



ICAR-Indian Institute of Rice Research

NEWSLETTER

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RICE IS LIFE

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From Director's Desk....



At the outset, I wish all the rice fraternity a very happy and prosperous New Year-2016. It gives me immense pleasure to bring out the first issue of quarterly Newsletter of IIRR for this year. This quarter is a period of intense activity for IIRR scientists on account of data compilation, analysis and report writing for the Annual Rice Group Meeting of AICRIP to be held from 2 to 5 April, 2016 at Raipur. I convey my sincere thanks to our co-operators for successful conduct of AICRIP trials.

At Institute level we are constantly reorienting our research priorities tailored to meet the needs of the farmers. In this direction we undertook an extensive mass farmer contact programme-*Rythu Sadbhavana Yatra* in the state of Andhra Pradesh in which scientists from all the ICAR institutes based at Hyderabad toured 200 villages covering all the 13 districts of the state within a span of three days. The teams met various stake holders of agriculture to identify the researchable issues, disseminate latest technologies and instil confidence among the farming community. Increased emphasis is given to address the issues in sustainable management of soil fertility, water, pests and diseases under changing and aberrant climatic conditions.

Under the CRP on Biofortification, comprising seven crops across 35 centres for improvement of seven traits associated with biofortification, significant leads have been obtained with respect to screening of genotypes, nutritional profiling of the promising genotypes. DRR Dhan 45 (IET 23832), the first high zinc rice variety developed at IIRR is one of three biofortified rice varieties notified at national level during this period which will help to ensure nutritional

security in the country. A training programme on 'Modern Integrated Crop Breeding Tools' was conducted. National Rice Group Meeting for Hill Rice was held at the ICAR Research Complex North Eastern Hill Region (ICAR-RC NEH), Umiam, Shillong. IIRR team participated in ICAR-Inter Zonal Final Sports Meet held at Jodhpur and our participants Dr. K. Surekha and Dr. G. Padmavathi won the Gold in Womens' Doubles and Dr. K. Surekha won Silver in Singles table tennis events. I take this opportunity to congratulate the winners.

I am happy to inform that Dr. Trilochan Mohapatra, an eminent biotechnologist of the country has taken over as the Director General of ICAR and the Secretary, DARE. IIRR family wish him all the success in his new endeavour. DG, ICAR along with Shri. Chhabilendra Roul, IAS, Secretary, ICAR and Dr. J. S. Sandhu, DDG (CS) visited the Institute on 26 March, 2016 and addressed the staff members.

Kharif-2015 rice production was 90.61 million tonnes from 36.84 million hectares, 0.27 per cent less as compared to the previous year. Rice domestic and export prices are expected to be north bound due to the shortfall in production. The cumulative rainfall during the 2015 monsoon season has been deficient by 15 per cent. Current *Rabi* season is also besieged by unseasonal rains leading to crop damage across the country. According to the NCAER (National Council of Applied and Economic Research) 2016 *Rabi* report, the rice production is expected to be lower due to poor monsoon rains and lower water levels in reservoirs.

I hope that the contents of the newsletter would be informative and useful to the readers. I thank all the contributors and editorial team for bringing out of the issue in time.


(V. Ravindra Babu)

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AICRIP Centre Profiles

Rice & Wheat Research Centre, Malan, Himachal Pradesh



Rice & Wheat Research Centre, Malan (RWRC) is located on 32°1' N latitude and 76 ° 20' E longitude, 5 Km from the famous Chamunda temple overlooking majestic Dhauladhar range of North Western Himalayas 950m above the mean sea level.

Centre History

The centre for research on rice was initially started in 1936 at Saloh in Kangra District to address the problems of hill rice cultivation. In 1938, it was shifted to Nagrota Bagwan and named as Rice Breeding Sub Station. Subsequently, it was transferred to Punjab Agricultural University, Ludhiana in 1962 and to Himachal Pradesh University, Shimla in July 1970. In 1970-71, ICAR research project on rice was started at Palampur. The station was inherited by CSKHPKV, Palampur in 1978. The rice research has been reorganized at Rice Research Station, Malan since 1980 and All India Coordinated Rice Improvement Project of ICAR was transferred from Palampur to Malan in 1985. All India Coordinated Improvement Project on Wheat and Barley was also shifted to Malan in 2002 from main campus and the station was renamed as Rice & Wheat Research Centre, Malan.

Mandate

- To develop high yielding, early maturing and blast resistant varieties of rice for irrigated and rainfed ecosystems of the State.
- To develop climate resilient varieties of rice and wheat in the event of terminal abnormal drought, heat stress and excessive precipitation.
- To develop integrated nutrient and pest management practices for rice and rice based cropping systems.
- To develop improved agronomic practices for rice and wheat cultivation in different zones.
- To identify genetic stocks having proven sources of resistance to major diseases, insect pests and desirable quality components of rice and wheat.

- To develop suitable management strategies for important diseases of rice and wheat.

Infrastructure

Centre is spread over an area of 6.5 ha in three blocks. The office-cum-laboratory building and farm stores are located in the main block. Centre has well equipped laboratories with facilities for rice grain quality, soil & plant analysis and crop protection research. The source of irrigation is through gravity channel (*Kuhl*) originating near Chamunda. Recently, the centre has created good irrigation facilities.

Scientific staff

1. Dr. (Mrs.) Daisy Basandrai, Principal Scientist (Plant Breeding)
2. Dr. D. P. Pandey, Principal Scientist (Plant Breeding)
3. Dr. D. R. Thakur, Principal Scientist (Agronomy)
4. Dr. Ajai Srivastava, Principal Scientist (Entomology)
5. Dr. Sachin Upmanyu, Assistant Scientist (Plant Pathology)

Significant Achievements

- Over the last 35 years, the centre has released 23 rice varieties (Table 1) for different agro-ecological zones of the state and developed agro-techniques for management and protection of rice crop for obtaining high and stable yields.
- As a result of adoption of new varieties and agro-techniques developed at the centre by the farmers the average rice yield of the state increased from 1056 kg ha⁻¹ in 1971 i.e. the beginning of AICRIP in Himachal Pradesh to 1760 kg/ha in 2014.
- It was observed that *xa5*, *xa8*, *xa13* & *Xa 21* genes showed resistance to BLB races in the mid-hills of the State. Resistant sources of blast were identified (Table 2).
- Resistant sources for rice stem borer, hispa, leaf folder and gundhi bug were identified (Table 3).
- Developed appropriate Integrated Disease and Pest Management (IDPM) and Integrated Nutrient Management (INM) technologies for rice based cropping systems.



Table 1: Rice varieties developed from Malan centre during 1970-2014

Name	Year	Adaptability	Maturity (Days)	Yield (t/ha)
T 23	1971	Irrigated (< 1000m)	140-145	2.5-3.0
IR 579	1975	Irrigated (< 1000m)	140-145	4.0-4.5
Himdhan	1978	Irrigated (mid-hills)	130-135	3.5-4.0
Himalaya 1	1982	Irrigated (mid-hill)	115-120	4.0-4.5
Himalaya 2	1982	Irrigated (mid-hills)	120-125	3.5-4.0
Himalaya 741	1986	Irrigated & rainfed (mid-hills)	115-125	3.8-4.2
Himalaya 799	1992	Irrigated (mid-hills)	120-125	3.7-4.0
Naggar Dhan	1992	Irrigated (> 1400m)	135-140	3.5-4.0
RP 732	1992	Irrigated (Low hills)	130-135	5.0-5.5
Himalaya 2216	1994	Irrigated (mid-hills)	125-130	3.8-4.2
RP 2421	1994	Irrigated (mid-hills)	120-125	3.7-4.0
Kasturi	1994	Irrigated (<1000m)	135-140	3.0-3.5
VL Dhan 221	1994	Rainfed upland	100-105	2.5-3.0
Palam Dhan 957	2000	Irrigated (mid-hills)	125-130	4.0-4.2
Hassan Serai	2000	Irrigated (1000-1300m)	120-125	2.8-3.2
Sukara Dhan 1	2004	Rainfed (mid-hills)	115-120	2.8-3.2
HPR 2143	2005	Irrigated (mid-hills)	125-130	3.5-4.0
HPR 1068	2005	Irrigated (mid-hills)	120-125	3.8-4.5
Bhrigu Dhan	2005	Irrigated (>1200m)	150-155	3.3-4-4
Varun Dhan	2007	Irrigated (>1200 m)	140-145	2.5-3.6
Palam Basmati 1	2013	Irrigated (mid-hills)	120-125	4.0-4.5
Palam Lal Dhan 1	2013	Irrigated (mid-hills)	130-135	4.0-4.5
Sukaradhan 1	2014	Rainfed (mid-hills)	115-120	2.8-3.5

**Field plot showing severe neck blast incidence****Uniform blast screening nursery**

Table 2: Leaf blast and neck blast resistant sources

Disease	Resistant sources
Leaf blast	HPR 1155, HPR 2001, HPR 2036, HPR 2083, HPR 2086, HPR 2129, HPR 2172, HPR 2186, HPR 2315, HPR 2317, HPR 2322, HPR 2352, HPR 2501, RP 2421
Neck blast	HPR 2125, HPR 2130, HPR 2143, HPR 2167, HPR 2355, HPR 2363
Leaf & neck blast	HPR 2072, HPR 2167, HPR 2174, HPR 2309, HPR 2322, HPR 2329, HPR 2504

Table 3: Resistant sources for different insect pests

Insect pest	Resistant sources
Stem borer	HPU 824, HPU 838, HPU 862, Himalaya 2216, RP 2421
Rice hispa	HPR 932, HPR 1198, HPR 2025, HPR 2031, HPR 2033
Leaf folder	HPR 2001, HPR 2002, HPR 2031, HPR 2032, HPR 2033, HPR 2086
Gundhi bug	HPR 2054

Chhohartu-Red Rice Variety of Himachal Pradesh

Rice is an important crop in Himachal Pradesh, and the region is home for traditional varieties that are being cultivated even today. One of the many treasures of Himachal Pradesh is its 'red rice' varieties. Red rices are cultivated in certain high altitude niche areas of the state. Sukara, Jhinjan and Karad (Chamba), Jatoo and Matali (Kullu) and Desi Dhan, Kalizhini (red) and Begmi (Kangra) are some of the red rices growing parts of the state. Chhohartu is a red rice variety of japonica type. Malan centre has played a proactive role in registration of the red rice variety, Chhohartu under the Protection of Plant Variety and Farmers' Rights Act (2001). Mr. Thakur Nehar Singh, representative of the farming community growing Chhohartu rice variety in Rohru Sub Tehsil in Shimla District received the registration certificate from Hon'ble State Minister of Agriculture and Food Processing Industries, Government of India at New Delhi on 22 May, 2012. Chhohartu is the first farmers' variety of any crop from Himachal Pradesh to get this national recognition. The farming community inherited this variety from their ancestors and have been cultivating and maintaining it from times immemorial. It is grown in an area of more than 500 hectares in Chhohara and Ransar Valleys of Rohru subdivision on either side of Pabbar river at an altitudes between 1500 to >2000 m above mean sea level.



PPV&FRA award for CHHOHARTU farmer

Table 4: Awards and Distinctions.

Dr Ajai Sri vastava & Dr P K Sharma	Best AICRP Scientist (Entomology) in 2009-10 awarded by DRR, Hyderabad.
Dr Sachin Upmanyu	Best AICRIP Center Award – Plant Pathology in 2015 awarded by IIRR, Hyderabad.
Dr R P Kaushik	Doyen of Rice Research Golden Jubilee Award (Life time achievement award) in 2015 awarded by IIRR Hyderabad.



Farmers First - Rythu Sadbhavana Yatra in Andhra Pradesh

In view of precarious agricultural situation prevailing in the state of Andhra Pradesh, *Rythu Sadbhavana Yatra* was conducted from 27 to 30 January, 2016 in all the thirteen districts of the state under the flagship programme of the ICAR, 'Farmers First'. Major objectives of the programme were to instill confidence among the farmers, to suggest mitigation measures for drought stress and related problems, and to get first hand information on the agrarian scenario of the state through direct contact with the farmers. This was in continuation of the Rythu Sadbhavana Yatra carried out during 2015 in the drought hit state of Telangana.

The teams comprised of multidisciplinary scientists from Hyderabad based ICAR institutes namely; IIRR, IIMR, IIOR, PDP, CRIDA, ATARI, and NBPGR. Scientists from ANGRAU, KVKs, ICRISAT and officials from state line departments also were part of the teams. The yatra was flagged off by the Director, IIRR. More than 200 villages were covered across the thirteen districts of the state. The teams met various stakeholders of agriculture; farmers, agri-entrepreneurs, local leaders and officials of the line departments. Exhaustive information was collected using questionnaires on all aspects of agriculture and socio-economic conditions of the farmers. There were visits to schools and colleges also, to create awareness on the importance of agriculture in the Indian economy and to motivate youth to take up agriculture as a profession with renewed interest backed by latest science and technology.

The visit provided information on the emergent issues in agriculture in the state. The interaction with farmers was highly useful in identifying the felt needs of the farmers on the basis of which research priorities could be reoriented. During the visits, the teams also created awareness on ICM, IPM and INM practices among the farmers. Technical guidance was provided on various aspects of horticulture, veterinary, poultry, fishery, agroforestry, and nutrition and health management. Scientists emphasised the role of farm diversification, adoption of science and technology and value addition in making agriculture profitable and sustainable. The yatra received full support from the Agricultural Department and ANGRAU. Farmers were progressive and receptive to new technologies and interested in the developmental programmes under the state departments and

central schemes. Print and electronic media covered the programme widely in their regional editions. The following is the summary of key issues identified during the *yatra*.

Institutional Issues

- Majority of the farmers expressed high cost of cultivation as a major concern, and MSP of paddy to be increased to Rs. 2000 per quintal.
- Timely disbursement of crop loans, subsidies and payment for sale of produce is critical to prevent farmers approaching private money lenders.
- Supply of quality seeds, fertilizers and pesticides in time is to be ensured. Farmers' cooperative societies can play a key role for which unity among the farmers and government support is essential.
- Farmer based crop insurance policy was one of the important demands of the farmers.
- There is an urgent need for development of quality storage facilities and modern marketing mechanism to prevent the involvement of middle men and distress sales.





- The farmers also expressed need for development of agro-based industries for value addition and post harvest technology to improve farm incomes.
- Employment opportunities created by the mechanization of agriculture such as custom hiring centres for farm machinery, workshops for repairing of farm machinery, rice mills, biofertilizer and biopesticide manufacturing units, etc. are to be tapped. Rural youth need to be trained to impart knowledge and skill to utilize these opportunities.

Researchable Issues:

- Development of cost effective farm implements tailored to meet the needs of small and marginal farmers is the need of the hour to address the twin problem of scarcity and cost of labour.
- In view of increasing aberrant, dry and hot weather conditions focus is to be on delivering technologies for efficient water harvesting, water conservation, water use efficiency and productivity enhancement involving engineering, agronomy, plant physiology and genetics. Promotion of SRI, MSRI, direct seeding with drum seeder and aerobic rice cultivation are some of the technologies in this direction.
- Replacement for variety Swarna particularly in Godavari districts with a short duration, lodging and shattering resistant, MS variety to escape from cyclonic rains during the month of November.
- Integrated management of stem borer and plant hoppers in rice, yellow mosaic virus disease in pulses, sucking pests in cotton, leaf curl in chillies, blast and BLB in rice, with emphasis on varieties resistant/tolerant to multiple insect pests and diseases.
- Reclamation of saline and alkaline soils, popularization of green manuring, balanced use fertilizers and N & P use efficient genotypes are critical in improving the yields.
- Development and popularization of agro-techniques for organic farming specifically in tribal areas of Srikakulam, Vizianagaram, Vishakapatnam, and East Godavari districts.

Rice News

- Expected decline in rice production during 2015-16 USDA forecasts a 2 per cent decline in global rice production during 2015-2016 due to reduced acreage and low average rainfall in major rice growing areas from 480.7 tonnes milled rice to 471.09 tonnes (Rice outlook report).
- Oil for Basmati exchange deals with GCC countries India is in bilateral talks with Gulf Cooperation Council (GCC) countries, to ensure its energy security and also to increase exports especially Basmati Rice and wheat under a scheme in which they can exchange crude oil for food. Under the programme, the government is contemplating to increase export of Basmati Rice and wheat to GCC countries. (Business standard <http://wap.business-standard.com>)
- Scientist found giant reed uses photosynthesis common to soybean, rice and peanuts Prof. Stephen P. Long of the University of Illinois Urbana-Champaign, found that a deep rooting plant *Arundo donax*, a giant reed can grow up to 6 m in height annually. The plant uses C3 photosynthesis pathway that is more common to crop plants such as rice but it is highly productive as it can produce 60 tonnes of dry matter per hectare. This is equivalent to the productivity of C4 grass *Miscanthus x giganteus*. (Crop biotech update)
- Mutated Garlic Gene Expressed in Rice Confers Resistance to Sheath Blight Rice sheath blight caused by *Rhizoctonia solani* is one of the most devastating diseases of rice and is associated with significant reduction in rice productivity. A mutant variant of mannose binding *Allium sativum* leaf agglutinin (mASAL) was previously reported to exhibit strong antifungal activity against *R. solani*. A team of scientists from Bose Institute, India, led by Prithwi Ghosh, evaluated the mASAL gene for in planta antifungal activity in rice plants. mASAL was expressed in an elite indica rice cv. IR64 through *Agrobacterium* mediated transformation. Molecular analysis of transgenic plants confirmed the presence and stable integration of mASAL gene. Analysis of various tissue sections of plants indicated the expression of mASAL. In planta bioassay of transgenic lines against *R. solani* exhibited an average of 55% reduction in sheath blight percentage disease index (PDI). (Crop biotech update)
- GE Rice High in Iron and Zinc Developed A group of scientists from Philippines, Colombia, Indonesia, USA, Australia, and Japan has successfully developed rice with increased levels of iron (Fe) and zinc (Zn) through biofortification. The study found that the genetically engineered rice has significantly increased levels of Fe (up to 15 micrograms) and Zn (up to 45.7 micrograms) per gram of polished rice that human cells can potentially absorb. The scientists used genes—nicotianamine synthase from rice and ferritin from soybean. They introduced the genes to the rice variety IR64, and bred these into other popular indica varieties. (Crop biotech update)

Research Highlights

Water scarcity: Driving force for root studies in rice

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Roots are the most critical organ responsible for overall growth and vigour of plants as they are involved in water and nutrient uptake, anchorage, support and storage. The root system architecture, generally considered as the hidden half aptly influences the yield of the crop. In view of changing climate, rainfall aberrations and water scarcity, enhancing yield is increasingly challenging, particularly in an important crop like rice which is widely cultivated in different eco-systems and largely consumed. Of late, a shift has been observed in rice cultivation from flooded rice to aerobic or dry direct seeded rice or alternate wetting and drying. In all these systems of cultivations, root system may play larger role in seedling vigor and establishment. Hence, there is a need to understand and explore the genetic variation in root traits specifically the root system architecture. In direction, a panel of 22 rice lines including popular varieties, EMS mutant lines of Samba Mahsuri and segregants of mapping population developed for adaptation to aerobic system of cultivation were characterized for useful root traits in polythene bags maintained in polyhouse conditions in three replications. Aerobic conditions were maintained

and need based irrigation was provided without any stress or standing water. Observations for root length, weight, volume and relative water content, number of roots at panicle initiation stage were recorded. Significant variability was observed for all the traits. Among the tested entries, the maximum root and shoot length was observed in KK-3 (37.5 cm, 87.2 cm), a segregant derived from BPT5204 X Azucena and TI-5 (32.5 cm, 87.4 cm), a Samba Mahsuri mutant. Comparatively thicker root system was observed in TI-5 mutant line (Figure 1). The maximum root biomass was recorded in KK-4 (30 g), a segregant derived from BPT5204 X Azucena and TI-5 (30g). The deep and robust root system is desirable for water and nutrients uptake where as branched and thicker root system with high root to shoot ratio can enhance tolerance to water stress condition. These lines are in re-evaluation and lines which are consistent in their phenotypic performance will be screened using linked markers, gene specific and allele specific markers for reported genes. This initiative is anticipated to facilitate root breeding especially for water limiting conditions adapted to local rice growing regions.

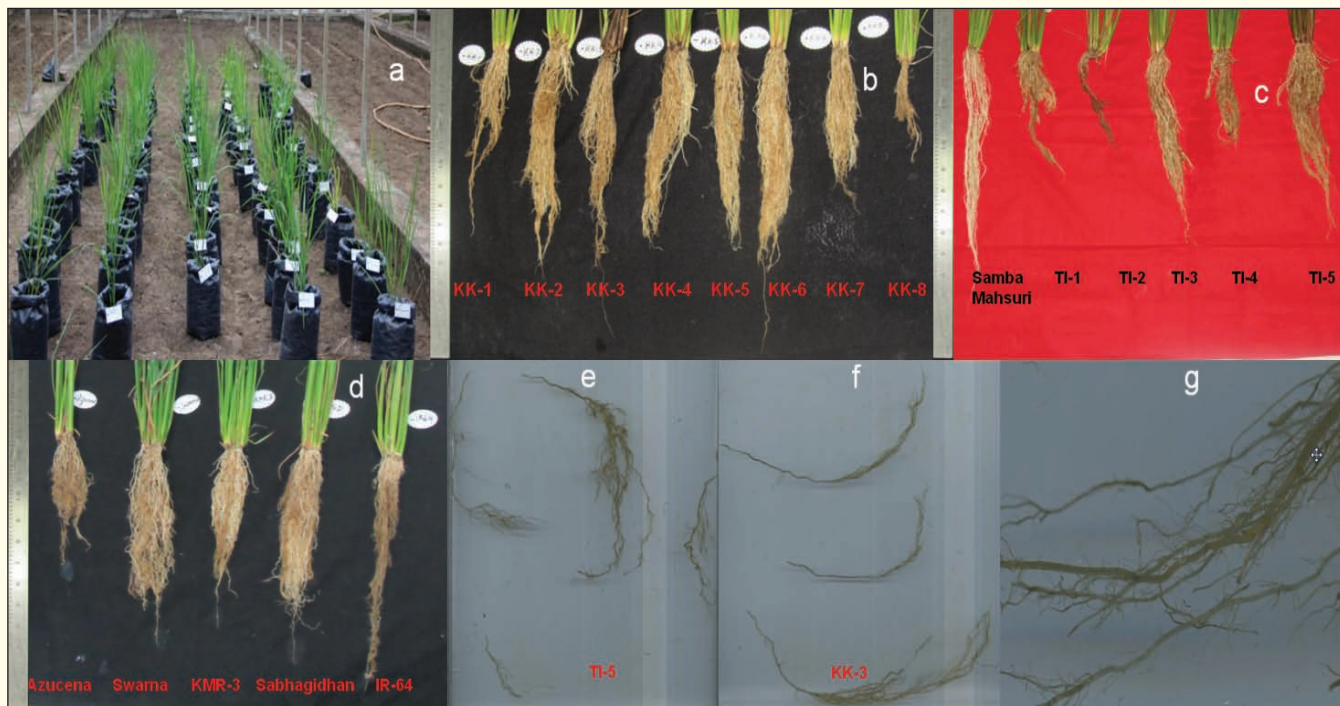


Fig. 1 Rice genotypes/lines grown in polythene bags under aerobic condition (a); Root systems of segregants of mapping population (b) EMS mutants of Samba Mahsuri (c) and popular varieties (d); Representative scanned root images of KK-3 (e); TI-5 (f) enlarged root area showing fine roots of TI-5 (g)

Developing chromosome segment substitution lines of elite rice varieties with introgressions from wild rice

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Chromosome Segment Substitution Lines (CSSLs) are genetic stocks representing the complete genome of a distant genotype in the background of a cultivar as overlapping segments; which are useful tools for precise mapping of quantitative trait loci (QTLs) and the evaluation of gene action in inter-specific crosses. CSSL libraries are being developed in ICAR-National Professor Project at Indian Institute of Rice Research, Hyderabad using *O. rufipogon* and *O. nivara* as donors and seven popular Indian rice varieties as recipients. Seven popular genotypes (Swarna, MTU1010, Dhanarasi, Rasi, Krishnahamsa, Vandana and Varadhan) and 3 accessions of wild rice (*O. rufipogon* CR100267, *O. nivara* CR100008 and CR100097) with high photosynthetic rates were selected for development of CSSLs (Fig. 1).



Fig. 1 Donor parents used in breeding programme



Fig. 2 F₁s generated for CSSL development

Twenty one crosses (F₁s) were made using wild genotypes as male parent (Fig. 2). The F₁s of seven crosses were backcrossed to corresponding recurrent parent to produce BC₁F₁ population. Two selected crosses viz., Swarna x *O. rufipogon* CR 100267 and MTU1010 x *O. rufipogon* CR 100267 were advanced to BC₃F₁ generation for CSSL development by marker assisted backcross breeding approach. Parents were genotyped along with other accessions and diversity analysis and population structure helped grouping them into different sub populations (Fig. 3).

A set of 400 core set SSRs distributed throughout rice genome were used to identify polymorphic markers for genotyping back cross generations. Genotyping data of BC lines using polymorphic markers was used to identify wild introgression with CSSL Finder software. The selected lines will be further back crossed upto BC₄ generation and then selfed to obtain interspecific CSSLs. It is hoped that the development and availability of a genomic resource such as CSSLs will spawn a lot of projects in NARS of basic and applied value. Studies on CSSLs will help in accelerating identification of genes and QTLs for important traits and transfer of useful traits in popular varieties and hybrids so that farmer's income, food security and resilience will improve in a sustainable manner.



Fig. 3 Dendrogram based on genotypic data for 253 alleles at 77 SSR loci in 23 rice genotypes

Energy dynamics of herbicidal weed control in aerobic rice

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In the present scenario of increasing water scarcity, aerobic rice is one of the contingent production systems. Weeds are the number one biological constraints in aerobic rice cultivation causing grain yield losses up to 50-91 per cent. Relatively few insights exist in crop-weed dynamics. Furthermore, limited information is available on the weed management

practices and weed-crop dynamics, which influence grain yield, energy use pattern in aerobic rice cultivation. With this background a study was taken up to develop suitable weed management practice by reducing weed biomass for increasing energy efficiency and grain yield. The experiment was conducted in Randomized Block Design with three replications

and with different weed management practices (Pendimethalin fb Bispyribacsodium, Pendimethalin fb 2,4-D Na-salt, Pendimethalin fb Ethoxysulfuron, Pendimethalin fb Chorimuron + Metsulfuronmethyl, Butachlor fb Bispyribac sodium, Butachlor fb 2,4-D-Na salt, Butachlor fb Ethoxysulfuron, Butachlor fb Chorimuron + Metsulfuronmethyl, Mechanical weeding at 20 & 45 DAS, need based hand weeding and unweeded control. The experimental field was naturally infested with weeds namely, *Echinochloa colona*, *Cyperus difformis*, *Cyperus iria*, *Eclipta alba*, *Ammania baccifera*, *Paspalum* spp. For conversion of inventory into energy, as is suggested by Nassiri and Singh (2009) was taken into consideration.

The grassy weeds dominated the weed flora followed by broad leaf weeds (BLW). Most of the herbicides used in the study controlled BLW and grassy weeds to a large extent. Sedge population was low in the treatment of Butachlor + 2,4-D Na salt application. Mechanical weeding recorded significantly higher BLW population. The need based hand weeding recorded lowest weed biomass. Among the herbicides, Pendimethalin fb Bispyribacsodium or Chorimuron+Metsulfuron-

methyl and Butachlor fb Bispyribacsodium recorded significantly low weed biomass, low weed index, high weed control efficiency and high grain yield indicating the comparable effectiveness. The energy input was lowest in unweeded check followed by mechanical weeding treatment. Chemical weed control consumed less energy than manual weeding. Similar results were reported by Billore *et al.* (1992). The energy output and energy ratio were highest in need based hand weeding, followed by Pendimethalin fb Bispyribacsodium treatment. The specific energy was higher with need based hand weeding and Pendimethalin fb Bispyribacsodium, Pendimethalin fb 2,4-D Na salt.

Sequential herbicide application of Pendimethalin @ 1 kg a.i./ha or Butachlor @ 1.5 kg a.i./ha 3-4 DAS); fb Bispyribacsodium @35 g at 2-4 leaf stage of mixed weed flora or Chlorimuron+Metsulfuronmethyl @40 g a.i./ha at 25-30 DAS (for annual sedges and BLW) helps in realizing higher grain yields, higher energy output and energy ratio, that were comparable to or closer to need based hand weeding.

Table 1. Weed -Yield and energy parameters in aerobic rice

Treatment	Grain Yield (t/ha)	Panicle/m ² (No.)	Panicle Weight (g)	Weed dry weight (g/m ²)	Weed control efficiency	Weed index	Energy input (MJ/ha)	Energy output (MJ/ha)	Energy ratio	Specific energy (MJ/Kg)
Pendimethalin (30EC)@1.00 kg a.i./ha(3-4 DAS) + Bispyribacsodium (10%SC)@35 g.a.i./ha (15-20 DAS)	3.88	265	2.19	29.73	72.80	3.72	20714.4	57036	2.75	5.34
Pendimethalin (30EC)@1.00 kg a.i./ha(3-4DAS) +2,4 D,Na salt (80WP) @0.06 kg.a.i./ha (20-25 DAS)	3.51	244	2.20	37.89	65.33	12.90	20786.1	51597	2.48	5.92
Pendimethalin (30EC) @ 1.00 kg a.i./ha (3-4 DAS) + Ethoxysulfuron (15WSG) @ 15 g.a.i./ha (25-30 DAS)	3.41	256	2.24	38.50	64.78	15.38	20845.6	50127	2.40	6.11
Pendimethalin (30EC) @ 1.00 kg a.i./ha (3-4 DAS) + (Chorimuron + Metsulfuronmethyl) 20WP @ 40 g.a.i./ha (25-30 DAS)	3.38	240	2.17	32.86	69.94	16.13	20647.36	49686	2.41	6.11
Butachlor (50EC)@1.5 kg/a.i./ha (3-4DAS) + Bispyribacsodium (10%SC)@35 g.a.i./ha (15-20DAS)	3.76	266	2.14	32.19	70.55	6.70	20714.4	55270	2.67	5.51
Butachlor (50EC)@1.5 kg/a.i./ha (3-4DAS) + 2,4-D,Na salt (80WP) @ 0.06 kg.a.i./ha (20-25 DAS)	3.35	240	2.19	47.93	56.15	16.87	20786.1	49245	2.37	6.20
Pretilachlor (30EC) @ 1.00 kg a.i./ha (3-4 DAS) + Ethoxysulfuron (15WSG) @ 15 g.a.i./ha (25-30 DAS)	3.33	247	2.14	48.21	55.89	17.37	20845.6	48951	2.35	6.26
Pretilachlor (30EC) @ 1.00 kg a.i./ha (3-4 DAS) + (Chorimuron + Metsulfuronmethyl) 20WP @ 40 g.a.i./ha (25-30 DAS)	3.37	237	2.09	37.43	65.75	16.38	20647.36	49539	2.40	6.13
Mechanical weeding/weeders at 20&45 DAS	3.48	259	2.28	27.12	75.19	13.65	19943.78	51156	2.57	5.73
Need based hand weeding (4 at 15 day interval)	4.03	287	2.05	20.53	81.22	0	20866.22	59241	2.84	5.18
Unweeded	1.92	162	1.63	109.3	0	52.36	19770.18	28224	1.43	10.30
C.D. (0.05)	0.28	20	0.51	4.89	NA	NA	NA	NA	NA	NA

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Multi variety green manuring technique improves rice productivity in alkaline soils

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Rice crop is very sensitive to soil salinity particularly at seedling and flowering stages. Amelioration of saline/alkaline soils is necessary for better yields. Organic sources such as green manuring are known to improve the conditions of salt affected soils, promote better crop growth and productivity. The multi-variety green manuring technique, popularly known as Dabholkar Method, was tested to reclaim salinity affected soils in three villages for three consecutive years [2012 (village-Aroor), 2013 (village- Rudraram) and 2014 (village- Singaram)] during *kharif* season under front line demonstrations (FLDs). Ten selected farmers were supplied with multi-variety green manure seeds consisting of 15 types of seeds including cereals, pulses, oil seeds, green manures and spices @ 20 kg/acre and vermicompost as critical inputs along with zinc chelate based on their soil fertility status. The soil analysis indicated different degrees of alkalinity as well as nutrient problems. Rice productivity was estimated at the end of the season and soil properties were analysed after harvest. In all the three villages, grain yield increased with multi-variety green manuring technique (2.81 to 5.10 t/ha) over check plot (2.1 to 4.27 t/ha) depending on the degree of alkalinity (Table 1). The yield advantage from green manuring ranged from 11-43 per cent over check plots. Similarly, soil pH also was found to be

improved. In this method of green manuring, a mixture of plant species with diverse root systems and nutrient requirements are grown and incorporated into the soil and that might have resulted in efficient cycling of soil nutrients leading to overall improvement in soil productivity. The study demonstrated the efficacy of multi-variety green manuring technique in ameliorating the alkaline soils and improving the rice productivity.

Table 1. Rice grain yield (t/ha) in Farmers' fields - (Range of 10 farmers)

Treatments	Grain yield (t/ha)	% increase over check
Aroor – 2012 – Less problematic (pH- 8.2-8.5)		
Without green manure (check)	3.37 - 4.27	
With green manure	4.30 - 5.10	19 - 27
Rudraram – 2013 – Problematic (pH- 8.2-8.9)		
Without green manure (check)	2.25 - 4.01	
With green manure	2.81 - 4.80	18 - 25
Singaram – 2014 – Severe problem (pH-8.8-9.8)		
Without green manure (check)	2.10 - 3.20	
With green manure	3.00 - 3.55	11 - 43



Multi-variety green manuring (Dabholkar method)



Rice crop without green manure (check plot)



Rice crop with green manure

Panicle rice mite – an emerging pest in Chhattisgarh

Dr. Sanjay Sharma

Indhira Gandhi Krishi Vishwavidyalaya, Raipur (CG)

Panicle Rice Mite (*Steneotarsonemus spinki*) was observed to be an emerging problem in this state. High temperatures during the crop season particularly in medium duration varieties might be favouring the mite incidence. The problem of discoloured chaffy grains was observed on a large scale during *Kharif*-2014 season in several rice growing areas in the month of October after rains due to *Hudhud* cyclone. A survey was conducted during October 2015 to investigate into the problem in Abhanpur and Arang blocks of Raipur district, Patan block of Durg district, Takhatpur and Kota blocks in Bilaspur district and Mungeli and Patharea blocks of Mungeli district of the state. Scientists from KVKs at Bhathapara, Rajnandgaon, Dhamtari, Naryanpur, Janjgir-Champa, Balrampur districts were also involved in the survey.



Fig. 1 Presence of chocolate brown patches on leaf sheath

The problem was widespread in almost all parts of Chhattisgarh on several medium duration varieties like MTU-1010, Mahamaya, Durgashwari, Swarna and several hybrids. The intensity of damage may be categorized in to moderate to severe. The presence of chocolate brown patches on leaf sheath (Fig. 1), partially unfilled

and discoloured grains (Fig. 2) are some of the characteristic symptoms of mite attack. Microscopic examination of affected plant parts confirmed the presence of mites. Mite population consisting of different life stages were observed inside the affected leaf sheaths. Panicle mite causes damage to plant by direct feeding on leaf tissues and developing grains at milky stage and indirectly by transmitting fungal pathogens. The mite has been reported to be associated with sheath rot and bacterial panicle blight. The mite can carry sheath rot spores on their body and feeding injuries by the mite facilitate the entry of fungal pathogen in to the rice plant. High temperature and low rainfall were reported to be favourable conditions for the build up of rice panicle mite. Continuous rice cultivation and sharing of farm implements between the fields is also reported to contribute in the spread of the mite. It was also reported on *Oryza latifolia*. The crop losses due to mite damage are reported to be in the range of 5-90 per cent.



Fig. 2 Partially unfilled and discoloured grains

Report of a new parasitoid attacking rice case worm, *Paraponyx stagnalis* (Zeller) from India

Dr. K. Karthikeyan

Regional Agricultural Research Station, Pattambi, Kerala

Rice caseworm, *Paraponyx stagnalis* (Zeller) is a serious pest of paddy that attacks young rice plants. The moths are nocturnal in habit and are attracted to light. They are delicate, white with luscious markings and black specks on wings (Fig. 1). Eggs are usually laid during the night. Larvae are transparent green in colour with light brownish orange head. The damaging stage is the larva which lives in sections of leaves cut from young rice plants and rolled into tubes called cases (Fig. 2). The leaf cases float on water surface carrying the larvae from one plant to another during the day time and at night the larvae climb plants to cut off leaves to make new cases, or feed on severed leaves on the water surface.

Rice plant at seedling and tillering stages are most preferred and do not occur after maximum tillering. The caseworm is widely distributed in rice growing counties of Asia, Australia, America and Africa. The semi-aquatic life and the protection the rice caseworm enjoys during larval stage make them less susceptible either to natural enemies or pesticide application. Litsinger *et al.* (1986) enlisted a limited range of predatory insects for the larvae and adults of *P. stagnalis* in the field. Sinu *et al.* (2007) reported *Litochila* as a pupal parasitoid of rice caseworm and studied its host searching behavior and reported it's ovipositing under the water.

A new species of parasitoid, *Apsilops scotinus* was found parasitizing the larvae of *P. stagnalis* in Pattambi, Kerala, India (Fig. 3) in large numbers. Incidence was observed in the month of August 2014 as larval-pupal parasitoid attacking 4th to 5th instar larvae and adults emerged from the pupal stage of the host. The total parasitization observed due to the parasitoid

was up to 45.7 per cent. *Apsilops* Förster is a small genus of the subfamily Cryptinae with eight known species. The species are known from North America, Europe, and Asia. Available reports indicate that species of this genus parasitize aquatic or semi aquatic moths of the families Crambidae and Noctuidae.



Fig. 1 Adult of caseworm

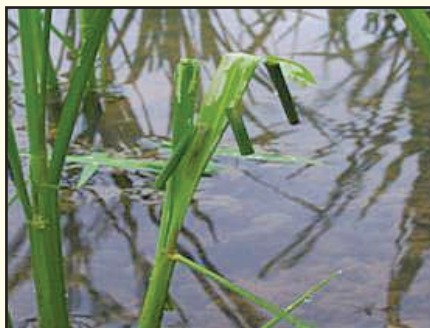


Fig. 2 Larvae of caseworm



Fig. 3 *Apsilops scotinus*

References

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Climate resilient management practices in rice based cropping systems

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The impact of changing climate on agriculture is being increasingly felt. Rise in night temperatures are reported to adversely impact rice productivity (Peng *et al.*, 2004). As Indian agriculture is highly dependent on climatic conditions, the research on the impact of climate change on agriculture in general and rice production in particular is very important. Therefore, development of climate resilient management practices for improving input use efficiency in rice based cropping systems has been attempted under this work.

For this purpose an experiment was initiated during *kharif* 2013 in which different climate resilient management practices were compared with farmers practice. The study clearly indicated that the treatment 'climate resilient management practices' (non-puddled rice + split application of N+ 50% N through biofertilizers+crop residue retention) was superior as compared to the farmers' practice in all the tested cropping systems namely, rice-rice, rice-cowpea and rice-wheat (Fig. 1). Similar observations were made in the *Rabi* season also across the centres except Coimbatore.

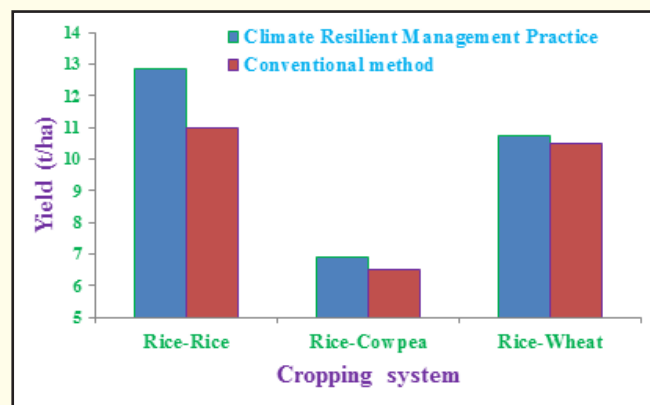


Fig. 1 Climate resilient management practices in rice based cropping systems

References

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New

High Zinc Rice Variety - DRR Dhan 45 (IET 23832)

IET 23832 is a biofortified semi-dwarf, non-lodging, medium duration (125 days), long slender, high yielding (>5 tonnes/ha) variety for irrigated conditions. It is developed through conventional breeding methods using material from Harvest Plus. It is the first high zinc rice variety to be notified at national level with an overall mean zinc content of 22.6ppm (24.0ppm in AP, KA & TN) in polished rice. It has good cooking quality with desirable amylose content (20.7%). Moderately resistant to blast, sheath rot and rice tungro virus. The variety is recommended for the states of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu. The variety is a proof of concept for biofortification and can address the hidden hunger or mineral malnutrition for ensuring nutritional security of the nation.



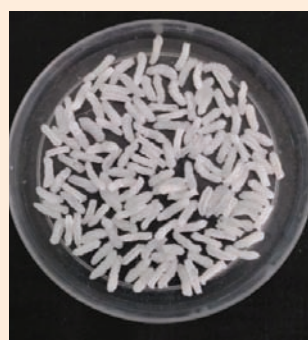
Paddy



Brown Rice



Polished Rice



Cooked Rice

RICE RECIPES

Rainbow Pulao in Microwave

This festive season enjoy the colourful, tasty and easy to make rice dishes!

Ingredients:

2 cups Rice, 2 onions (sliced), 1 tbsp oil, 4 cups water, 1 small beetroot, 1 tbsp tomato puree, 1 carrot, 1/2 tsp red chilli powder, few drops of yellow colour, 1/2 cup spinach paste, 2 tbsp green chilli paste, 1/2 cup boiled peas, salt to taste.

Method:

- Place oil and onions in a covered microwave-safe bowl and microwave for 5 minutes.
- Add rice, water and salt and microwave for 15 minutes.
- Divide the rice into three parts.

First Part:

Grate beetroot and strain for juice. Mix with tomato puree, grated carrot and red chilli powder to get a red paste. Mix the first part of rice in it.

Second Part:

Add a few drops of yellow colour to the second part of rice.

Third Part:

Add spinach paste, green chilli paste and boiled peas to the third part of rice.

Preparation:

In a microwave-safe dish put red rice at the bottom, yellow rice at the middle and green rice at the top. Press lightly and microwave for 4 minutes. Turn the dish upside down in a serving bowl. Garnish with onion, cucumber and tomato rings. Serve hot with yogurt.



Panorama of Institutional Activities

New Year's Day Celebration

IIRR welcomed New Year-2016 in a grand manner. On the New Year's Day evening a staff get-together and a gala cultural event was organized at the institute auditorium. About 450 members from the scientific, technical, administrative and farm staff attended the function along with their family members. Dr. V. Ravindrababu, Director, IIRR greeted the gathering on the occasion of New Year's Day.



Republic Day Celebration

Sixty seventh Republic Day was celebrated at the institute



with full enthusiasm. Dr. V. Ravindra Babu, Director, IIRR hoisted the national flag and highlighted the significance of Republic Day. He also emphasized the responsibility of being a citizen of India. On this occasion sports and cultural competitions were organized and prizes were distributed to the winners.

Women's Day Celebration

ICAR-IIRR celebrated International Women's Day on 8 March, 2016 at the SVS Shastry Auditorium, IIRR. This year's International Women's Day theme was "Planet 50-50 by 2030: Step It Up for Gender Equality". The guest of honour of the function was Dr. KBRIS Visarada, Principal Scientist, ICAR-IIMR and chief guest was Mrs. Meghana Musunri, Founder and Chairperson, Fountainhead Global School, Hyderabad. The guests delivered inspiring lectures on the role and importance of women in the society.



Training Programmes, Workshops and Meetings

Workshop on Relaxation and Meditation Techniques

A three day workshop on "Heartfulness Guided Relaxation Technique for Stress Free Life: Learn to Meditate" was organized for the staff members of IIRR by Sri Ramachandra Mission, Hyderabad during 18-20 January, 2016 at SVS Shastry Auditorium, IIRR. Scientific, technical, administrative and farm staff have actively participated in the programme to learn the relaxation techniques.

ICAR Sponsored Short Course on Modern Integrated Crop Breeding Tools

ICAR sponsored short course on "Modern Integrated Crop Breeding Tools-Breeding Management System" for scientists from ICAR and SAUs was organized during 18-27 January, 2016 in collaboration with Breeding Informatics Unit, ICARISAT, Hyderabad. The Course Directors were Dr. T. Ram and Dr. P. Revathi. A total of twenty four participants took part in this programme.



ICAR-Institute Biosafety Officers Interaction Meeting

ICAR-IIRR organized ICAR Institute Biosafety Officers (IBOs) interaction meeting was held on 17 February, 2016. Dr. Micheal Wach of ILSI, Washington delivered the guest lecture. IBOs of ICAR institutes situated in Hyderabad attended the meeting along with scientific staff.



National Rice Group Meeting for Hill Rice

The 3rd National Rice Group Meeting for Hill Rice was held on 27 February, 2016 at the ICAR Research Complex North Eastern Region (ICAR-RC NEH), Umiam, Shillong. About 30 scientists from ICAR-IIRR, Hyderabad, ICAR-RC NEH, Central Agricultural Universities of Shillong and Manipur, Sher-E-Kashmir University of Agricultural Sciences and Technology, Srinagar, Himachal Pradesh Krishi Vishwa Vidyalaya, Palampur and Vivekanand Parvatiya Krishi Anusandhan Sansthan, Almora participated in the meeting. Dr. S.K. Nachan, Director, RC NEH inaugurated the meeting and Dr. Ravindra Babu, Director, ICAR-IIRR chaired the proceedings. The group meeting reviewed the research work on hill rice cultivation being carried out under the All India Coordinated Rice Improvement Project (AICRIP). The group meeting came out with refinements in technology and identified promising entries for cultivation in hill region.

Interaction Meeting of CBM and IIRR Scientists on Food Security Projects

An interaction meeting of Canadian Baptist Missonaries (CBM) and IIRR scientists was held on 11 March, 2016 at IIRR to discuss the status of projects related to food security in this institute. Dr. Stefan Cherry, Greg Matthews and Dr. Suraj Kumar of CBM and Drs. V. Ravindra Babu, R. M. Kumar, L. V. Subbarao, K. Surekha and B. Nirmala of IIRR participated in the discussion.

Expert Elicitation Workshop on Rice Varietal Adoption

Expert Elicitation Workshop on 'Rice Varietal Adoption in Andhra Pradesh and Telangana states' was organized at ICAR-IIRR on 18 March, 2016. This workshop was organized in collaboration with International Rice Research Institute (IRRI) and Strengthening Impact Assessment of Consultative Group on International Agricultural Research (SIAC) and Michigan State University (MSU). The Expert Elicitation method for rice varietal adoption was validated under the project 'Tracking Improved Varieties in South Asia (TRIVISA)' conducted by IRRI and showed that estimates derived from Expert Elicitation Method were close to estimates derived through traditional household survey method with only a small margin of error. Dr. V. Ravindra Babu, Director, IIRR, in his opening remarks appreciated the efforts of IRRI in conducting the Impact assessment of rice germplasm improvement research.



Dr. Raji Reddy, Director of Research, PJTSAU suggested to identify the tools and methods to regularly monitor the varietal adoption. Experts from both Andhra Pradesh and Telangana states have participated in the workshop and arrived at a consensus on the most popular rice varieties and expressed that these estimates will serve as a feedback for the improvement of rice breeding programme to meet the preferences of the farmers and consumers. The Expert Elicitation Methodology was validated by Ms. Lourdes Velasco, Scientist, Social Sciences Division, IRRI and Dr. Debdutt Behura, Agricultural Economist of OUAT. Dr. B. Nirmala, Scientist (Agricultural Economics), IIRR coordinated the Workshop.

Outreach Programmes

ICAR-IIRR participates in Krishi Unnati Mela - 2016

ICAR-IIRR participated in the 'Krishi Unnati Mela-National Agriculture Fair' organized at ICAR-IARI, Pusa, New Delhi during 19-21 March, 2016. The mega event was organized by the Ministry of Agriculture and Farmers' Welfare, Government of India in which Indian Council of Agricultural Research was a major partner and facilitator. The National Fair was inaugurated by Hon'ble Prime Minister, Shri. Narendra Modi. IIRR technologies, varieties and hybrids along with the best practices were displayed as posters and exhibits. The IIRR stall was visited by the farmers from across the country and familiarized with IIRR activities, latest rice varieties/hybrids and management practices.



Nutrition Information Campaign

ICAR-IIRR organized 'Nutrition Information Campaign' to create awareness on the nutritional deficiencies and importance of bio-fortified rice under 'CRP on Bio-fortification in selected crops for nutritional security' on 6 February, 2016 in the tribal hamlet of *Banne Baoji Tanda* in Deverakonda Mandal, Nalgonda District, Telangana in association with Action for Rural Development Society, Devarakonda. Dr. V. Ravindra Babu, Director, IIRR, Dr. Amtul Waris, Principal Scientist, IIRR, Dr. B. Nirmala, Scientist, IIRR and Dr. T. Supraja, Assistant Professor (Food and Nutrition), PJTSAU, Hyderabad

participated in the campaign. The team explained the importance of bio-fortified rice in overcoming micronutrient deficiencies and simple diagnostic techniques to identify the nutritional deficiency symptoms. The team also explained input saving technologies in rice production for higher productivity and profitability.



Kisan Mela at Maruteru

Dr. V Ravindra Babu, Director, ICAR-IIRR, participated in *Kisan Mela* at APRRI, Maruteru Andhra Pradesh on 24 March 2016. Honourable Agriculture Minister of Andhra Pradesh, Shri P. Pulla Rao was chief guest of the function. Member of Legislative Assembly of local constituency P. Satyanarayana also graced the occasion. Director, ICAR-IIRR was the Guest of Honour of the function. Director of Research, Director of Extension and Registrar of ANGRAU were also participated in the function. Dr. Babu in his address informed the audience about the recently conducted Rythu Sadbhavana Yatra under the leadership of ICAR-IIRR and presented comprehensive report of the yatra to the honourable minister. He also emphasized the collaborative works of AICRIP in Andhra Pradesh and Telangana states. Honourable minister in his address urged the farm scientist to emulate ICAR-IIRR model of farmers mass contact programme. Dr. P. Satyanarayan, Director APRRI, Maruteru elaborated the activities of the institute.



Highlights of the Review Meeting on Basmati Rice Research

A review meeting on Basmati Rice Research was held on 11 January, 2016 at IARI, New Delhi under the Chairmanship of Dr. J. S. Sandhu, Deputy Director General (CS). Twenty one experts from all the Basmati growing states have participated in the meeting. Dr. T. Mohapatra, then Director, IARI in his introductory remarks mentioned that too many varieties of basmati are available which need to be shortlisted for export purpose and also stressed that testing of the Basmati cultures to be done in the GI area only. He also mentioned about the basmati variety Pusa 1509 which is of short duration and requires less number of irrigations. However, due to quality issues Basmati procurement is poor and market price of basmati has fallen drastically. Dr. V. Ravindra Babu, Director, IIRR made presentation on the status of basmati rice research. There was an in-depth discussion on Basmati rice research, quality and trade related issues. As an outcome of the meeting the following suggestions were made.

- Research and variety development of basmati varieties: The entry to be released as Basmati needs to be evaluated in the GI areas only. For non-Basmati areas separate long grain trial in the AICRIP is to be constituted.
- Development of varieties with photosensitivity: All the released Basmati varieties need to be tested for photoperiod sensitivity. The varieties with 135 days duration with flowering coinciding by 15th September with ideal transplanting in the first fortnight of July.
- The cultures nominated in AICRIP Basmati trials need prior testing for quality before entering the National Basmati trial.
- Basmati variety with blast and BLB resistance will only be submitted to the Variety Identification Committee (VIC) for release.
- National science fund project for testing of BLB and Blast to be initiated by IARI as lead centre and IIRR to be included as one of the test centre.
- Industry and trade demands for parboiling of Basmati - Centralized facilities for testing of parboiling rice are to be developed. Rice milling industry to be taken into consideration to determine the conditions of parboiling.
- Aroma quantification (2-AP content) in the AVT 2 entries of Basmati is to be initiated.
- APEDA may be approached for creating state of art quality lab at IIRR, Hyderabad.
- Research programmes on sticky rice to be initiated to meet the export demands of other rice eating countries.
- Sequencing and characterization of basmati varieties and land races is to be taken up.

The meeting was concluded with the remarks by the Dr. J. S. Sandhu, DDG (CS) that all the policy issues related to Basmati rice will be discussed at appropriate forums. The meeting ended with the formal vote of thanks by Dr. Suneetha Kota.

Tribal Sub Plan Program

A meeting was conducted in tribal area of Narayanpet (Rural), Mehboobnagar District, Telangana State on 22 March, 2016. Dr. L. V. Subba Rao, Principal Scientist, ICAR-IIRR along with A. K. Munna, Mandal Extension Officer and Mr. Dasharat, RADP President participated in the meeting. In this meeting, knowledge of modern agriculture technologies was disseminated to farmers. Drum seeders were also distributed to tribal farmers.



Farewell and Felicitation

Dr. A. Padmaraju was felicitated by ICAR-IIRR on 11 February on his superannuation in the capacity of Vice-Chancellor, ANGRAU. Dr. A. Padmaraju had a long association with IIRR in various scientific aspects.



Distinguished visitors

- A delegation of students and the faculty members of Cornell University, USA visited IIRR and interacted with scientist on 4 January, 2016.
- A delegation of students and the faculty members of Wisconsin University, USA visited IIRR and interacted with scientist on 5 January, 2016.
- Dr. N. K. Tyagi, Ex-board member ASRB and former Director CSSRI, Karnal visited the institute on 12 February, 2016 and interacted with scientists.



DG-ICAR Visits IIRR

The Secretary, DARE and Director General, ICAR, Dr. Trilochan Mohapatra along with Shri Chhabilendra Roul, IAS, Additional Secretary DARE and Secretary, ICAR and Dr. J.S. Sandhu, DDG (CS) visited ICAR-IIRR on 26 March 2016. Dr. Mohapatra laid foundation stone for 'Central Soil and Plant Health Laboratory' building in the IIRR campus. He also unveiled a plaque rechristening the IIRR auditorium as 'SVS Shastry Auditorium' in honour of Dr. SVS Shastry, the renowned rice breeder and founder Coordinator, AICRIP. Presence of Dr. Shastry along with his family members made the occasion a memorable one. DG, ICAR addressed the gathering attended by the Directors of IIRR, IIMR, IIOR, DPR, NRC on Meat, NBPGR-Regional Station, IIOPR, CTRI, Vice Chancellors/special officers of Agriculture, Veterinary, and Horticulture Universities of Telangana and Andhra Pradesh states. Shri Roul, Secretary, ICAR stressed the need for impact assessment for the technologies emanated from research. The honourable DG, ICAR emphasised to work at grass root level to support the central sponsored schemes in the field of agriculture for their successful implementation. A brochure, 'In Pursuite of Conservation of Plant Genetic Resources' by NBPGR - Regional Station, Hyderabad and a product 'Instant Mix and Staples of Millets' by IIMR, Hyderabad were released on this occasion by the DG.



- Dr. Jauhar Ali, Senior Scientist, IRRI-GSR Project Leader (Asia) visited the institute on 20 February, 2016 for interaction with GSR team.
- Participants of training programme on “Plant Health Management in Rice” at NIPHM visited ICAR-IIRR on 9 March, 2016. There were 36 participants comprising of Assistant Directors/Deputy Directors from the Department of Agriculture, Government of Tamil Nadu. The participants visited the museum and research fields of IIRR and interacted with the scientists. Lectures on SRI method of rice cultivation by Dr. R. Mahendra Kumar, Biointensive IPM with special emphasis on biological control options in rice by Dr. Chitra Shanker and the Role of extension strategies in dissemination of advanced technologies in rice by Dr. P. Muthuraman, were also delivered.



Staff Activities

Awards & Fellowships

- Dr. Ch. Padmavati, Principal Scientist (Entomology) was awarded as the Fellow of Plant Protection Association of India at the ‘Conference on National Priorities in Plant Health Management’ held during 4-5 February, 2016 at SV Agricultural College, Tirupati (AP). 
- Dr. Brajendra, Senior Scientist (Soil Science) was conferred with ‘Distinguished Scientist Award’ by the Society of Biotechnology SHIATS at the ‘International Conference on Advancing Frontier in Biotechnology for Sustainable Agriculture and Health’ held during 25-26 February, 2016 at Allahabad (UP). 



Deputations

- Dr. Chitra Shanker was deputed to IRRI, Philippines, for the Rice Doctor Development and Translation Workshop conducted by the Rice Knowledge Bank (RKB) and Rice Doctor (RD) team from 10-15 January 2016.
- Drs. Shaik N. Meera, B. Sailaja and S. Arun Kumar were deputed to IRRI, Philippines for achieving the object of

localization of RKMP and exchange of knowledge on new developments from 9-12 February 2016.

- Dr. V. Ravindra Babu, Director, IIRR undergone ‘8th Executive Training Programme on Leadership Development’ organized at NAARM, Hyderabad during 21-25 February, 2016.
- Dr. Shaik N. Meera participated in FAO-RDA plenary meeting and IGAD pre-meeting at Tokyo, Japan during 28 February-3 March, 2016.
- Dr. G. Padmavati attended a workshop on ‘Genome-wide association analysis of MAGIC population’ at IRRI, Philippines during 7-15 March, 2016.
- Dr. Brajendra attended 5th Intergovernmental Technical Panel (ITPS) on Soils from 14-18 March, 2016 at FAO, Rome. He is one of the 27 global soil experts on the prestigious panel.
- Drs. V. Ravindra Babu, R. M. Kumar and Shaik N. Meera Participated in Green Super Rice Phase-III inception meeting at IRRI, Philippines held from 30 March to 1 April, 2016. India is in primary focus for phase-III activities along with Bangladesh and Tanzania.
- Dr. K. B. Kemparaju was deputed to attend a training course on ‘Rice Breeding’ at IRRI, Philippines from 7 March to 6 April, 2016

Promotions

- Mr. S. Vijay Kumar, SSS has been promoted to the post of Technician (Field/Farm) w.e.f. 18 February, 2016. 
- Mr. M. Chandra Kumar, SSS has been promoted to the post of Technician (Field/Farm) w.e.f. 18 February, 2016 

Selections

- Dr. V. P. Bhadana, Senior Scientist, IIRR joined at ICAR-Indian Institute of Agricultural Biotechnology (IIAB), Ranchi as Principal Scientist on direct recruitment. IIRR Staff Recreation Committee, organized a farewell function and felicitated Dr. Bhadana on 20 February, 2016.



IIRR PADDLERS WIN MEDALS AT ICAR-INTER ZONAL FINAL SPORTS MEET

ICAR-Inter Zonal Final Sports Meet held on 8-12 February, 2016 was held at CAZRI, Jodhpur. IIRR Team consisting of Dr. R. Mahender Kumar, Dr. M. N. Arun Kumar, Mr. C. Muralidhar Reddy, Mr. B. Ramesh, Dr. K. Surekha, Dr. G. Padmavathi participated Table Tennis events. Mr. R. Udaya Kumar was the Chief-De-Mission. Dr. K. Surekha and Dr. G. Padmavathi won the Gold in Womens' Doubles and Dr. K. Surekha won Silver in Singles events.



Superannuations

- Mr. M. Chandraiah, SSS superannuated on 30 January, 2016. On this occasion IIRR Staff Recreation Committee organised a farewell function and felicitated him.



Forthcoming Events

- Annual Rice Group Meeting (AGRM) from 2-5 April, 2016 at IGKV, Raipur.
- Institute Research Council Meeting.
- Research Advisory Committee Meeting.
- Institute Management Committee Meeting.

Book Post

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