FLDs on “Paddy straw mushrooms var. *Valverilla Spp.*” and “Bhendi plucker” have been conducted at Juanga (Niali), Mangarajpur (Badamba) and Tentuliragadi involving 50 farmers, farmwomen and rural youth.

FLDs on “Soil test based fertilizer application in rice” and “Brown manuring on direct seeded rice” have been conducted involving 15 farmers each at Mangarajpur (Badamba) and Abhayapur (Tangi-Choudwar).

Soil Sample Analysis

Fifty three soil samples of adopted village Mangarajpur (Block: Badamba) have been analyzed for N, P, K, PH, EC, B and Zn. Fifty three nos. of soil health card have been issued to the concern farmers. On the basis of soil test results the fertilizer for rice has been recommended.

Jainagar, Koderma

Training Programme

KVK, Koderma conducted 13 training programmes during the period which were participated by 331 farmers and rural youths. The training topics included (i) Entrepreneurship development in SHG, (ii) Nutritional kitchen garden, (iii) Mushroom cultivation, (iv) *Kharif* potato cultivation, (v) Weed management in rice, (vi) IPM in pulses and (vii) Pre-rabi vegetable nursery management.

Kisan gosti

Krishi Vigyan Kendra, Koderma conducted *kisan gosti* and *sammelan* on 2 August 2015 in which total 200 farmers participated. The programme was chaired by honourable MP (Koderma) Dr. Ravindra Rai. Two technical bulletins entitled “*lah ki kheti*” and “*makai ki kheti*” (Hindi) were released by Dr. Rai.

Exhibition

Mrs. Chanchila Kumari and Mr. R Ranjan participated in *kisan sangosthi* and put up stall in two days Agriculture Exhibition conducted at Pipra Kothi, Motihari, Bihar from 20 to 21 August 2015.

सीआरधान २०१ चावल किरमों पर अग्रिम पंक्ति प्रदर्शन कार्यक्रम आयोजित किया गया।

नियाली के जुआंग, बडंबा के मंगराजपुर तथा तंतुलीरगडी के ५० किसान, महिला किसान एवं ग्रामीण युवकों को शामिल करते हुए धान पुआल मशरूम (वाल्वेरिला एसपीपी) तथा भिंडी प्लकर पर अग्रिम पंक्ति प्रदर्शन कार्यक्रम आयोजित किया गया।

बडंबा के मंगराजपुर एवं टांगी-चौद्वार के अभयपुर में प्रत्येक गांवों के १५ किसानों को शामिल करते हुए ‘चावल में मृदा परीक्षण आधारित उर्वरक प्रयोग’ तथा ‘सीधी बुआई चावल में भूरा खाद’ पर अग्रिम पंक्ति प्रदर्शन कार्यक्रम आयोजित किया गया।

मृदा नमूना विश्लेषण

बडंबा प्रखंड के अपनाए गए मंगराजपुर गांव में पोटाश, नत्रजन, फास्फोरस, ईसी, बोरॉन एवं जस्ता के लिए तिरापन मृदा नमूनों का विश्लेषण किया गया। संबंधित किसानों को तिरापन मृदा स्वास्थ्य पत्रक जारी किया जा चुका है। मृदा परीक्षण के परिणामों के आधार पर चावल में उर्वरक की मात्रा सिफारिश की गई है।

जयनगर, कोडरमा

प्रशिक्षण कार्यक्रम

कृषि विज्ञान केंद्र, कोडरमा ने जुलाई-सितंबर, २०१५ के दौरान ग्रामीण युवकों, ३३१ किसानों को शामिल करते हुए १३ प्रशिक्षण कार्यक्रमों का आयोजन किया गया। इसमें स्वयं सहायता दल में उद्यमशीलता का विकास, पोषणिक शाकवाटिका, मशरूम खेती, आलू की खरीफ खेती, धान में खरतपवार प्रबंधन, दलहन में समन्वित नाशककीट प्रबंधन तथा रबी पूर्व सब्जी की नर्सरी प्रबंधन पर प्रशिक्षण दिया गया।

किसान गोष्ठी

कृषि विज्ञान केंद्र, कोडरमा ने २ अगस्त २०१५ को किसान गोष्ठी एवं सम्मेलन का आयोजन किया जिसमें कुल २०० किसानों ने भाग लिया। कोडरमा के माननीय सांसद डा.रवींद्र राय ने इस सम्मेलन की अध्यक्षता की। डा.रवींद्र राय ने ‘लाख की खेती’ एवं ‘मकई की खेती’ नामक दो हिंदी तकनीकी बुलेटिनों का विमोचन किया।

प्रदर्शनी

श्रीमती चंचिला कुमारी तथा श्री आर रंजन ने २० से २१ अगस्त २०१५ के दौरान पिपरा कोठी, मोतिहारी, बिहार में आयोजित दो दिवसीय कृषि प्रदर्शनी किसान संगोष्ठी में भाग लिया तथा स्टॉल का आयोजन किया।

RESEARCH NOTES

High protein rice variety CR Dhan 310

Although grain protein content (GPC) of rice is lower than that of other cereals, rice protein is of higher quality because it contains all essential amino acids in reasonable proportions, though little low in lysine. In addition it has highest protein digestibility among the staple foods was found one landrace (ARC10075) as high GPC donor. In our breeding scheme, one landrace (ARC 10075) as high GPC donor was used for three repeated backcrossing with recurrent parent, Naveen for developing backcross population. BC_3F_1 plants were selfed and population was carried by single seed descent method producing wide range of phenotypic variation with high level of transgressive segregation for GPC. It was found that more than 20% introgression lines for GPC with substantial phenotypic similarities with recurrent parent, Naveen. Ten high yielding introgression lines ($BC_3F_{2,4}$) were grown in the same experimental plot at the experimental farm of the National Rice Research Institute, Cuttack, Odisha, India in *rabi* 2014 and *kharif* 2014. Nitrogen, phosphorus, and potassium were supplied at 80 kg, 40 kg, and 40 kg per hectare, respectively in *kharif* and 120 kg, 60 kg and 60 kg per hectare, respectively in *rabi*. Phosphorus (as single superphosphate) was applied as a basal dose, and nitrogen (as urea) and potassium (as muriate of potash) were applied in two equal doses at 30 days after transplanting and at 50% flowering. GPC was estimated in polished rice by the standard Micro-Kjeldahl method. Single grain protein content (SGPC) was also estimated, which was observed to be a more stable parameter than GPC with higher percent of heritability than the latter. All lines had significantly higher GPC, SGPC and protein yield than their corresponding high yielding parent, with acceptable grain quality. Among these lines, seven were nominated for multilocal testing (AICRIP Biofortification trial in 2014). The identified high protein rice variety, IET 24780 (CR2829-PLN-37), a derivative of the cross, ARC10075/Naveen, which belongs to BC_3F_5 generation is medium early (123 days) with semi-dwarf (110 cm), compact plant type and has good initial growth and tillering ability. It has long panicle with medium slender grains with high yielding ability (4483 kg/ha). At national level, CR Dhan 310 (IET 24780) outperformed the yield-check, Samba Mahsuri by registering yield superiority of 6.81%. It performed at par with the other national check IR 64. In agronomic trial held at NRRRI farm during *kharif* 2014, it performed at par with Naveen. It has more than 10% average protein content in polished grain which is much higher than that of the high yielding parent (Naveen) and other quality checks used in the all India coordinated trial conducted at 17 locations and was independently verified by CIFA, Bhubaneswar. The variety has been found better or at par with the checks with regard to its response to important biotic stresses. It was found tolerant or moderately tolerant to leaf blast, brown spot, sheath rot, stem borer, gall midge biotype 1 and leaf folder. This variety has very high head rice recovery (65%) and it has good cooking quality as realized from its alkali spreading value (4) and intermediate amylose content (24.7%). It also contains moderate level of Zn (15 ppm) in polished grain. This high protein rice variety has been identified for release for Odisha, Uttar Pradesh and Madhya Pradesh by the Varietal Identification Committee and assigned a national identity number (IC 614804) by NBPGR, New Delhi.



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NRRRI, Cuttack

CRMS 52A: A new CMS line developed at NRRI

Short duration drought tolerant parental lines are required for developing rice hybrids with climate resilience. During earlier effort, the drought tolerant variety Sahabhabidhan was identified as a maintainer of the Kalinga-1 cytoplasm based male sterility (CMS). To generate a CMS line under Sahabhabidhan genetic background, this variety was crossed with the CMS line CRMS 32A (Kalinga-1 CMS based), which was taken as female plant. After recurrent backcrosses with Sahabhabidhan, a new CMS line CRMS 52A has been developed. It has plant height of 80-85 cm and promising out crossing features like spikelets opening during flowering and dual stigma exertion with golden colour long bold (LB) grain. It has observed to be a very good combiner, having more than 25% out crossing ability. The new CMS line, CRMS 52A, will be of use in development of short duration drought and seedling stage cold tolerance hybrids.

ON Singh, RL Verma, JL Katara, S Samantaray, BC Patra, RK Sahu, B Hembram and SSC Patnaik
NRRI, Cuttack



Sahabhabidhan A (CRMS52A)

Development of high yield potential lowland rice genotypes utilizing inter sub-specific crosses and validation of molecular markers for high grain yield

The yield potential of rainfed lowland rice is low in India. Innovative approaches need to be applied to enhance the yield potential of the ecology. New generation rice, a new approach is applied here by modifying few traits as proposed in super rice for achieving higher yield in lowland rice. The genotype for rainfed shallow lowland can be designed with production of targeted total biomass and harvest index with ideal plant architecture like super rice possessing 6-8 productive tillers/hill instead of 4-5 along with other lowland rice adoptive features. The other modification like plant height of 130cm is good for obtaining required biomass with a moderate tiller number. This type of rice is described as “New Generation Rice” that can break yield ceiling of shallow lowland ecology (Pradhan *et al.* 2012, Pradhan *et al.* 2013). Many of the superior traits from indica and tropical japonica are combined through inter sub specific hybridization and transgressive segregants were obtained through pedigree selection. Three hundred thirty germplasm lines of which majority were tropical *japonicas* with few *NERICA* and *indica* lines were selected on the basis of heavy panicle, high grain number, strong culm, spikelet fertility, dark green foliage, upright upper leaves, late duration and planted in augmented design with three checks and five blocks during wet season, 2004 for identification of donor lines to be used in the new generation rice breeding program. The new generation rice breeding program was designed with basic concept of Peng *et al.* 1999 with modification in effective tiller of 6-8/hill instead of 4-6 and plant height of 130cm so as to increase biomass to >20t/ha with harvest index of 0.5. Three late duration popular *indica* varieties namely Gayatri, CRLC 899 (Varshadhan) and Chakaakhi were hybridized with best ten identified donor lines from tropical *japonicas* and *NERICA*s to get 30 F_5 during 2005. The F_1 s were evaluated along with their parents and check



Photographs showing (A) segregants in F_2 generation with heavy panicle and high spikelet numbers of cross Gayatri/Warda1 (B) CR3696-1-2-1-1 with heavy panicle, high grain number, sturdy culm and stay green feature (C) weighing balance showing panicle weight of CR2683-46-5-9-1-2 (D) field view of CR2683-35-6-1-1-2 at maturity stage



Table 1. Promising fixed genotypes of indica/tropical japonica derivatives evaluated under Advanced Yield Trial during wet season, 2013 and 2014

Name of genotype	Panicles /plant	Panicle Length (cm)	Grain length (mm)	Grain width (mm)	Grain L/B ratio	Test Weight (g)	Spikelet fertility %	Spikelets/p anicle	Panicle weight (g)	Grain yield (tons/ha)
CR2683-46-5-8-3-3	5.5	26.8	8.732	3.022	2.874	27.21	86	399	8.91	8.13
CR2682-1-1-5-1-2	5.8	27.1	7.699	2.158	3.568	29.21	87	268	7.32	7.91
CR2682-7-1-1-1	8.4	26.7	7.852	2.451	3.2	21.31	83	291	6.8	8.68
CR2683-1-1-2-1-1	6.7	27.2	6.924	2.514	2.75	26.9	83	274	8.05	8.52
CR3696-1-2-1-1-1	5.6	26.7	7.708	3.119	2.478	26.8	83	352	8.84	10.12
CR2683-45-1-5-2-1	6.7	27.7	9.592	2.912	3.293	28.1	86	294	7.51	7.45
CR2687-13-5-7-1-1	6.4	26.8	8.196	2.919	2.734	31.4	84	204	6.12	7.91
CR2687-19-1-1-1-2	8.3	26.3	7.895	2.924	2.717	25.3	85	375	8.51	8.07
CR2683-35-6-1-1-2	6.2	26.8	9.731	2.757	3.570	27.3	85	247	6.7	7.83
CR2683-50-7-3-1-1	6.1	26.5	9.381	3.013	3.113	30.07	85	258	5.9	7.42
CR2683-10-9-2-1-1-1	6.3	26.9	7.948	2.894	3.076	26.4	85	236	6.1	7.21
267213-1-1-1-2	6.8	27.4	7.950	2.878	2.769	27.1	84	264	8.1	8.74
2682-7-1-2-3-1	6.5	27.5	6.152	2.782	2.900	25.6	82	274	8.0	8.12
2681-2-2-2-2-3	9.3	27.2	8.691	2.721	3.194	23.2	88	342	7.8	10.23
CR3696-1-1-1-1	6.2	30.0	8.399	3.110	2.710	28.1	85	284	7.6	8.34
CR2681-2-2-2-2-2	6.3	28.1	8.571	2.968	2.912	25.2	83	244	8.3	8.17
CR2687-13-5-7-1-2	6.1	30.0	9.612	2.859	3.283	27.8	81	284	7.5	7.94
CR2688-9-2-1-1-1	6.4	30.8	7.259	2.569	2.821	25.1	86	223	8.2	7.81
CR2695-5-1-1-1-2	6.2	27.3	6.781	2.429	2.746	28.1	85	282	8.5	9.62
CR2683-46-5-9-1-1	6.5	27.4	8.745	3.284	2.666	27.8	83	265	8.9	9.36
CR2683-46-5-9-1-2	5.8	26.4	8.634	3.401	2.539	27.5	81	340	7.3	7.51
2683-46-5-8-3-2	6.4	26.2	7.451	2.699	2.761	25.2	81	282	5.3	8.24
CR2667-9-2-6-1-2	7.2	27.2	9.421	2.898	3.251	24.4	84	275	5.8	7.34
CR2681-2-2-2-1-3	6.2	30.0	7.069	2.884	2.735	28.1	81	284	7.6	7.92
CR2682-7-1-2-3-1	6.8	26.2	6.091	2.822	2.188	26.2	82	308	6.1	7.54
CR2683-45-1-2-1-1-2	6.6	26.5	9.225	2.736	3.687	25.2	85	218	5.7	7.20
Pooja (Check)	9.8	25.3	5.82	2.06	2.82	22.4	87	171	2.75	6.12
Gayatri (Check)	7.6	26.2	5.71	2.45	2.33	24.6	88	168	3.92	6.03
Varsadhan (Check)	5.4	27.8	6.45	2.14	3.01	24.1	84	235	5.12	5.4

varieties during wet season, 2006. The experiment was laid out in a randomized complete block design with three replications. Combining ability analysis was performed following the method of Kempthorne (1957). Pedigree breeding method was applied for selection of promising single plants from F_2 to F_6 focusing the target traits of heavy panicle, high grain number, late duration to fit lowland ecosystem, strong culm, dark green foliage and high spikelet fertility from the high mean performance, heterotic and GCA crosses. Two hundred twenty six promising fixed derivative lines were generated from these crosses and used for observational yield trial (OYT) during wet season, 2012 and genotyping for yield QTLs. Promising lines from OYT were evaluated under advanced yield trials during wet season, 2013 and 2014. Many transgressive segregants were selected out from the breeding program exhibiting a potential yield of >10 t/ha under various yield trials (Table 1). Presence of five yield component QTLs namely *Gn1a*, *OsSPL14*, *GW2*, *gw-5* and *SCM2* were observed to be the reason of high yield in the inter sub specific derivatives. Presence of these five yield QTLs in a single very high yielding background may be the clue for these QTLs that they may not interact antagonistically to reduce high grain yield drastically. Very high yielding genotypes could be developed for rainfed shallow lowland ecology through new generation rice approach utilizing inter sub specific hybridization. Five yield QTLs namely *Gn1a*, *OsSPL14*, *GW2*, *gw-5* and *SCM2* may be much helpful in getting higher yield in lowland rice and these QTLs can be utilized in marker-assisted selection for high grain yield.

SK Pradhan, SP Mohanty, DK Nayak, SR Barik, E Pandit, SK Dash and A Anandan
NRRI, Cuttack

Performance evaluation of climate resilient NRRI rice varieties in Sundarban area of West Bengal

Productivity of rice in coastal area is very low due to various abiotic stresses. In addition, rice production in this area is presently greatly affected by climate change. Four climate resilient varieties have been taken for 33 demonstration at farmers fields at Sandeshkhali block 1 (Sundarban), West Bengal in *kharif* season 2014. The performance evaluation revealed that overall 14.56% yield advantage has been registered by using NRRI climate resilient rice varieties as compared to varieties grown during the last *kharif* season from the lands affected by one or more than one abiotic stresses such as waterlogging (45 cm water depth), salinity ($EC = 2-5.7 \text{ dSm}^{-1}$) and submergence. Varshadhan has performed well under waterlogging situation and registered 17.23% mean yield advantage over varieties (Patnai, Pankaj, CR 1017) grown in the last *kharif* season in 14 demonstrations. Farmers observed that it has good cooking and eating qualities, good for popping and has demand in the rice market. CR Dhan 406 performed well under medium salinity and waterlogging situation under five demonstrations and registered 19.9% yield advantage over varieties (Pankaj, CR 1017) grown in the last *kharif* in the same fields. Although it is not preferred for eating by farmers but it has demand for selling to the traders. Swarna-*sub1* also registered 15.6% mean yield advantage over check (Mahsuri, CR 1017). It was preferred for eating and has good market demand. On the other hand, although CR Dhan 403 has not registered any yield advantage over checks but it is preferred very well by farmers for its good cooking qualities and market demand. These varieties can contribute significantly in the overall improvement of productivity in Sundarban under the coastal saline ecosystem.



Varshadhan variety performed well under water logging situation at Sundarban in *kharif* 2014

K Chattopadhyay, S Gayen, SK Mishra, AK Mukherjee,
RK Sarkar and ON Singh
NRRI, Cuttack

Endophytic & epiphytic microbial community in phytonic parts of three cultivated (*Oryza* spp. L.) and one wild rice (*Oryza eichengiri*)

Comparative analysis of community level physiological profiling (Biolog ecoplates), culture dependent (cfug⁻¹ phytonic part) and independent Denaturing Gradient Gel Electrophoresis (DGGE) approaches based on nitrogen response of three predominant Indian cultivated (*Oryza sativa* var Sabita, Swarna and Swarna *Sub1*) and one wild rice (*Oryza*

echengiri) varieties was performed in terms of microbial community as epiphytes and endophytes in phytomic parts (leaves, phyllosphere, stem, root and rhizoplane). Analysis of the population dynamics exposed that microbial load was the highest in the wild variety followed by respective cultivated ones (Sabita > Swarna > Swarna *Sub1*). It also discloses that the overall microbial activity was superior in rhizoplane followed by root, leaf, phyllosphere and stem among experimental rice varieties. Compared to other phytomic parts, the microbial community in terms of community level physiological profiling (CLPP) was significantly ($p < 0.01$) observed more in roots (Wild > Sabita > Swarna > Swarna *Sub1*) of all rice varieties. The principal component analysis pattern showed the Wild and Swarna *Sub-1* had a close proximity to each other among all studied parts. Shannon-Weaver and Simpson's index in different phytomic parts of the cultivated varieties were considerably higher than the wild one, while McIntosh index was lower in different part of four varieties. The similar trend of carbohydrate and phenolic compounds with a higher utilization ratio in rhizoplanes was observed by phytomic microbes. The uncultured endophytic community based on DGGE pattern showed the Swarna root was distinct from other parts of different rice varieties (Fig 1). Furthermore, Shannon-Weaver (H) of CPPL and DGGE were found much higher in root (3.44; 2.32), stem (3.42; 2.04) and leaves (3.36; 1.59) of Swarna than others.

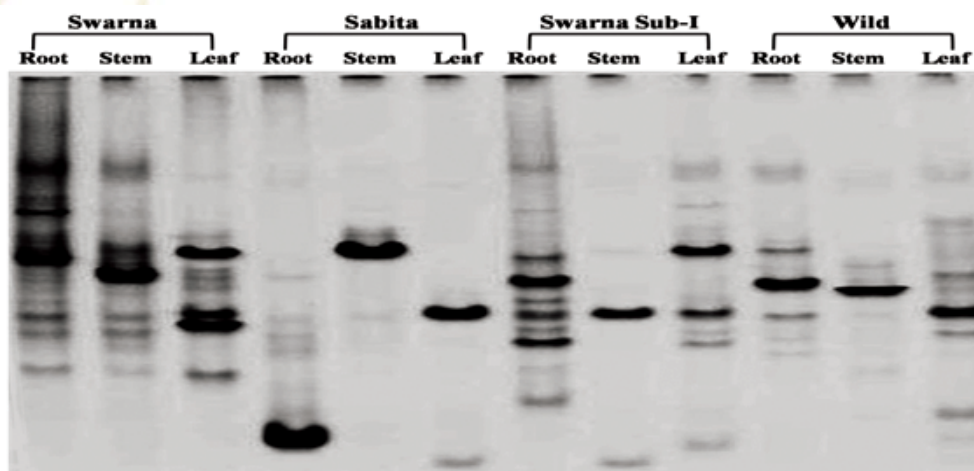


Fig 1. DGGE profiles of V3 region-16S rRNA genes amplified from twelve phytomic samples displays diversity of endophytic bacteria in four rice varieties

TK Dangar and U Kumar
NRRI, Cuttack

Development of soil fertility map of NRRI farm for available nitrogen and phosphorus

Soil test-based fertility management is an effective tool for increasing productivity of agricultural soils that have a high degree of spatial variability. The experimental and seed production blocks with different management practices have created variations in the soil nutrient status. The spatial variability and mapping of nutrients would help to manage the experimental soils in a better way. Grid wise (2×2 m) soil samples (0-15 and 15-30 cm depth) were collected from all the 24 blocks of NRRI farm. Soil samples were processed and analyzed for available nitrogen and phosphorus. Boundaries along with sample locations for these blocks were digitized. Arc-GIS was used for analyzing the spatial variability and the best model was used to develop an isarithm map for available nitrogen and phosphorus of NRRI research farm (Fig 2). Based on the fertility map, it can be concluded that nitrogen status of maximum blocks was low except few blocks where it is medium, whereas, available phosphorus is mainly in medium range and in few blocks it falls under low and high

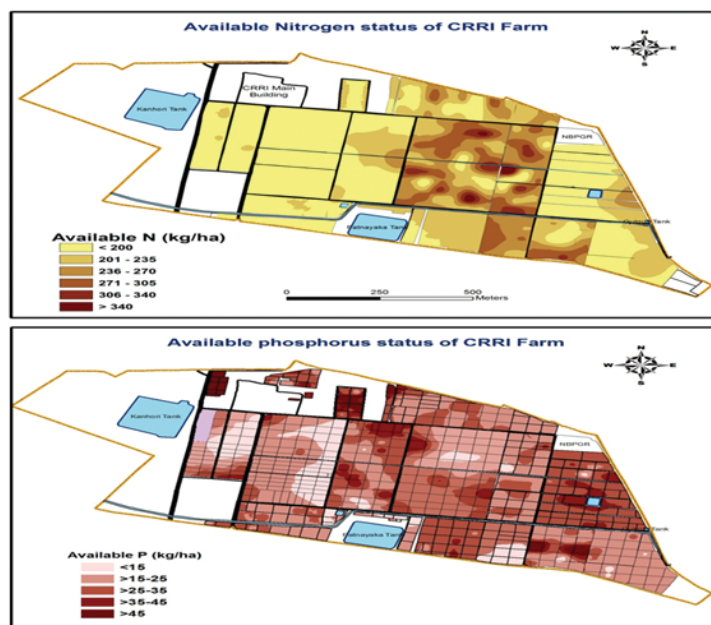


Fig 2. Available Nitrogen (a) and Phosphorus (b) status of NRRI farm

range. It can be recommended that where status is low, nutrient can be applied as 25% higher than the recommended dose and where its status is high, dose can be reduced by 25% of recommended dose. This map will be helpful for scientist/researchers of the institute to strategize their research components as well as for appropriate management of nutrients.

Priyanka Gautam, R Tripathi, B Lal, R Raja, M Shahid and AK Nayak
NRRI, Cuttack

Investigating impact of silicon application on yield and N use efficiency of lowland rice

Silicon plays important role in growth and metabolism of rice, it increases the cell wall thickness, imparts mechanical resistance to plant, prevents lodging thus reduces self-shading, especially under high nitrogen rate (Yoshida et al., 1969). A field trial was conducted in kharif season of 2014 with variety Gayatri with the objective of investigating impact of silicon application on yield and N use efficiency of lowland rice. Treatments included 2 levels of Si (0, 200, kg SiO₂ ha⁻¹) and 4 levels N (0, 80, 100, 120 kg N ha⁻¹). All the treatments were replicated thrice in randomized block design. Observations on grain and straw yield were recorded at the time of harvest, grain and straw samples were analyses for N content (Fig 3).

Results revealed that application of Si increased yield by 12.2- 16.9% as compared to treatments without Si. Partial factor productivity of N with Si application was 53-75 kg kg⁻¹, and without Si was from 45-65 kg kg⁻¹. Agronomic N use efficiency ranged from was 23.3-31.3 kgkg⁻¹ with Si and 14.4-19.7 kgkg⁻¹, without Si. N recovery efficiency ranged from was 36.9-42.9 % with Si and 27.3-33.8 %, without Si. Positive effects of Si application on yield and yield components of rice have been reported (Deren et al., 1994 and Takahashi et al., 1995). Apart from improving leaf erectness and enhancing active photosynthetic area, according to Kaufman (1979) deposition of Si in epidermal cell may allow light to be transmitted to the photosynthetic mesophyll tissue below the epidermis better which may promote photosynthesis.

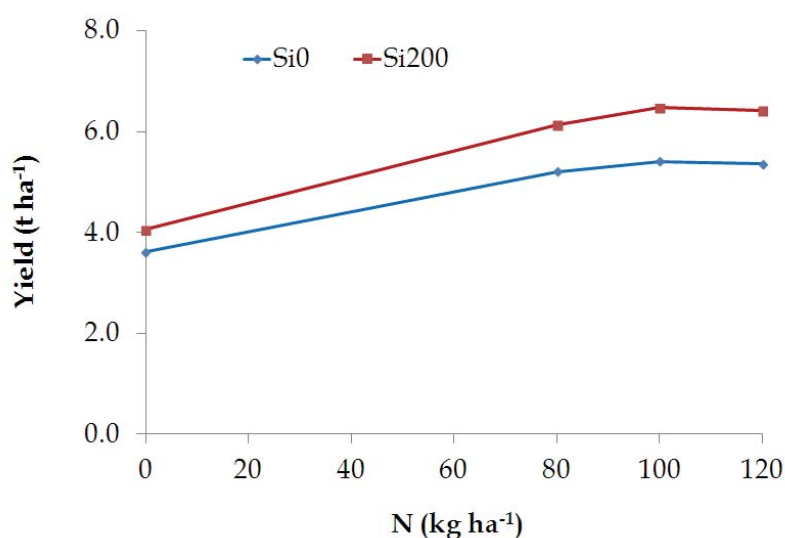


Fig 3. Response of low land rice to N rate with and without application of Si

Sangita Mohanty, Anjani Kumar, Md Shahid, Rahul Tripathi, B Lal, P Goutam and AK Nayak
NRRI, Cuttack

Swarming caterpillar incidence in irrigated rice ecosystem and its management

Swarming caterpillar is a voracious leaf feeder of rice and needs immediate attention. It occurs mostly at nursery or at initial stage of transplanting. The common habitat of the insect is forest or unused bushy areas of suitable hosts where its multiplication coincides with the onset of rainy season. With heavy flush of rain water, the larvae flows out along with the rushing water and harbours the rice fields where the water loses its velocity. Generally, rice fields adjacent to forest or hilly areas suffer frequent infestation of swarming caterpillar.

But during *kharif* season 2015, the pest infestation was experienced in the irrigated rice areas of Mahanga and Nischitkoili block of Cuttack and vast area of Kendrapada district. Surveillance in the IPM trial plots of Baenpur village, Mahanga block revealed that the pest incidence started during 2nd week of August in nursery beds as the sowing was delayed due to late release of canal water. Due to the nocturnal habit of the pest and its unusual occurrence in the area, farmers were panicked but informed at right time, i.e., at the initiation stage so that the pest was identified in about 4.4 acres of transplanted paddy and about 1 acre of nursery area. Investigation carried out on upsurge of the pest revealed that the larvae had come through canal water. They were seen crawling at the side of the canal and most of the rice fields adjacent to the irrigation canal were affected. The average number of larvae present per 50 continuous hills (10x5 hills) as one replication was recorded in 10 replications. Insecticides such as chlorpyrifos 20EC @ 500ml/ Ac, imidacloprid

17.8SL @125ml/ha, thiamethoxam 25WG @ 100g/ha, triazophos 40 EC @ 2.5 ml/liter and acephate 75% SP @2gm/litre of water were applied immediately with hand sprayer after recording the larvae and the pest was under control. But it was again reported during 2nd week of September by some farmers and upon survey it was found out that some of the farmers, who had not taken any protection measures during the pest invasion, had experienced the problem. Larval population was on an average @ 12 larvae per 50 hills and about 10 hills were infested to above 50% level. Immediate application of thiamethoxam controlled the pest absolutely with an immediate knock-down effect.

So, farmers of irrigated rice areas should also be vigilant for their irrigation channel as well as to their adjacent rice crop for swarming caterpillar infestation. Treatment of proper pesticide should be made immediately after spotting the insect or visualizing plant damage so that absolute control can be achieved. Community-based management strategy is key success to the swarming caterpillar control.

Table 2. Efficacy of insecticides against swarming caterpillar

Sl.No.	Treatments	Average No. of larvae/ replication (BT)*	% reduction after 24 hrs (AT)	Population/50 hills at 25 DAT	% damaged hills
1	Chlorpyrifos	32	100	0.0	0.0
2	Imidacloprid	30	100	0.0	0.0
3	Thiamethoxam	40	100	0.0	0.0
4	Triazophos	38	85	0.0	0.0
5	Acephate	44	100	0.0	0.0
6	Untreated control	41	0.0	15	44

*50 hills /replication, BT : Before treatment , AT : After treatment

Mayabini Jena, Totan Adak and J Berliner
NRRI, Cuttack

Evaluation of salinity-tolerant rice genotypes for drought (Osmotic stress) tolerance

The experiment was conducted with twenty two rice cultivars with different levels of salinity tolerance i.e. tolerant to salinity (e.g. AC 1303B, AC 1472, AC 1151, AC 39416A and AC 30747), medium salinity tolerance (e.g. AC 39384, AC 34254, AC 33107, AC 847A, AC 1017A, AC 1785, AC 85, AC 1764, AC 39291 and AC 34286) and susceptible to salinity (e.g. AC 34300, AC 289A, AC 39293B, AC 1996 and AC 1829) including susceptible checks (FR 13A and Swarna) for osmotic stress tolerance under hydroponic condition using polyethylene glycol 6000 -5.0 bars, 200 g PEG 6000 L⁻¹). The survival % varied for 0 to 87.1%. All the salinity tolerant cultivars were not tolerant to osmotic stress. Among the salinity tolerant lines AC 1303B, AC 1472 and AC 39416A were highly tolerant to osmotic stress, whereas AC 1151 and AC 30747 were medium tolerant to osmotic stress. In the medium tolerant only one cultivar i.e. AC 33107 showed medium tolerance to osmotic stress. Other cultivars were susceptible to osmotic stress. A notable observation was that among the salinity susceptible cultivars two cultivars i.e. AC 39293B and AC 34300 were tolerant to osmotic stress. FR 13A, a susceptible salinity tolerant cultivar was also exhibited greater tolerance to osmotic stress compared to other susceptible cultivars (Fig 4). The data showed that in rice germplasm pools both salinity and drought (osmotic stress) tolerant cultivars were available. In general, highly salinity tolerant cultivars showed tolerance to osmotic stress. Yet no generalized conclusion could be drawn from this investigation as because the cultivars susceptible to salinity also showed tolerance to osmotic stress. In general medium salinity tolerant cultivars did not show tolerance to osmotic stress.

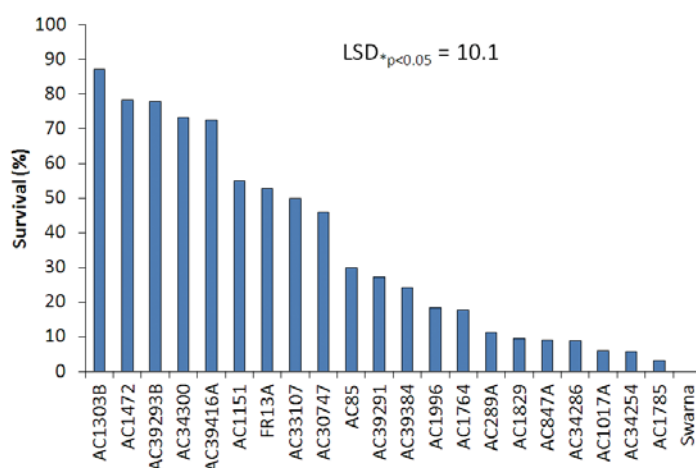


Fig 4. Testing of salinity tolerant rice cultivars for drought tolerance

RK Sarkar
NRRI, Cuttack

Extent and determinants of diversification of rice-based cropping systems in eastern region of India

Information on area under foodgrains as well as non-foodgrain crops for the period from 2000-01 to 2012-13 were analysed and compound growth rates were calculated. Simpson diversity index have been used to measure the degree of diversification and the determinants of diversification have been identified using regression analysis. In terms of area while rice has lost about 1% per year on an average, its output has increased almost 10% per year during the period in eastern region of India. This implies that there has been a tremendous increase in rice yield. The diversity index ranged between 0.34 and 0.74 in different states of the region during different years. However, the region is lagging behind the country average figure in terms of diversification as allocation of acreage is still skewed towards foodgrains, mainly rice which ranged between 42% and 79% of gross cropped area (GCA) in different states (Fig 5). Diversification was observed to be influenced mostly by the average farm income during preceding year and length of rural roads.

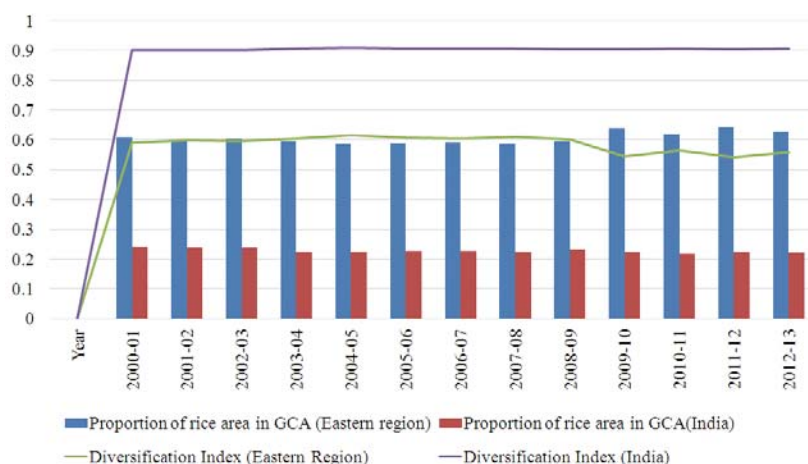


Fig 5. Treand of rice area and diversification in Eastern Region vis-a-vis India

Biswajit Mondal, P Samal, BN Sadangi and NN Jambhulkar
NRRI, Cuttack

WBPH Screening Database

White Backed Plant Hopper (WBPH) (*Sogatella furcifera* Howvath, Delphacidae, Homeoptera) is a major sap-sucking pest of rice and has a long history. A total of 1864 genotypes have been screened against WBPH in control condition during 2004 to 2013 and the database has been developed for the same genotypes.

WBPH screening database containing five fields namely 'Genotype name', 'Score', 'Source', 'Year of screening' and 'Type of resistance'. It is necessary to know the genotypes under different resistance type. So, the database has been prepared to search the genotypes based on resistance type i.e. R (for resistance), MR (moderately resistance), S (susceptible), MS (moderately susceptible), and HS (highly susceptible) using a drop down option list (Fig 6).

An output has been given to search the resistant genotypes. The user will get all the WBPH resistant genotypes along with their score, source of genotype and year of screening of the genotype as shown in the figure given below:

The distribution of number of genotypes screened from 2004 to 2013 has been given in Fig 7. Out of the total genotypes screened, more than 70% of

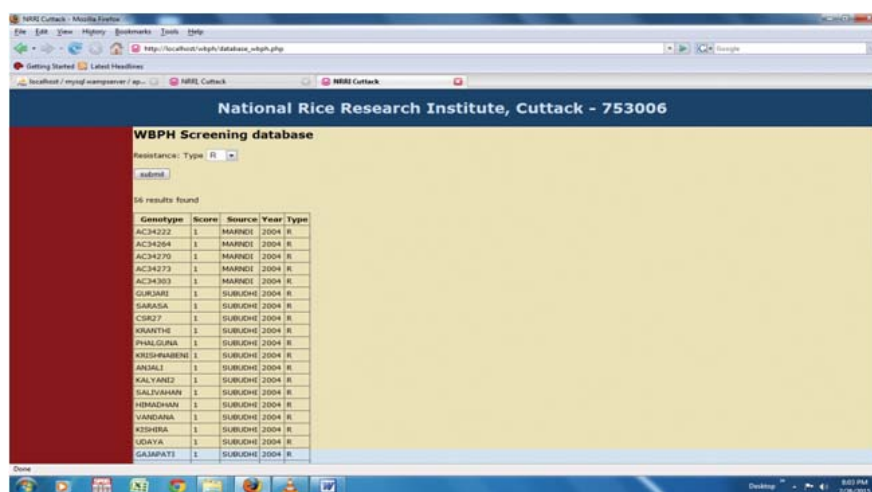


Fig 6. Output of result after selecting R (resistant) option from the drop down list

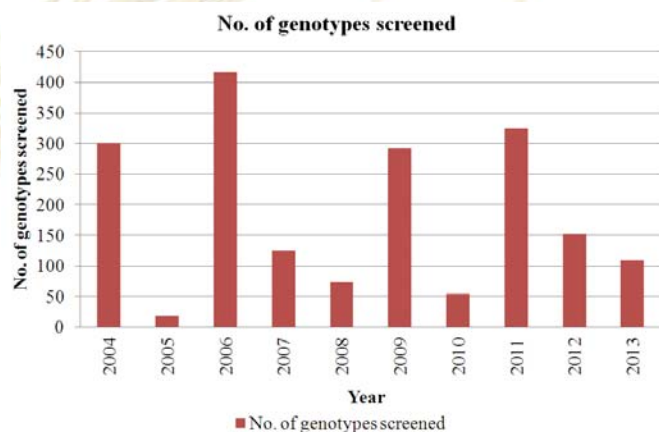
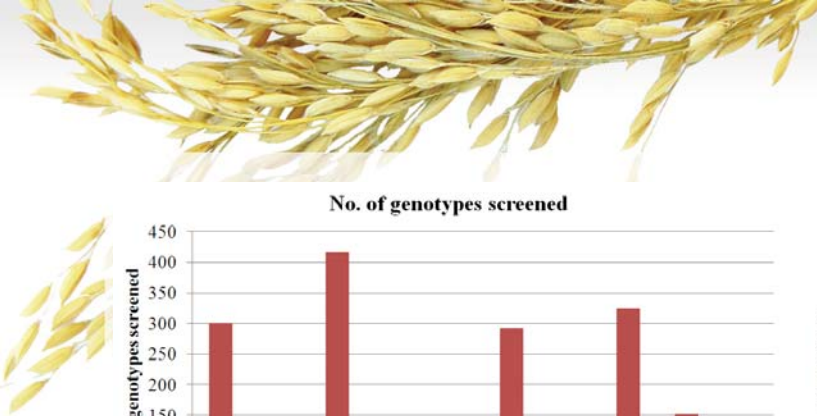


Fig 7. Number of genotypes screened from 2004 to 2013

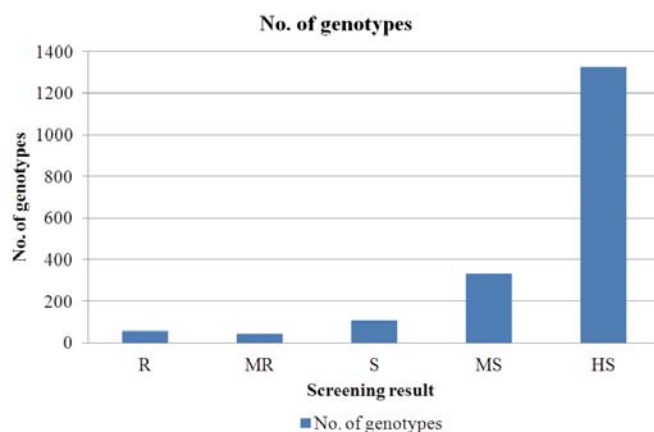


Fig 8. Number of genotypes under each resistant type category

genotypes were screened during four years 2004, 2006, 2009 and 2011. The number of genotypes under each screening category has been given in Fig 8. More than 70% genotypes were highly susceptible to WBPH, 18% were moderately susceptible, 6% were susceptible and only 5% were under resistant and moderately resistant category.

NN Jambhulkar, PC Rath, M Jena, BC Marandi,
HN Subudhi and A Pattnaik
NRRI, Cuttack

Insect-pest infestations in winter rice under different dates of transplanting

Infestations of rice stem borer, leaf folder and whorl maggot on variety Naveen as winter rice under three different dates of planting commencing from the first fortnight of August at an interval of fifteen days. Per cent dead heart was found to be the lowest (0.27%) in the crop transplanted during first fortnight of September as compared to first fortnight (1.29%) and second fortnight (0.79%) of August. Per cent leaf folder folded leaves was 5.13 in first fortnight of August transplanted rice, which gradually increased to 6.43 and 6.44 the crops transplanted in second fortnight of August and first fortnight of September, respectively. Whorl maggot (*Hydrellia philippina*) infestation was severe (scale 9) in September transplanted rice which killed 75 per cent of rice hills in the experimental plots as compared to that transplanted in 1st fortnight of August (scale 1) and 2nd fortnight of August (scale 3).

Table 3. Infestation of stem borer, leaf folder and whorl maggot in rice crops under different planting dates

Date of transplanting	Per cent dead heart	Leaf folder folded leaves (%)	Whorl maggot (0-9 scale)	Yield (t/ha)
13-08-2014	1.29	5.13	1	4.87
28-08-2014	0.79	6.43	3	4.99
11-09-2014	0.27	6.44	9	1.72

K Saikia and KB Pun
NRRI Regional Station, Gerua



Participation in Symposia/Seminars/ Conferences/Training/Workshop/ Meeting/ Visits

Dr. T Mohapatra, Director, NRRI attended the Selection Committee Meeting at ASRB, New Delhi on 1 July 2015.

Dr. SM Prasad and Dr. M Chourasia attended a training programme as resource persons organized by Sri Satya Sai Seva Samitee, Cuttack at Manibada (42-Mauza), Cuttack Sadar on 5 July 2015.

Mr. DR Sarangi attended as resource persons for two days in the skill development training programme for 34 rural youth on “Soil Health and Fertility Management” from 5 July to 4 August 2015 at KVK Barchana, Jajpur on ring concept of KVK.

Dr. Yogesh Kumar attended Extension Research Council meeting of BAU (Ranchi) as an expert on 6 July 2015.

Mr. DR Sarangi attended Scientific Advisory Committee meeting at KVK Barchana, Jajpur on 14 July 2015.

Mrs. Chanchila Kumari attended in ATMA GB meeting at ATMA, Koderma, Jharkhand on 17 July 2015.

Dr. U Kumar invited as an expert to evaluate M.Sc. (Microbiology) thesis (Viva-voce) at OUAT, Bhubaneswar on 22 July 2015.

Dr. T Mohapatra, Director, NRRI, Dr. SM Prasad, Smt. S Sethy, Shri DR Sarangi and Mrs. Chanchila Kumari attended the 87th Foundation Day of ICAR and 9th National Conference of KVKs organized at S.K. Memorial Hall, Patna from 25 to 26 July 2015.

Dr. T Mohapatra, Director, NRRI attended the Sectional Committee meeting of INSA at New Delhi from 27 to 28 July 2015.

Smt. S Sethy attended a Short Course on “Promoting Occupational Safety and Drudgery Reduction among Farm Women” at ICAR-CIWA, Bhubaneswar from 1 to 10 August 2015.

Dr. NN Jambhulkar attended workshop on ‘KRISHI: Knowledge Based Resources Information Systems Hub for Innovations in Agriculture (ICAR Research Data Repository for Knowledge Management)’ at NASC Complex, New Delhi from 4 to 5 August 2015.

Mrs. Chanchila Kumari and Mr. R. Ranjan participated in integrated development programme for schedule tribe organized by NABARD at Katio, Domchanch, Koderma on 8 August 2015.

Dr. T Mohapatra, Director, NRRI attended the National Symposium on “Germplasm to Genes: Harnessing Bio-

technology for Food Security and Health” at NRCPB, Pusa Campus, IARI, New Delhi from 9 to 11 August 2015.

Dr. T Mohapatra, Director, NRRI attended the Programme Advisory Committee (PAC) meeting at NABI, Mohali, Chandigarh on 12 August 2015.

Dr. SM Prasad and Dr. M Chourasia attended the HRD-cum-Review Programme for Execution of XIIth Plan Proposal and New Projects of KVKs of Odisha at Directorate of Extension Education, OUAT, BBSR from 13 to 14 August 2015.

Dr. D Maiti as member of the National Level Monitoring Team (NLMT-NFSM) attended monitoring visits to Districts Motihari and Madhubani of Bihar from 17 to 19 August 2015.

Dr. T Mohapatra, Director, NRRI participated as a Co-ordinator for the Kisan Gosthies in Agriculture Exhibition at Motihari, Bihar from 19 to 21 August 2015.

Dr. SM Prasad and Dr. Manish Chourasia attended the meeting on Comprehensive District Agriculture Action Plan Development for Cuttack district at ATMA conference hall Cuttack on 20 August 2015.

Drs. D Maiti, NP Mandal and CV Singh participated in two days Agriculture Exhibition and Kisan Sangosthies on ‘Rice, Pulses, Sugarcane, Oilseed and Crop Production & Management’ at Pipra Kothi, Motihari, Bihar from 20 to 21 August 2015.

Dr. SM Prasad attended the Foundation day programme of OUAT, BBSR on 24 August 2015 with a progressive mushroom entrepreneur Sri Chandrasekhar Ray of Cuttack who was felicitated on the occasion.

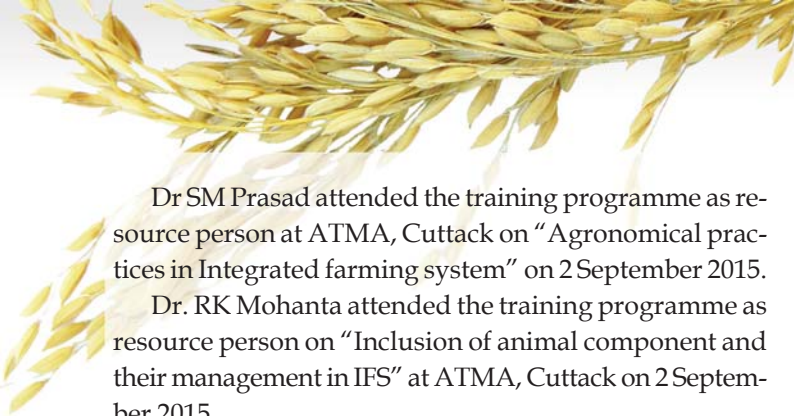
Dr. Biswajit Mondal attended a training programme on ‘Developing Winning Research Proposals in Agricultural Research’ at ICAR-National Academy of Agricultural Research Management (NAARM), Hyderabad from 25 to 29 August 2015.

Dr. SM Prasad and Dr. Manish Chourasia attended the “Krishak Gosthi” organised by OCTMP at Tentuliragadi, Tigiria on 27 August 2015.

Mrs. Chanchila Kumari attended and presented report in the review meeting of KVK at BAU, Ranchi from 26 to 27 August 2015.

Dr. SM Prasad attended two days training programme “Comprehensive District Agriculture Action Plan at OUAT, BBSR from 29 to 30 August 2015.

Dr. Sanjoy Sahavisited Nadia and North 24-Paraganas districts of West Bengal from 29 August to 2 September 2015 for monitoring BGREI Program.



Dr SM Prasad attended the training programme as resource person at ATMA, Cuttack on “Agronomical practices in Integrated farming system” on 2 September 2015.

Dr. RK Mohanta attended the training programme as resource person on “Inclusion of animal component and their management in IFS” at ATMA, Cuttack on 2 September 2015.

Dr. Manish Chourasia attended the training programme as resource person on “Integrated Pest Management in Integrated farming system” at ATMA, Cuttack on 3 September 2015.

Dr. Yogesh Kumar as member of the National Level Monitoring Team (NLMT-NFSM) attended monitoring visits to Districts Ranchi and Hazaribag of Jharkhand from 1 to 3 September 2015.

Dr. Yogesh Kumar attended the meeting on ‘Rice-fallow’ program organized by CGIAR at New Delhi to develop new project on the aspect with ICAR, IRRI, ICARDA and ICRISAT. Dr. Kumar presented proposal for rice-fallow under raised uplands.

Drs. SM Prasad and Manish Chourasia attended the DLMT meeting of BGREI of *kharif* 2015 at O/o DDA, Cuttack on 4 September 2015.

Dr. Sanjoy Saha visited jute growing border areas in Murshidabad district of West Bengal as member of ICAR Team from 6 to 8 September 2015 to review the issues as raised by Home Ministry for imposition of restriction of cultivation of high standing crops in the Indo-Bangladesh border passing through Murshidabad district of West Bengal.

Dr. SM Prasad and Dr. Manish Chourasia attended Zonal Workshop of KVKs of Zone VII at Ujjain from 9 to 11 September 2015.

Smt. S Sathy attended RPSC meeting of All India Radio, Cuttack at ICAR-CIWA, Bhubaneswar on 11 September 2015.

Mrs. Chanchila Kumari participated in GB meeting ATMA and BGREI, Koderma on 14 September 2015.

Mr. Bhoopendra Singh attended Agriculture Technology Management Agency G.B. Meeting at ATMA Office Koderma on 9 September 2015.

Dr. SM Prasad attended two days orientation workshop for State Govt. Officers of Odisha on latest ICT initiatives under NEGP at Hotel Sandy’s Tower, Bhubaneswar from 15 to 16 September 2015.

Dr. ON Singh, Director (Acting), NRRI attended the Mid-Term Review meeting of Regional committee II at CIFRI, Barrackpore on 19 September 2015.

Dr. Biswajit Mondal attended a training programme on ‘Capacity Building Program on Methodologies in Agriculture Extension Research’ at NASC Complex, Pusa New Delhi from 21 to 24 September 2015.

Delivered Lectures

Mr. Bhoopendra Singh delivered lecture on “Suitable varieties for vegetables, fruits and cash crops for rainfed area during *kharif* and *rabi* season” at Soil Conservation Training Centre, Soil Conservation Department Damodar Valley Corporation Hazaribag on 8 August 2015. He also delivered a lecture on “Protected Cultivation of Vegetables” in Jharkhand at Soil Conservation Training Centre, Soil Conservation Department Damodar Valley Corporation Hazaribag on 11 August 2015.

Drs. M Variar, D Maiti, NP Mandal, CV Singh, Yogesh Kumar and MS Anantha participated as resource persons in the training program (for Field/Project Officers of different state governments/organizations) on Crop Management Module for Agro-climatic Zones with Special Reference to Rainfed Area which was organized from 5 to 11 August 2015 by Damodar Valley Corporation (Hazaribag) and sponsored by Govt. of India, Ministry of Agriculture, Deptt. of Agriculture & Co-operation, (Natural Resource Management Division), New Delhi.

Drs. M Variar, D Maiti, NP Mandal, CV Singh, Yogesh Kumar and MS Anantha delivered lecture on different related topics in the Mid-*kharif* workshop organized on 7 September 2015 by CRURRS in Joki Tola (Hamlet) of village Dasokhap (Dt. Hazaribag) under TSP.

Mr. Bhoopendra Singh delivered lecture in mid-*Kharif* Workshop on the topic “Scientific Cultivation of Vegetables in Jharkhand” on 7 September 2015 at TSP Selected village Joki, Dasokhap Organized by CRURRS Hazaribag.

Mr. Bhoopendra Singh delivered lecture in the topic “Organic Farming in Vegetables” on 15 September 2015 at Yuva Kisan Club Paharpur, sponsored by NABARD Koderma.

Drs. M Variar, D Maiti, NP Mandal, CV Singh, Yogesh Kumar and MS Anantha are scheduled to participate as resource persons in the training program on Integrated Farming System (IFS) to make Indian Agriculture Climate Resilient which is going to be organized from 18 to 24 September 2015 by Damodar Valley Corporation (Hazaribag) and sponsored by Govt. of India, Ministry of Agriculture, Department of Agriculture & Co-operation, (Natural Resource Management Division), New Delhi.

Publications

Research Papers

Mondal B, Singh A, Sekar I, Sinha MK, Kumar S and Ramajayam D. 2015. Institutional arrangements for watershed development programmes in Bundelkhand region of Madhya Pradesh, India: an explorative study. *International Journal of Water Resources Development*, DOI: 10.1080/07900627.2015.1060195.

MS Anantha, Patel Devraj, Quintana Marinell, Swain Padmini, Jawaharlal L. Dwivedi, Rolando O. Torres, Satish B. Verulkar, Variar Mukund, Mandal NP, Kumar Arvind and Henry Amelia. 2015. Trait Combinations that Improve Rice Yield under Drought: Sahbhagidhan and New Drought Tolerant Varieties in South Asia. *Crop Science* (on line), DOI:10.2135/cropsci2015.06.0344 .

Singh BK, Chopra RC, Rai SN, Verma MP and Mohanta RK. 2015. Nutritional Evaluation of Seaweed on Nutrient Digestibility, Nitrogen Balance, Milk Production and Composition in Sahiwal Cows. Proceedings of the National Academy of Sciences, India Section B: *Biological Sciences*, 1-7. DOI: 10.1007/s40011-015-0616-8.

Rath PC, Lenka S, Dasmahapatra SD and Jena M. 2014. Field evaluation of selected insecticides against insect pests of wet season transplanted rice. *Oryza*. 51(4):324-326.

Radio/TV Talks

Dr. RK Mohanta, SMS (Animal Sc.) delivered a talk on “*Pariskar Dugdha Utpadana Pain Sabadhanata*” on AIR Cuttack broadcasted in Krishi Sansar programme on 16 September 2015.

Institute Seminar

Dr. DT Singh, Founder & President, Cloud Seq Pvt. Ltd, Singapore delivered a lecture on ‘Rice Genome Informatics with Cloud Seq’ on 13 July 2015.

Dr. BB Panda delivered a lecture on ‘Crop Cutting Experiment for Yield Estimation’ on 17 July 2015.

Dr. NN Jambhulkar delivered a lecture on ‘KRISHI: Knowledge Based Resources Information Systems Hub for Innovations in Agriculture (ICAR Research Data Repository for Knowledge Management)’ on 22 August 2015.

Appointment

Dr. Dibyendu Chatterjee joined as Scientist (Soil Science), in the Crop Production Division on 17 July 2015.

Dr. T Mohapatra, Director, NRRI was relieved on 27 August 2015 to join as Director and Vice Chancellor, IARI, New Delhi on 28 August 2015.

Dr. ON Singh, Head, Crop Improvement Division joined as Director (Acting), NRRI on 28 August 2015.

Popular Articles

Jena Mayabini. 2015. *Barshadinia Dhana Phasalare roga poka Niyantrana* (Insect pests and disease management in wet season rice), *The Samaj* (8 August 2015), Odia daily newspaper. 86(216), pp. 18.

Rath PC. 2015. *Parajibi dwara kharif dhan phasalare poka niyantran* (Control of insect in kharif rice by insect parasite), *The Dhwani Pratidhwani* (26 August 2015), Odia daily news paper. 24 (221), pp.4.

Technology Bulletins

Verma RL, Katara JL, Samantaray Sanghamitra, Patra BC, Sahu RK, Pattanaik SSC, Singh SP, Poonam Annie, Hembram Baidnath, Rao RN, Singh ON and Mohapatra T. 2015. *A practical guide for successful hybrid seed production in rice: A profitable venture*. NRRI Technology Bulletin No. 114.

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रेडियो वार्ता

डॉ.आर के महांत, विषयवस्तु विशेषज्ञ ने १६ सितंबर २०१५ को आकाशवाणी, कटक केंद्र में शुद्ध दुग्ध उत्पादन के लिए सावधानियां विषय पर कृषि संसार कार्यक्रम में एक रेडियो वार्ता प्रस्तुत की।

संस्थान सेमिनार

डॉ.डी टी सिंह, संस्थापक एवं अध्यक्ष, क्लाउड सेक प्राइवेट लिमिटेड, सिंगापुर ने १३ जुलाई २०१५ को राइस जीनोम इंफोरमाटिक्स विद क्लाउड सेक पर एक सेमिनार व्याख्यान दिया।

डॉ.बी बी पंडा ने १७ जुलाई २०१५ को उपज आकलन हेतु फसल कटाई परीक्षण पर एक सेमिनार व्याख्यान दिया।

डॉ.एन एन जांभूलकर ने २२ अगस्त २०१५ को कृषि: कृषि में नवोन्मेष के लिए ज्ञान आधारित संसाधन सूचना प्रणाली हब (ज्ञान प्रबंधन के लिए आईसीएआर अनुसंधान आंकड़ा रिपोजिटरी) पर एक सेमिनार व्याख्यान दिया।

नियुक्ति

डॉ.दिबेंदू चटर्जी ने १७ जुलाई २०१५ को वैज्ञानिक (मृदाविज्ञान) के पद पर फसल उत्पादन प्रभाग में अपना कार्यभार ग्रहण किया।

डॉ.टी महापात्र, निदेशक, एनआरआरआई को २८ अगस्त २०१५ को आईएआरआई, नई दिल्ली में निदेशक के पद पर अपना कार्यभार ग्रहण करने के लिए सेवामुक्त किया गया।

डॉ.आ एन सिंह, अध्यक्ष फसल उन्नयन प्रभाग ने २८ अगस्त २०१५ को एनआरआरआई के कार्यकारी निदेशक, का कार्यभार ग्रहण किया।

Promotion

Shri GK Sahoo, PA, Shri NN Mohanty, PA and Shri Janardan Nayak, PA promoted to the post of Private Secretary w.e.f. 8 July 2015.

Shri KC Mallick and Shri GC Sahoo, Technical Assistant promoted to the post of Sr. Technical Assistant w.e.f. 31 March 2015.

Shri Srinibash Panda, Technical Assistant promoted to the post of Sr. Technical Assistant w.e.f. 27 June 2015.

Shri Akadashi Mallick, Technical Assistant promoted to the post of Sr. Technical Assistant w.e.f. 1 January 2015.

Shri HC Satapathy, Shri Aparti Sahoo, Shri JC Hansda, Shri Abdul Samad, Shri R Jamuda, Shri Srikrishna Pradhan, Shri MN Mallick and Shri KC Bhoi, Technical Officer granted one advance increment (3% of the minimum pay in the pay Band-3).

Confirmation of Service

Dr. (Mrs.) Sushmita Munda, Scientist and Dr. (Mrs.) V Kasthuri Thilagam, Scientist w.e.f. 27 April 2013.

Dr. Teekam Singh, Senior Scientist w.e.f. 13 April 2014.

Shri Soham Ray, Scientist w.e.f. 6 July 2014.

Dr. N Umakanta, Scientist w.e.f. 1 January 2015.

Dr. (Mrs.) P Sanghamitra, Scientist w.e.f. 16 January 2015.

Transfer

Shri RC Pradhan, Assistant transfer from RRLRRS, Gerua to NRRI, Cuttack on 25 August 2015.

Retirement

Shri HC Satapathy, Technical Officer and Shri BK Behera, SSS retired on 31 July 2015.

Shri SK Ram, AAO, Shri Ananda Naik, SSS, Shri MM Nayak, SSS and Shri Pravakar Bhoi, SSS retired on 30 September 2015.

प्रोन्नति

श्री जी के साहु, निजी सहायक, श्री एन.एन.महांती, निजी सहायक तथा जनार्दन नायक, निजी सहायक को ८ जुलाई २०१५ से निजी सचिव के पद में पदोन्नति मिली।

श्री के सी मलिक तथा श्री जी.सी.साहु, तकनीकी सहायक को ३१ मार्च २०१५ से वरिष्ठ तकनीकी सहायक के पद में पदोन्नति मिली।

श्री श्रीनिवास पंडा, तकनीकी सहायक को २७ जून २०१५ से वरिष्ठ तकनीकी सहायक के पद में पदोन्नति मिली।

श्री एकादशी मलिक, तकनीकी सहायक को १ जनवरी २०१५ से वरिष्ठ तकनीकी सहायक के पद में पदोन्नति मिली।

श्री एच सी सतपथी, श्री अपर्ति साहु, श्री जे सी हांसदा, श्री अब्दुल सामद, श्री आर.जामुदा, श्री श्रीकृष्ण प्रधान, श्री एम एन मलिक तथा श्री के सी भोई, तकनीकी सहायक को एक अग्रिम वेतनवृद्धि (वेतनमान-३ के न्यूनतम वेतन के ३ प्रतिशत) की मंजूरी दी गई।

सेवा में पुष्टि

डॉ.(श्रीमती) सुष्मिता मुंडा तथा डॉ.(श्रीमती) कस्तुरी तिलगम, वैज्ञानिक की सेवा २७ अप्रैल २०१३ से।

डॉ.टीकम सिंह, वरिष्ठ वैज्ञानिक की सेवा १३ अप्रैल २०१४ से।

श्री सोहम राय, वैज्ञानिक की सेवा ६ जुलाई २०१४ से।

डॉ.एन उमाकांत, वैज्ञानिक की सेवा १ जनवरी २०१५ से।

डॉ.(श्रीमती) पी संघमित्रा, वैज्ञानिक की सेवा १६ जनवरी २०१५ से।

तबादला

श्री आर सी प्रधान, सहायक का आरआरएलआरआरएस, गेरुआ से एनआरआरआई, कटक में २५ अगस्त २०१५ को तबादला हुआ।

सेवानिवृत्ति

श्री एच सी सतपथी तकनीकी अधिकारी तथा श्री बी.के.बेहेरा, कुशल सहायक कर्मचारी ३१ जुलाई २०१५ को सेवानिवृत्त हुए।

श्री एस के राम, सहायक प्रशासनिक अधिकारी तथा श्री आनंद नायक, कुशल सहायक कर्मचारी, श्री मदनमोहन नायक, कुशल सहायक कर्मचारी तथा श्री प्रभाकर भोई कुशल सहायक कर्मचारी ३० सितंबर २०१५ को सेवानिवृत्त हुए।



Shri HC Satapathy and Shri BK Behera with Director and staff



Shri SK Ram, Shri A Naik and MM Nayak with Director and staff



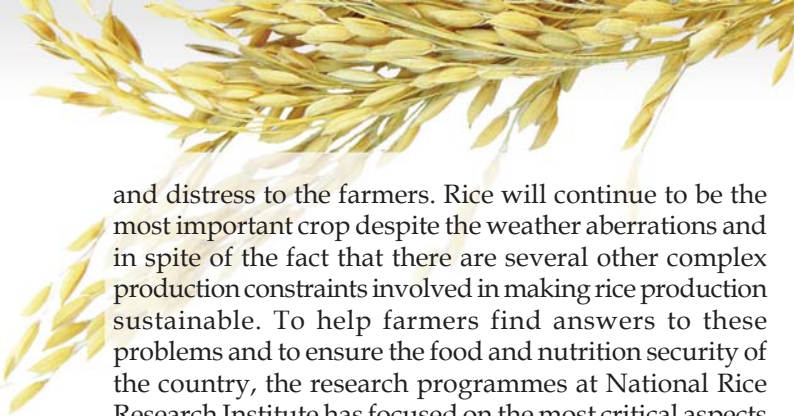
निदेशक की कलम से *From Director's Desk*

About 16 per cent of India's total area is drought prone and approximately, 50 million people are annually affected by droughts. About 68 per cent of total sown area of the country is susceptible to drought at one time or other. Recent climatic perturbations have exacerbated the stresses and contributed to large variations in area under cultivation and consequently production. Climate change scenarios show that higher temperature will lead to lower rice yields as a result of shorter growing periods. Heavier rains with longer spells of rainless periods will also limit water availability to the crop. Rainfed crops are likely to be worst hit by these events because of the limited mechanisms for coping with variability of precipitation. Even small changes in the rainfall pattern translate into pronounced consequences for rice in terms of reduced crop area, delayed planting with older seedlings and lower production under poor crop nutrition, increased incidence of pests and reduced grain quality. In the states of Jharkhand, Odisha and Chhattisgarh alone, rice production losses during severe droughts (about one year in five) average about 40% of total production, with an estimated value of \$800 million. Thus, adaptation in rainfed rice production can be seen as a promising entry point to buffer the consequences of climate change amongst the poorest of the poor.

The country as a whole faced moderate to severe drought during this monsoon as a strengthening El Nino pattern restricted the rainfall to less than 88% of the long term average by September 2015. Though monthly averages may not indicate severe shortfalls in precipitation, the distribution has been erratic with drought spells of 20-35 days duration in several states during September. Monsoon rains which arrived in time helped the farmers to sow and transplant rice crops during June and July in most parts of the country but the intensity weakened in August, and by the end of September, the southern, western and northern parts of the country experienced poor rainfall causing damage to the rice crop

भारत के कुल क्षेत्र में लगभग १६ प्रतिशत क्षेत्र सूखा प्रवण है एवं प्रति वर्ष लगभग ५० मिलियन लोग बाढ़ से प्रभावित होते हैं। देश के कुल बुआई क्षेत्र का ६८ प्रतिशत किसी न किसी समय पर सूखे से ग्रसित रहता है। हाल के जलवायु अव्यवस्थाओं से दबावों में और वृद्धि हुई है तथा खेती की जाने वाले क्षेत्रों में व्यापक भिन्नता देखने को मिला है जिससे उत्पादन भी बाधित हुआ है। जलवायु परिवर्तन परिदृश्य से पता चला है कि अधिक तापमान से कम उपज प्राप्त होगी क्योंकि खेती की अवधि छोटी होगी। अत्यधिक वर्षा या वर्षाविहीन लंबे सूखे की अवधियों से फसल के लिए जल उपलब्धता में भारी कमी होगी। वर्षा की अनियमितताओं की समस्याओं से सामना करने लिए सीमित विकल्प होने के कारण वर्षाश्रित फसलें सबसे अधिक प्रभावित होंगी। यहां तक कि वर्षा पैटर्न में छोटी से परिवर्तन से चावल को प्रभावित कर सकता है अर्थात् खेती किए जाने वाले क्षेत्र में घटाव, अधिक दिन वाले पौद से विलंबित रोपाई, कम उपज, कम पोषकतत्व, नाशककीटों का अधिक प्रकोप तथा दाना के गुणवत्ता में कमी। केवल ओडिशा, झारखंड एवं छत्तीसगढ़ में गंभीर सूखे के दौरान (पांच वर्ष में एक बार) कुल चावल उत्पादन में ४० प्रतिशत नुकसान हुआ जिसका मूल्य लगभग ८०० मिलियन डॉलर है। अतः जलवायु परिवर्तन के परिणामों से सामना करने के लिए वर्षाश्रित चावल उत्पादन को अपना आशाजनक प्रवेश बिंदु होगा।

एल नीनो पैटर्न मजबूत होने के कारण पूरे देश में समग्र रूप से २०१५ सितंबर तक मानसून कमजोर रहा और ८८ प्रतिशत से कम वर्षा हुई। हालांकि मासिक औसत वर्षा आंकड़ें अत्यधिक कमी नहीं दर्शाते हैं किंतु वर्षा का वितरण अनियमित रहा और कई राज्यों में सितंबर के दौरान २० से २५ दिनों तक वर्षा नहीं हुई। मानसून वर्षा जो समय पर हुई और जिसके कारण देश के अधिकांश भागों के किसान जून एवं जुलाई में बुआई एवं रोपाई कर पाए किंतु वर्षा की तीव्रता व सघनता अगस्त में कमजोर हुई तथा सितंबर के अंत तक देश के दक्षिण, पश्चिम एवं उत्तरी भागों में बहुत कम वर्षा हुई जिसके कारण चावल फसल को नुकसान पहुंचा एवं किसानों की दुर्गति हुई। मौसम की अनियमितताओं तथा चावल उत्पादन को स्थिरता देने में अन्य उत्पादन बाधाओं के बावजूद भी चावल एक प्रमुख फसल बनी रहेगी।



and distress to the farmers. Rice will continue to be the most important crop despite the weather aberrations and in spite of the fact that there are several other complex production constraints involved in making rice production sustainable. To help farmers find answers to these problems and to ensure the food and nutrition security of the country, the research programmes at National Rice Research Institute has focused on the most critical aspects of stress tolerance including drought, submergence, salinity and several biotic stresses that threaten stability of production year to year in different parts of the country.

Rice research programmes have to be compatible with the imperatives of drought resilience. Strategies may vary for different agro-ecological zones based on their vulnerability profile and will include development and dissemination of drought tolerant varieties of rice; moisture conservation and drought proofing with appropriate crop establishment methods; increasing nutrient uptake efficiency under initial, intermittent and reproductive drought stress; efforts to reduce risk by developing contingency plans; dissemination of weather based advisories to the farming community on real time basis through extension and linkage with regional and state agencies/departments to promote resource conservation technologies. Success of drought tolerant varieties like Sahbhagidhan, Shushk Samrat and the newly introduced IR 64 drt 1 in Eastern Indian states show that it is possible to sustain production under moderate levels of stress but matching management technology is yet to be adopted by farmers who continue to grow rice under transplanted conditions in drought prone areas. Dry or wet direct seeded rice and aerobic rice systems have been amply evaluated in on-farm trials and proved beneficial in rainfed drought prone areas and other water limited situations. Further efforts to popularize the methods with live demonstrations, adequate training and exposure visits would help the farmers to use such stress mitigation strategies for stable rice production in drought prone areas.

इन समस्याओं से मुकाबला करने के लिए देश के किसानों को मदद करने एवं खाद्य एवं पौषणिक सुरक्षा सुनिश्चित करने हेतु, राष्ट्रीय चावल अनुसंधान संस्थान के अनुसंधान के कार्यक्रम सूखा, जलनिमग्नता, लवणता समेत दबाव सहिष्णुता तथा कई जैविक दबावों जिससे देश के विभिन्न भागों में प्रति वर्ष उत्पादन स्थिरता के प्रति संकट उत्पन्न हो जाता है, आदि पर केंद्रित रहते हैं।

सूखे की अनुकूलनीयता के अनुसार चावल के शोध संबंधी कार्यक्रम होने चाहिए। विभिन्न कृषि पारिस्थितिकीय क्षेत्रों के उनकी ग्राह्यशीलता के आधार पर रणनीतियों में विभिन्नता हो सकती है। इस रणनीति में सूखा सहिष्णु चावल किस्मों का विकास एवं प्रचार, नमी संरक्षण एवं सूखा प्रतिरोधिता, उपयुक्त फसल स्थापना विधियां, सूखे की दबाव के तहत आरंभिक, मध्यम तथा वृद्धि अवस्था के दौरान पोषककतत्व अधिग्रहण क्षमता में वृद्धि, आकस्मिक योजनाओं के विकास द्वारा जोखिम को कम करने के लिए प्रयास, विस्तार के द्वारा वास्तविक समय पर किसान समुदाय को मौसम आधारित सेवा प्रदान, समय तथा संसाधन संरक्षण प्रौद्योगिकियों को प्रोत्साहन के लिए क्षेत्रीय एवं राज्य कृषि अभिकरणों/विभागों के साथ संपर्क शामिल हैं। सूखा सहिष्णु चावल किस्मों जैसे सहभागीधान, शुष्क सम्राट एवं पूर्वी भारत में हाल ही में विमोचित आई ६४ डीआरटी १ से पता चला है कि मध्यम स्तर के दबावों के तहत उत्पादन को कायम रखा जा सकता है किंतु वह किसान अभी तक नवीनतम प्रबंधन तकनीकियों को नहीं अपनाए हैं जो सूखा प्रवण क्षेत्रों में प्रतिरोपित स्थिति के अंतर्गत धान की खेती करते रहते हैं। सूखा या आर्द्र सीधी बुआई धान तथा ऐरोबिक धान प्रणालियों का किसानों के खेतों में अच्छी तरह से मूल्यांकन किया जा चुका है तथा वर्षाश्रित सूखा प्रवण क्षेत्रों एवं अन्य जलाभाव परिस्थितियों में लाभदायक सिद्ध हुआ है। प्रत्यक्ष प्रदर्शनों, पर्याप्त प्रशिक्षण एवं भ्रमण कार्यक्रम के द्वारा नवीन खेती पद्धतियों को लोकप्रिय बनाने के प्रयासों से ही सूखा प्रवण क्षेत्रों में स्थायी चावल उत्पादन के लिए किसानों को इन दबाव उन्मूलन रणनीतियों से मदद मिल सकेगी।

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