DRR

Directorate of Rice Research

Newsletter

Vol. 8 No: 1 RICE IS LIFE January - 2010

Activities AICRIP News Research Notes Global Rice News



New DG of ICAR



Dr. S.Ayyappan has taken over as Secretary, DARE, Government of India and Director General, Indian Council of Agricultural Research on 1st January 2010 after the superannuation of Dr. Mangala Rai. Rice family extends hearty congratulations to him and looks forward to work under his able leadership to achieve the targeted goals.

All the rice workers are grateful to Dr. Mangala Rai, former Secretary, DARE and DG, ICAR for providing dynamic leadership and guiding the rice research programme very effectively.

DDG (Crop Sciences) visits DRR

Call for public -private partnership...

Dr. Swapan Kumar Datta, DDG -Crop Sciences, ICAR visited DRR on 21st December 2009 and inaugurated Rice Knowledge Management cell. Addressing the scientists at the Directorate, he emphasized the need to have effective partnership between public and private sectors for meeting the future challenges of enhancing and sustaining rice productivity. He stressed that the interaction should be a two-way process to harness the strength of both the sectors for mutual benefit. Dr. S.K. Datta also chaired Variety Identification Committee meeting in which 15 new proposals submitted by different centres were discussed.



Monitoring tours

On the move towards improvement…

DRR is entrusted with the responsibility of collective planning, implementation and coordination of multidisciplinary rice research activities being carried out at more than 100 research centres spread over 27 states and two Union Territories. Monitoring of the AICRIP trials, breeder seed production, frontline demonstrations in farmers' field and research activities of the centres is very crucial in order to ensure desired results and proper implementation of the co-ordinated programme.

This year, nine multidisciplinary monitoring teams of DRR along with nodal scientists from different regions were constituted to monitor AICRIP trials and breeder seed production undertaken by different centres in particular and to take a note on impact of drought on rice cultivation in the Country in general. All the monitoring teams visited 55 AICRIP funded as well as voluntary centres wherein altogether more than 500 experiments under various trials of different disciplines were monitored. Besides, individual scientists of DRR also visited AICRIP centres for monitoring and specific consultations. Majority of the trials were found in good condition and conducted as per the technical programme. Breeders had also maintained high standards to ensure maximum purity of breeder seed being produced. Details of teams, places visited and remarks are given in the table.

S.No	DRR multi-disciplinary teams and Nodal Scientists	AICRIP centres monitored	Period of visit	Remarks
1	Dr. S M Balachandaran Dr. D Subrahmanyam Dr. Chitra Shanker Dr R K Salgotra - Chatha, SKUAT, Jammu	Palampur, Malan, Almora, Majhera	20th to 26th Sept., 2009	Delayed sowing/ transplanting due to late onset of monsoon. Attack of leaf and neck blast and grain discolouration was observed.
2	Dr. S P Singh Dr. N Sarla Dr. M Mohan Dr. S P Singh - GBPUAT, Pantnagar	Pantnagar, Ludhiana, Karnal, Uchani, Kaul, IARI	30th Sept to 7th Oct., 2009	Rain was less than normal but due to good irrigation facilities in the region effect of drought was not significant. In general disease and pest pressure was less except false smut attack in some entries at Uchani and Ludhiana.
3	Dr. T. Ram Dr. G S Laha Dr. B. Sreedevi Dr R K Chowdhury - RARS, AAU, Titabar	Chinsurah, Lebuchhera, Arundhutinagar, Gerua, Titabar, Barapani, Upper Shillong, Imphal, Lamphelpat, Wangbal	3rd to 14th Oct., 2009	Transplanting was delayed by 15 to 30 days due to late receipt of rains. Blast and sheath blight was observed in NEH and BPH was also observed in Manipur.
4	Dr. N Shobha Rani Dr. G S Varaprasad Dr K Surekha Dr. P V Shende - ARS, Dr.PDKVV, Sakoli	Nawagam, Banswara, Karjat, Panvel, Sakoli, Sindewahi	4th to 10th Oct., 2009	Delayed onset of monsoon and erratic distribution of rains severely affected the rice crop in this region. Pest and disease occurrence was negligible.
5	Dr. V P Bhadana Dr. Ch Padmavathi Dr. P C Latha Dr. P Perraju - JNKVV, Rewa	Waraseoni, Jabalpur, Rewa, Raipur, Jagdalpur, Chiplima	5th to 14th Oct., 2009	In general crop season was late; Jabalpur and Rewa were badly affected by drought. No major incidence of pest and disease was observed.
6	Dr. G Padmavathi Dr. M S Prasad Dr. S Leena Kumary - RRS, Moncompu	Vyttila, Moncompu, Pattambi, Brahmavar	6th to 11th Oct., 2009	Area of Pokkali cultivation reduced as farmers diverted area for fish and prawn culture. Incidence of sheath blight and blast was observed at Moncompu and Pattambi and gall midge at Brahmavar.
7	Dr. N Shobha Rani Dr. L V Subba Rao Dr. G. Katti Dr. R Mahender Kumar Dr. J L Dwivedi - CRS, NDUAT, Masodha	Bankura, Ranchi, Hazaribagh, Masodha, Kanpur, Lucknow, Varanasi	8th to 16th Oct., 2009	Early as well as later stage drought was experienced at most of the places leading to reduction in area. High incidence of gall midge (upto 90% SS) was observed in the simdega block of Ranchi due to late planting.
8	Dr. K V Rao Dr. A S Hari Prasad Dr. R M Sundaram Dr. Surendra Raju - ARI, ANGRAU,Hyderabad	Maruteru, Warangal, Rajendranagar, Mandya, Coimbatore, Karaikal, Kurumbapet	26th Oct. to 11th Nov., 2009	Effect of early drought not only led to reduced area under *kharif* rice but transplanting was also delayed. In general biotic pressure was low except rat damage in Godavari district
9	Dr. C N Neeraja Dr. Brajendra Dr. J N Reddy - CRRI, Cuttack Dr. N Prakash - NDAUT, Ghaghraghat	Cuttack, Bhubaneswar, Chinsurah, Pusa, Masodha, Ghaghraghat	3rd to 11th Nov., 2009	Erratic and in places less than normal rainfall resulted in less paddy transplantation.

AICRIP NEWS

Rice Research Station, Navsari

Regional Research station (Paddy), Navsari was established in 1982 under NARP. In view of commendable contribution from the centre, ICAR has made it an AICRIP funded centre in 2009. Now this research station is under the Navsari Agricultural University, which was part of the erstwhile Gujarat Agricultural University. The research station was located at 20.57^{0}N longitude and 72.54^0 E latitude in heavy rainfall zone of South Gujarat.

Significant Achievements

Since inception, a number of varieties of paddy were released and/or endorsed from the centre. These included GR – 3, GR – 4, GR – 6, GR – 7 and NAUR – 1 in early group, IR-22, Jaya and Gurjari in mid-late group, Masuri, GR – 103 in late group, GR- 101, GR – 102, GR – 104 and Narmada in aromatic type, Dandi as salt tolerant in transplanted paddy. GR – 5, GR – 8 and GR – 9 were released for direct seeding. Agronomic practices like planting geometry, sprouted seed technology, nutrient management, water and weed management were developed and recommended for the use of farming community. Crop protection measures were developed and recommended for the farmers of this region.



Scientists involved in AICRIP project:

Dr. R.D.Vashi (Plant Breeding), Dr. H.L.Chauhan (Pathology), Dr. K.G.Patel (Entomology), Mr. T.D.Patel (Agronomy) and Dr. S.R. Patel (Physiology) are involved in rice research.

Agricultural Research Station, Gangavathi

The AICRIP center functioning at ARS, Siriguppa has been shifted recently to ARS, Gangavathi on 19th November 2008 for administrative and functional convenience. The research station is located in the most productive district (Koppal) which has recorded average rice productivity of 3.8 t/ha. Rice is totally irrigated and double-cropped under Tungabhadra river command and mostly fine grain varieties like BPT 5204, Gangavathi Sona, Jagtial Sannalu, MTU 1010 are grown. The soils are fine-textured and heavy, but are saline because of brackish shallow ground water



needing efficient drainage network to prevent aggravation of soil salinity problems. Major biotic stresses in the region are stem borer, BPH, leaf folder, BLB, blast and of late false smut.

Scientists involved in AICRIP project:

Dr. M.S. Hiramath (Plant breeding), Dr. M. Pankaja (Pathology), Dr. Mastan Reddy (Agronomy) and Dr. R Kiran Kumar (Entomolgy) are involved. Dr. Mohammed Ibrahim, Senior Scientist (Genetics and Plant Breeding) is heading the station.

Field day celebrations

This centre organized a Farmers Field Day on 8th December 2009 in collaboration with Krishi Vigyan Kendra under University of Agricultural Sciences (UAS), Raichur. Dr. B. C. Viraktamath, Project Director and Dr. K.V. Rao, Principal Scientist, Soil Science attended the function. Sri Paranna Munavalli, honourable member of Legislative Assembly and President of Karnataka Rice Millers Association, inaugurated the function. Dr. B.V.Patil, special officer, UAS, Raichur, senior officers of the University, officials from agricultural department, members from industry and students participated in the farmers' day celebrations. In the field visit scientists explained about several promising cultures and management related experiments on aerobic rice and insect pest, disease and weed control. An exhibition displaying several agrochemical products, and energy-saving modern farm machinery like transplanters, combine harvesters was also organized for the benefit of farmers. Chief Guest, Dr. B. C. Viraktamath explained the technologies developed at DRR that are suitable for the region like fine grain hybrid rice (DRRH 3) and BLB resistant variety (improved Sambha Mahsuri). He released folders entitled "Varieties suitable for Tungabhadra project area" and Rice diseases and control measures in Tungabhadra project area".

A report on the 6th International Rice Genetics Symposium

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The 6th IRGS was held at Manila, Philippines from 16-19, November 2009, in which a total of 777 scientists and researchers representing 34 countries along with exhibitors and members of media participated. From India, 47 scientists participated in the symposium and there was good representation from other rice growing countries in Asia and Africa. With almost 90 speakers and more than 400 scientific poster presentations, the sixth IRGS provided an avenue for participants to exchange new research results from rice genetics and how to apply the new knowledge to overcome the problems threatening global food security. There were a total of six plenary sessions, eight concurrent sessions, nine poster sessions and two workshops during the symposium. The symposium covered the latest developments in evolutionary studies of rice, breeding research, mapping of genes and quantitative trait loci, identification and cloning of genes for biotic and abiotic stresses, gene expression, genomic databases, and mutation induction for functional genomics.

Dr. B.C. Virakatamath, Dr. N. Shobha Rani, Dr. N. Sarla and Dr. R.M. Sundaram participated in the symposium from DRR. Dr. B.C.Viraktamath chaired a plenary session on genomics, Dr. N. Shobha Rani and Dr. N. Sarla gave oral presentations in concurrent sessions and Dr. R.M. Sundaram presented a poster highlighting the research findings of their study. A total of 14 posters were presented from DRR.



Visit to Ohio State University (OSU), Columbus, USA under BOYSCAST fellowship

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I visited Ohio State University (OSU), Columbus from 27th March 2008 to 27th September 2009 under Better Opportunities for Young Scientists in Chosen Areas of Science & Technology (BOYSCAST) fellowship. I worked in Dr. G.L. Wang's laboratory on following important aspects.



i) *Molecular mapping and cloning of new rice blast resistance gene Pi 40 from wild species*- A novel broad spectrum blast resistance gene, *Pi 40* was identified in an introgression line from *O. australiensis*. The *Pi 40* was fine mapped and identified very close linked markers (0.3 cM each side) which can differentiate the *Pi 40* from other genes in the cluster of R genes on short arm of chromosome 6. High density BAC library of intogressed line was also constructed and identified the BACs containing the loci and those BACs were used to make a contig. Sub clones of contig was made and sequenced. From sequence information, genes were predicted, annotated and transformation of candidate genes is under way to know the right candidate for *Pi 40.*

ii) Domain swapping and DNA shuffling between Pi-2 and Pi-9 genes - To create novel resistance proteins by DNA shuffling, two major R genes (*Pi-2 and Pi -9)* which were previously cloned were selected. By employing site directed mutagenesis, the mutations were created in the C-terminal portion of the genes and the mutaganized constructs were mobilized in to *Agrobacterium* strain for further use in transformation and efficacy testing.

iii)Transcriptome profiling of rice for biotic stress using deep sequencing technologies - New deep sequencing techniques like Massively parallel signature sequencing (MPSS) and sequence-by-synthesis (SBS) were employed to profile the transcripts expressed in the rice after the infection by blast, BLB, armyworm and water weevil. This study identified many novel up regulated specific and common genes which have not been reported previously in rice for defense against diseases and insects. This work also pave the way to identify molecular switches/ transcription factors and their target sites which are involved in the host defense response, and further helped to make network of host defense pathways for insect pests. Hence, the comprehensive and deep survey of the these libraries will provide a rich genomic resource for targeted silencing or over-expression of key regulatory genes for disease/ pest resistance and further understanding of various signal transduction pathways involved in the host-pathogen as well as rice-insect interactions at molecular level.

Resource Conservation Options for Rice and Rice Based Cropping System in Hilly Agroecosystem

Brajendra, V.P.Bhadana and S.P.Singh

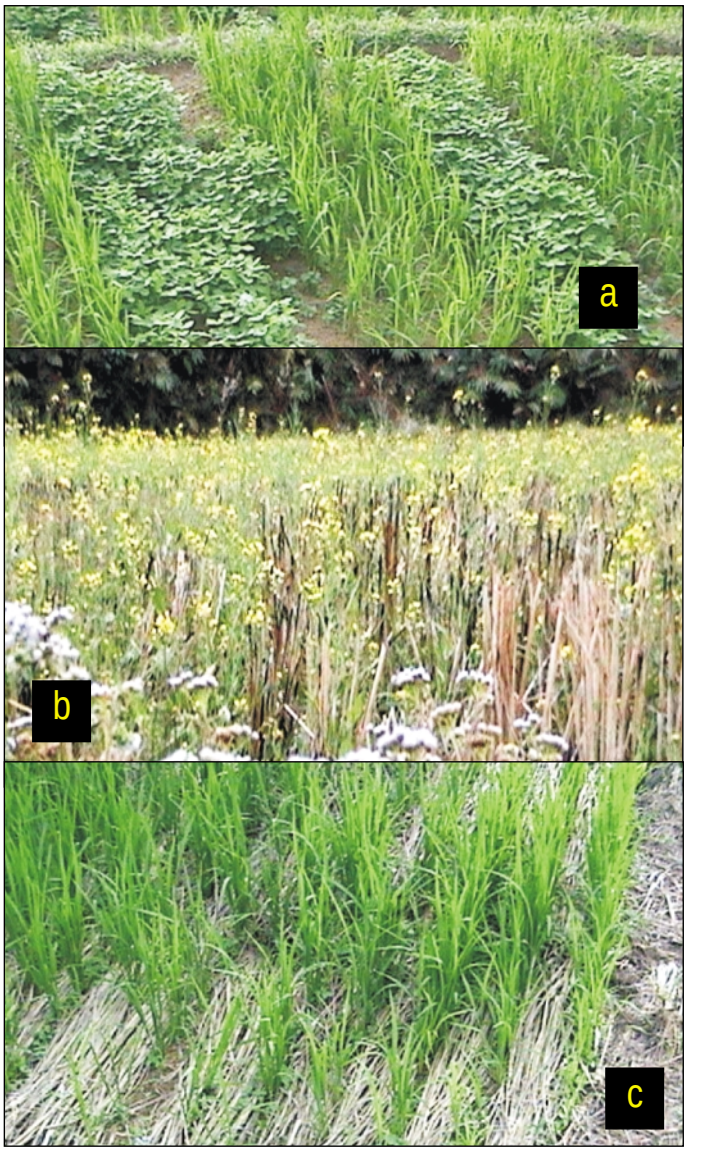
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The hill regions form complex ecosystems in which various forms of production systems coexist. Any agricultural practice that creates and maintains bare ground is inherently less sustainable than practices that keep the ground covered throughout the year. Farming practices using annual crops in ways that mimic perennial systems, such as no-till and cover crops, are the best alternative until perennial systems are developed. Maintaining ground cover in the form of cover crops, mulch, or crop residue achieves the goal of sustaining the soil fertility. In addition to organic matter benefits, cover crops provide considerable amount of nitrogen for crops that follow them. Following are few agronomic measures of soil and water conservation adopted by farmers:

Sowing dates - Farmers in hills adjust sowing dates in such a manner that when the maximum rainfall occurs, there is enough of ground cover. This practice is often done in *Jhums* as farmers finish sowing of crops by April or even dry sowing of crops to get a denser plant population in their fields (Fig. a).

Surface seeding - This is the only option for low lying poorly drained heavy rice soils that don't allow timely tillage operation after rice harvest for sowing mustard and is widely practiced in hilly areas of NEH region (Fig. b). The seeds are broadcasted in the saturated soil surface without any tillage operation or conservation tillage. This practice reduces the cost of production. It is popular among small, subsistent and below subsistent-level farmers.

Mulching –Mulching minimizes erosion and conserves in situ moisture, besides reducing weed menace. Spreading of crop/organic residues on the surface, cushions rain drop impact and reduces water movement, hence soil erosion is checked (Fig. c). As water runoff and evaporation are reduced, water penetration is improved. The crop residues and roots build up in the long term, improving soil structure and fertility.



INSTITUTIONAL ACTIVITIES

Institute Research Council meets in the field

New initiative at DRR…

Field IRC meetings were conducted under the Chairmanship of Project Director, Dr. B. C. Viraktamath for the first time in DRR. Chairman stated that the main purpose of this field IRC was to improve the field culture and also to see how the experiments are being conducted, problems being faced by each scientist and to enhance the interaction among scientists in sharing the resources. Chairman and all the scientists visited field experiments laid out under various projects of Plant Pathology and Agronomy sections on 21st October, Hybrid Rice, Plant Breeding, Plant Physiology and Biotechnology on 22nd October, Entomology and Soil Science on 28th October 2009. Plant breeding experiments at DRR farm in ICRISAT campus were visited on 10th November 2009. Mini - Institute Research Council Meeting was organized for newly joined scientists on 23rd December 2009 in which six new project proposals were approved.



Functional genomics of rice – Phase II

Consolidating to move forward…

First meeting of progress and work plan in Phase II of DBT Sponsored Network Project on Functional Genomics of Rice: Identification and Functional Validation of Genes related to yield and biotic stress was held on 2nd December 2009 at DRR. Dr. N.Seetharama, Project Director,

Directorate of Sorghum Research (DSR), DBT nominee with all PIs, CoPIs and project staff participated in the meeting.

Project Monitoring Committee Meeting

Talking stock of…

Fourth Meeting of the Project Monitoring Committee of the DBT funded project on Generation, Characterization, and Use of EMS Induced Mutants of Upland Variety Nagina22 for Functional Genomics of Rice was held on 5th and 6th November 2009 at DRR, Hyderabad. Dr. K.S. Charak, Advisor, DBT, New Delhi and the Project Coordinator Dr. R.P. Sharma, NRCPB, IARI, New Delhi monitored the progress of the project. Six PIs of the network project Dr. T. Mohapatra, NRCPB, New Delhi, Dr. N. Sarla, DRR, Hyderabad, Dr. A.K. Singh, IARI, New Delhi, Dr. M.S. Sheshshayee, UAS, Bangaluru, Dr. S. Robin, TNAU, Coimbatore and Dr. Kuldeep Singh, PAU, Ludhiana presented the progress followed by discussions. The CoPIs, RAs and SRFs also participated.



Workshop on Portal Design features under RKMP Project

Knitting the ideas…

One day workshop on Rice Knowledge Management Portal (RKMP) Design Features was organized on 18th December 2009 at DRR. All COPIs of RKMP project participated in this program. Different design features of the portal were discussed and card sorting exercise was conducted to collect ideas of participants for organizing the information in RKM portal.

Visit to demonstration plot on drip irrigation at Gummadidala village

More crop per drop…

Project Director, Dr. B.C. Viraktamath along with a multidisciplinary team of scientists' *viz.,* Drs S.P. Singh, D. Subrahmanyam, L. V. Subbarao, R. Mahenderkumar, K. Surekha and K. B. Kemparaju visited the field of a progressive and innovative farmer, Mr. V. Rangarao, at Gummadidala village on 7th November 2009, where drip irrigation system is being followed for rice cultivation. Twenty progressive farmers and Dr. V. Ranga Rao, Chief operating officer, Annadata, Eenadu television also accompanied. Rice is being grown successfully using drip irrigation in a red sandy loam (typical Telangana dubba) soil under unpuddled condition by direct seeding of sprouted seed. The field was divided into beds of 125 cm size and a hybrid, US 316 was sown in five rows at 25 cm apart



leaving 35 cm pathway between two beds for the convenience of inter cultivation using bullock drawn cultivator (gorru). On either side of each bed, a lateral with inline drippers having capacity of 2 litres per hour were installed. The crop stand was good and on an average, 25-30 tillers and 20-25 panicles with 200-250 grains/panicle were observed.

Participation in Meetings & Seminars

- Dr. B.C. Viraktamath, Project Director participated in the 54th meeting of the Central Sub committee on Crop Standards and Notification of varieties held at KSSDC, Bangalore on 24th October 2009.
- Dr. B.C. Viraktamath, Project Director attended 82nd Review meeting on RCGM of the DBT, New Delhi on 27th October 2009.
- Dr. L. V. Subba Rao, Principal Scientist attended one day National Workshop on "Revival of Kerala's Traditional Rice Varieties with special reference to Navara and Palakkadan Matta – Agricultural, Industrual and Cultural Aspects", held on 29th October, 2009 at Palakkad, Kerala.
- Dr. B.C. Viraktamath, Project Director attended the Mid-Term Review meeting of DARE/ICAR for the XI Five Year Plan held at CIFRI, Barrackpore, Kolkata on 31st October 2009.
- Dr. B.C. Viraktamath, Project Director and Dr. L.V. Subba Rao, Principal Scientist attended Work Plan meeting for the DBT Project on "National Rice Resource Data Base" under chairmanship of Dr. Akhilesh Tyagi of Delhi University at NBPGR, New Delhi on 2nd November 2009.
- Dr. B.C. Viraktamath, Project Director attended the Germplasm Export Facilitation Committee meeting under chairmanship of Dr. S.K. Sharma, Director, NBPGR at New Delhi on 2nd November 2009.
- Dr. B.C. Viraktamath, Project Director participated in the Regional Launch workshop of NAIP sponsored project on "Rice Knowledge Management Portal" at IARI, New Delhi on 3rd November 2009.
- Dr. G. Katti, Principal Scientist (Entomology) participated in the symposium on "Biosafety and Environmental Impact of Genetically Modified Organisms and Conventional Technologies for Pest Management" held at ICRISAT, Hyderabad during 20th – 21st November 2009.
- Drs. B.C. Viraktamath - Project Director, S.M. Balachandran, Principal Scientist and A.P. Padmakumari, Senior Scientist participated in 7th Pacific rim Conference on the biotechnology of *Bacillus thuringiensis* and its environmental impact, at NASC complex, New Delhi during 25th -28th November, 2009.

- Dr. B.C. Viraktamath, Project Director and Dr. J.S. Prasad, Principal Scientist had a meeting with Prof. M.C. Varshsneya, Vice Chancellor, Anand Agricultural University, Anand & other key officials regarding preliminary arrangements for holding 45th Annual Rice Group Meetings at Anand.
- Dr. B.C. Viraktamath, Project Director and Dr. J.S. Bentur, Principal Scientist & Head, Technical Cell participated in the DBT workshop on "Molecular Marker assisted Breeding for Crop Improvement" at IARI, New Delhi on 14th -16th December, 2009.
- Dr. K.Surekha, Senior Scientist participated and presented a paper entitled "Crop productivity, nutrient balance and soil quality under organic farming in Rice". in the Platinum Jubilee celebrations and 74th Annual convention of Indian Society of Soil science (ISSS) at IARI campus, New Delhi, during 21st -25th December, 2009.

Ph. D award

Ms. Hima Bindu Kudapa was awarded Ph.D in November 2009 by Acharya Nagarjuna University for her work on "Identification, tagging and mapping of rice gall midge resistant genes using micro satellite markers" under the guidance of Dr. J.S.Bentur, Principal Scientist.

Personalia

Appointments/Retirements/Promotions/Transfers

- Mr. Y. Kondala Rao was promoted to T 7-8 w.e.f 3rd February 2005.
- Mr. K. Satya Priya, was promoted as Assistant Administrative Officer on 6th November 2009
- Mr. Thakur Basant Singh, T-4 retired from ICAR service on 30th November 2009.
- Mr. G.V.S. Siva Prasad, T-4 retired from ICAR service on 31st December 2009.



Deputations Abroad

- Dr. B.C. Viraktamath, Project Director, Dr. N. Shobha Rani, Principal Scientist, Dr. N. Sarla, Principal Scientist, Dr. R.M. Sundaram, Senior Scientist participated in the 6th International Rice Genetic Symposium (IRGS) at Manila, Philippines during 16th-19th November 2009.
- Dr. Shaik N. Meera was deputed to IRRI Philippines as a part of NAIP funded RKMP project and CSISA project of IRRI during 18th Nov – 9th Dec 2009.

Distinguished Visitors

- Dr. R.K. Singh, DRR-QRT Chairman visited on 5th October 2009.
- Dr. David Shires, e- learning consultant from IRRI, Philippines visited DRR and interacted with scientists on RKMP project on 13th October 2009.
- Dr. M.P. Pandey, Vice Chancellor, IGAU, Raipur interacted with DRR scientists on 20th October 2009.



- Dr. R.J.Buresh, Senior Scientist, IRRI and Dr. K.Majumdar, Director, International Plant Nutrition Institute (IPNI) delivered talk on Site Specific Nutrient Management (SSNM) on 31st October 2009.
- Ms.Flora de Guzman, IRRI Gene bank, Philippines visited DRR on13th November 2009.
- Dr. G.S. Khush, Ex-IRRI Scientist visited DRR on 14th December, 2009.
- Dr. S.R. Rao, Advisor, DBT, New Delhi visited DRR on 18th December, 2009.
- Scientist probationers attending 87th and 88th Foundation Course on Agricultural Research Service at NAARM, Hyderabad visited DRR on 3rd October and 18th December, 2009.

Tribute to Dr. Norman E. Borlaug

Rice family pays tribute to Nobel laureate and father of green revolution, Dr. Norman E. Borlaug who passed away on September 12, 2009 at the age of 95. He developed high yielding varieties of wheat that helped to prevent hundreds of millions of people from famine and starvation. He would be a source of inspiration for generations to come.

At this juncture, let's recollect his famous quote:
Reach for the stars – Although you will never touch them, you may get a little stardust on you in the process.



GLOBAL RICE NEWS

Entire genetic diversity of rice to be revealed and shared

Calling global rice science community collaboration…

Dr. Robert Zeigler, Director General, International Rice Research Institute (IRRI) envisaged for revealing the genetic diversity of more than 109,000 different types of rice available in International Rice Genebank at IRRI and to make it available for rice breeders worldwide to breed and develop new rice varieties. In this endeavor he invited the global rice science community to sequence the genomes of all different types of rice in the International Rice Genebank - the world's most comprehensive collection of rice genetic diversity including wild rice, rice's ancestors, and traditional, heirloom and modern varieties. He further told that in 2005, the sequencing of the first type of rice was a milestone. However, the genome sequence of one type of rice does not reflect the immense genetic diversity of all types of rice therefore; all rice types need to be sequenced to capture the entire genetic diversity of rice. Dr. Zeigler outlined a plan to achieve the vision that involves empowering national research and breeding programs from major rice-growing countries, and training the next generation of rice scientists. The real power of genome sequencing will be when we identify which genes are responsible for which traits said Dr. Zeigler. To do this we will need to collaborate with our global scientific partners across the public and private sector.

Source: http://beta.irri.org/news/index.php/press-releases/entire-genetic-diversity-of-rice-to-be-revealed-and-shared.html

Forthcoming Events

- Content Development Workshop for RKMP - 5th to 6th February 2010
- Training on Hybrid Rice Production Technology – 18th to 25th February 2010
- 45th Annual Rice Workshop will be held at Anand Agricultural University, Nawagam, Gujarat - 3rd to 6th April 2010

DIRECTOR'S MESSAGE



I wish you all a very happy and prosperous new year 2010.

2009, was the year of several ups and downs. Delayed and erratic rainfall during *Kharif* season resulted in substantial reduction in rice area. Flood too played havoc in some parts of the Country resulting in significant reduction in rice production and productivity. However, timely planting in *Rabi* season show good promise. We have a daunting task of sustaining rice yield in the year ahead. I take this opportunity to welcome the new editorial team of the newsletter and invite more news from AICRIP centres for inclusion in the forthcoming issues.

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