



ICAR-Indian Institute of Rice Research NEWSLETTER

Volume : 13, Number : 4

RICE IS LIFE

October - December 2015

From Director's Desk....



Wish you all a very happy and prosperous new year

The year 2015 marked the Golden Jubilee celebrations of the All India Coordinated Rice Improvement Project (AICRIP) and the entire year was devoted to organizing events for furthering rice research and outreach activities for the benefit of the rice community.

In the final quarter of the year, IIRR hosted several important events. IIRR scientists participated in Raithu Sadbhavana Yatra in Telangana state to instil confidence among the farmers and to suggest mitigation measures for drought stress and related problems through field visits and interaction with farmers. Farmers' day was organized in the presence of Honourable Minister of State for labour and employment, Sri Bhandaru Dattatreya as Chief Guest where about 600 farmers from Telangana state participated. IIRR was the joint organizer of the "International Rice Symposium" during 18-20, November with the theme 'Rice Science for Global Food and Nutritional Security' where, 500 Indian delegates and 20 foreign delegates participated. Sixty five representatives from private companies and seven ICAR institutes participated in the ICAR (Crop Sciences) - Industry Meet which showcased the ICAR technologies and services to build a robust Public-Private Partnership.

As part of the AICRIP monitoring programme, 10 different teams comprising of Scientists from IIRR and cooperating centres monitored the AICRIP trials, breeder's seed production trials and FLDs across various centres in the country. Field IRC was conducted to review the field trials, and Interim IRC meeting was held for the

newly joined scientists in which eight new project proposals were approved. The XX Institute Management Committee meeting was held to discuss and fine tune the requirements of the institute. Soil Health Cards were distributed to the farmers of Nalgonda district on the occasion of the World Soil Day celebrations at IIRR. Labour saving and cost effective rice production technologies were demonstrated by IIRR scientists to farmers of Rangareddy district as a part of outreach programme. IIRR celebrated its first Foundation Day on 15th December and the occasion also rung down the curtain on the year-long golden jubilee celebrations. IIRR observed vigilance awareness week from 26-31 October and Jai Kisan Jai Vigyan Week was celebrated from 23-29 December.

Sowing of *rabi* rice was affected by precipitation anomalies of the north-east monsoon. The cumulative rainfall in the country during the post monsoon season *i.e.* 1st October to 30th December, 2015 was 23% lower than Long Period Average (LPA). Rainfall (% departure from LPA) in the four broad geographical divisions of the country during the above period was lower by 57% in East & North East India, 26% in North West India and 63% in Central India. However, in South Peninsula, rainfall was higher by 16%. Rabi Rice is reported to be sown in only 14.77 lakh hectares this year, which is 8% less than that of the last year.

I hope that the information in our newsletter will be helpful and stimulating for all those interested in rice research. I sincerely thank the editorial committee Drs. V. Jhansi Lakshmi, P. C. Latha, P. Revathi, S. Arun Kumar, D. Sanjeeva Rao, Mr. U. Chaitanya and Mr. K. Chaitanya for their effort in bringing out all the issues of the newsletter during 2015 and also the contributors for their tremendous support.

Ravindra

(V. Ravindra Babu)

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AICRIP centre Profiles

Rice Research Station, Moncompu Kerala Agricultural University

History: The Rice Research Station, Moncompu is located at Moncompu, Thekkekkara of Champakaulam Panchayat in Kuttanad Taluk of Alappuzha District in Kerala at a distance of 14 km from Alappuzha. It was originally established in 1940 as “Paddy Breeding Station” with a view to breed varieties suitable for Kuttanad, which was later renamed as Rice Research Station, Moncompu. With the establishment of the Kerala Agricultural University, this Station was brought under the control of the University with effect from 1st February, 1972. This was identified as the lead Station for Rice Research under the “National Agricultural Research Project” for the “Special Zone of Problem Areas”. Various research programmes under Kerala Agricultural University, ICAR and AICRIP are being implemented at this Station.

Kuttanad is a unique system where in rice is grown up to 3 m below sea level located in the southern coastal part of the Kerala State and spread across the districts of Alappuzha, Kottayam and Pathanamthitta. Kuttanad agro-ecosystem being low-lying estuarine lands, is subjected to flash floods during the two monsoons and salinity intrusion during post monsoon periods. Soil problems including

acidity, iron toxicity, hydrogen sulphide injury are the other major abiotic stresses limiting rice production in the region.

Mandate: The station aims at evolving suitable high yielding medium and short duration rice varieties resistant to pests and diseases and evolving ecofriendly and low cost production and protection technologies for Kuttanad.

Research achievements

Twenty two rice varieties have been bred by the station, which include varieties resistant/tolerant to brown plant hopper, gall midge, blast and sheath blight. These are Mo1, Mo2, Mo3, Bhadra, Asha, Pavizham, Karthika, Aruna, Makom, Remya, Kanakam and Ranjini, Pavithra, Panchami, Remanika, Uma, Revathy, Karishma and krishnanjana. Dormancy, has been introduced in few varieties. Out of these, Uma (MO.16) has become most popular variety in the region as well as in the State. Currently this variety is occupying more than 80% of the rice area in Kuttanad. The annual economic return to Kuttanad provided by this Station with this variety, at the current level of coverage, productivity and price is about Rs 60-80 crores.

Varieties released by RRS Moncompu

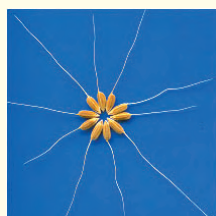
Variety No.	Variety name	Year of release	Pedigree	Important Characteristics
MO.1	Chettivirippu	1945	Pure line selection from Chettivirippu	Resistant to salinity, WBPH
MO.2	Kallada champavu	1945	Pure line selection from Kallada champavu	Res to acidity and salinity
MO.3	Kochathikkira	1968	Pure line selection from Kochathikkira	R to acidity and salinity
MO.4	Bhadra	1978	IR 8/ PTB 20	R to BPH, Susceptible to sh. blight
MO.5	Asha	1981	IR 11-1-66/ Kochuvithu	MR to BPH, sheath blight, sheath rot and bacterial blight
MO.6	Pavizham	1985	IR 8 /Karivennel	MR to BPH, sheath blight, sheath rot and stack burn
MO.7	Karthika	1987	Triveni/IR 1539	MR to BPH, sheath blight, sheath rot and BLB
MO.8	Aruna	1990	Jaya/ PTB 33	MR to BPH, stem borer, Gall midge, sheath blight, BLB and brown spot
MO.9	Makom	1990	ARC 6650/ Jaya	MR to BPH, leaf folder, YSB, gall midge, sheath blight, sheath rot and brown spot
MO.10	Remya	1990	Jaya/ PTB 33	MR to BPH, gall midge, sheath blight, sheath rot
MO.11	Kanakom	1990	IR 1561/PTB 33	HR to BPH, MR to stem borer, gall midge, sheath blight, sheath rot, blast and bacterial leaf blight

MO.12	Renjini	1995	Mo.5/Improved Sona	Res to Blast
MO.13	Pavithra	1998	Surekha/ Mo.5	Res to GM biotype 1 to 5, Tolerant to sheath blight and sheath rot
MO.14	Panchami	1998	Pothana/ Mo.5	Res to GM biotype 1 to 5, Tolerant to sheath blight and sheath rot.
MO.15	Remanika	1998	Mo.6/ Pokkali	MR to major pests and diseases.
MO.16	Uma	1998	Cul.12814/ Mo.6	MR to BPH and GM biotype 5. Possess Dormancy.
MO.17	Revathy	1998	Mutant of Mo. 1	MR to Blast, sheath blight and sheath rot. Resistant to BPH and YSB
MO.18	Karishma	1998	Mo.1/ Mo.6	Res to BPH, MR to GM biotype 5 and tolerant to iron toxicity and sulphide injury
MO.19	Krishnanjana	1998	Mo.1/ Mo.6	-Do-
MO.20	Gouri	2002	Mo.4/ Cul. 25331	Tolerant to Sheath blight.
Mo.21	Prathyasa	2010	IET 4786/MO.8	Semi tall, Short duration. Rich in Iron and Zinc

Speciality rices

The station has undertaken research on collection, purification and genetic improvement of the medicinal rice germplasm of Kerala and has collected around forty accessions of the medicinal rice Njavara. These accessions are maintained in the germplasm and purification of the heterogenous mixture has resulted in the identification of five distinct types of Njavara.

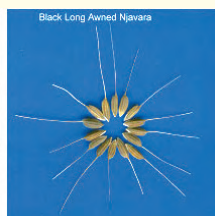
**Long awned
brown Njavara**



**Short Awned
Brown Njavara**



**Long Awned
black Njavara**



**Short Awned Black
Njavara**



**Awnless Yellow
Njavara**



Seed Production: 3000 kg of breeder seed and 10000 kg of foundation seed and truthfully labeled seed is produced.

Fertility mapping of the paddy fields of Kuttanad was

done and Soil Health Card and Nutrient Management Recommendation was generated and distributed to farmers. Effective IPM packages were developed for management of insect pests, diseases and weeds.

A Rice disease calendar was prepared. Forecasting of pest and disease incidence is given based on the meteorological observations taken at the station. The biocontrol agent *Psuedomonas* is being mass multiplied and its talc formulation is being distributed to the farmers. New native isolates of *P. fluorescens* and *Bacillus sp.* for false smut pathogen and egg parasitoid, viz., *Telenomus oryzae* for black bug were identified and *P. fluorescens* is mass multiplied and supplied to farmers. Rat traps, using food baits like raw tapioca or lemon peel etc., have been developed. Weather display units are established at various locations of Kuttanad region to give early forewarning on pests and diseases and changing weather conditions.

An information kiosk presenting the rice knowledge bank was established at RRS Moncompu for the farmers who visit the station.

A Plant Health Clinic is operating in the station.

A farmer participatory technology development project is carried out in the station, aimed at identifying the specific yield constraints and developing technology packages.

Scientific Staff: Dr S. Leena Kumari (Rice Breeder), Dr Reena Mathew (Agronomist), Sri M. Surendran (Pathologist), Dr Shanas. S (Entomologist).

Rice Research Station, Tirur

Tamil Nadu Agricultural University, Coimbatore

History: Rice Research Station, Tirur was established as Paddy experimental station in 1942 and was brought under the control of Tamil Nadu Agricultural University in 1981 and renamed as Rice research station in 1982. The RRS is situated at (12.10' – 13.15' N latitude, 79.15' – 80.20' E longitude and 39.47m above MSL) 1.5 kilometre away from south of Sevvapet road railway station on the Chennai – Arakkonam rail route and 2.5 kilometre away from Aranvoyal bus stop on Poonamallee –Thiruvallur bus route and is 35 kilometre away from the Chennai city. The Research Station has a total area of 15.85 hectares out of which 12 hectares is the cropped area. The Average rainfall is 1152.8 mm, maximum temperature is 33.1°C, minimum temperature is 22.5°C and the soils are sandy clay, non-calcareous light brown, medium fertile soils. The

cropping system in the irrigated area is Rice – Rice - Pulses (green gram), Rice- Rice- Rice, Rice - Groundnut /Sesame, Sugarcane - S.cane (ratoon), Banana - Rice – Banana and in the rainfed area, it is rainfed rice.

Mandate: To develop high yielding and quality rice varieties suited to upland, semidry and irrigated conditions tolerant to saline, alkaline and coastal inland situations, resistant to blast, bacterial leaf streak, rice tungro disease, leaf folder and black bug, to produce nucleus and breeder seed of rice varieties viz., TKM 9, TKM 11 and TKM (R)12, ADT 43, ADT (R)45, to develop INM and IPM practices.

Varieties developed and released: Thirteen rice varieties viz., TKM 1 to Rice TKM 13 were released from RRS, Tirur.

Variety	Year of release	Pedigree/ Parentage	Duration (Days)	Suitable season	Yield (Kg/ha) Irrig/rainfed	Special features
TKM 1	1950	PLS from local variety Pisini	130	Samba	1800 /1800	Coarse grain, white rice, suitable for rainfed
TKM 2	1950	PLS from local variety Sembalai	125	Samba		Medium grain, white rice, suitable for rainfed
TKM 3	1950	PLS from local variety Sornavari	105-110	Sornavari	3000	Coarse grain, white rice
TKM 4	1950	PLS from Yerra sannavadu	115	Samba Navarai	2700	Fine grain, white rice, suitable for rainfed and irrigated conditions
TKM 5	1952	PLS from local Manakkattai	105-115	Navarai ornavari	2700	Coarse grain, white rice, withstands drought
TKM 6	1952	GEB 24/CO 18	115	Navarai, Sornavari	3000	Fine grain, white rice, resistant to stem borer, GLH, BLB and Universal donor for YSB resistance
TKM 7	1973	PLS from local Kullakar	105-110	Samba Navarai	4300/2000	Bold grain, red rice, suitable for rainfed and irrigated conditions, resistant to BPH
TKM 8	1976	TKM 6/ T(N) 1	120-125	Samba	5000	Medium grain, white rice, drought tolerant, resistant to BPH
TKM 9	1978	TKM 7/IR 8	110	All seasons	5500/2500	Coarse grain, red rice, suitable for dry, semi dry and wet conditions. High yielding. Largely grown in Tamil Nadu under rainfed environment
TKM 10	1992	CO 31/ C 22	130-135	Samba	2600	Non-lodging, semi dry, medium slender, resistant to blast and BPH, photosensitive
TKM 11	1998	C 22 / BJ 1	110-120	Samba	3500	Withstands drought, capacity to rejuvenate after rain, high response to low fertilizer application, long slender, tolerant to YSB, leaf folder, GLH, BLB
TKM (R) 12	2002	TKM 9/ TKM 11	115-120	Samba	3043	Withstands drought, capacity to rejuvenate after rain, high response to low fertilizer application, medium slender, tolerant to YSB, leaf folder, GLH, BLB. High protein content (9.9%)
TKM 13	2015	WGL 32100 / Swarna	125-130	Samba	5938	

Pipe line cultures

TM 07278 : WGL 32100 / Swarna), yield 5858 kg/ha, completed 2 years of testing under ART-Rice 4 during 2013-14 and promoted to AVT 2-IME, evaluated in AICRIP during *kharif*, 2015.

TM 07335: Short duration rice culture (ADT 43 / CO (R) 47), yield 6232 kg/ha, 11.1 % over ADT (R) 45, evaluated in ART for two years, moderately resistant to blast, sheath rot, sheath blight, RTD and BPH, promoted and evaluated in AVT 1-E-TP in AICRIP.

TM 09132 : Drought tolerant, short duration culture (IR82590-B-B-14-3), yield 3234 kg / ha, in ART Rice-10 (II year of testing) during 2015- 2016.

PLS: Pure line selection, Samba: (July-Aug), Navarai (Dec-Jan), Sornavari (May-June sowing)

The following entries were nominated to AICRIP in 2015

IVT-E-TP-TM 10085, IVT-E-TP- TM 12375, AVT 2-IME -TM 07278 and AVI 1-E-TP -TM 09086

**TKM 13****Scientific Staff:**

Dr R. Agila		Dr S. Banumathy	
Dr H. Gopal		Dr A. Sheeba	
Dr R. Jegathambal			

Monitoring of AICRIP Trials

IIRR is entrusted with the responsibility of collective planning, implementation and co-ordination and multidisciplinary rice research activities being carried out at more than 100 research centres spread over 27 states and two union territories. Monitoring of All India Coordinated Rice Improvement Programme (AICRIP) trials, breeder seed

production, frontline demonstrations in farmer's fields and the research activities of the centres is very crucial to ensure desired results and proper implementation of the Co-ordinated programme. This year during the reporting period (October - December, 2015), ten multidisciplinary teams from IIRR along with a nodal scientist from the respective regions have completed the monitoring of rice trials as per the details given below.

S.No.	IIRR team and Nodal Scientist	AICRIP Centres monitored	Period of Visit	Remarks
1	P. Senguttuvel, Satendra Kumar Mangruthia, Mangal Deep Tuti, C. Kannan and Vijay Kumar Yadav (Nodal scientist)	Lucknow Kanpur Faizabad Ghagharghat Patna Mithnapur Pusa Varanasi	28.10.2015 to 3.11.2015	Monitored eastern region trials. Overall crop growth was good at all centres. No major incidence of pests and diseases was observed. In Faizabad, the crop performance was poor due to initial drought, even though trials were irrigated later, yield data can't be considered for analysis except in hybrid rice trials. No stress was imposed in deep and semi deep water trials, due to drought during early growth stage at Pusa. Complete flooding was there due to heavy rains during the early period of leaf blast and brown spot screening trials and NIL trials at Varanasi.
2	S.M. Balachandran, Ch. Padmavathi, P Brajendra, Ram Singh and S.L. Krishna Murthy (Nodal Scientists).	New Delhi, Modipuram, Karnal, Kaul, Rauni, Ludhiana, Kapurthala, Chatha.	05-10-2015 to 12-10-2015	Monitored North West Region -1 trials. In general, the crop stand was good at all the centres. At Kaul, at the time of sowing and planting, the centre experienced heavy flooding for nearly a week. At Ludhiana, heavy incidence of false smut was observed.
3	C. Gireesh, Divya Balakrishnan, P. Raghuvver Rao, D. Ladhakshmi and Dr B. D. Waghmode (Nodal scientist)	Goa, Ratnagiri Vadagaon, Karjat, Panvel, Lonavala, Igatpuri.	11.10.2015 to 17.10.2015	Monitored Western region trials. All the trials were conducted well and the crop is at maturity stage. At Ratnagiri, there was severe incidence of Blast, BLB, blue beetle, neck blast in some of the breeding trials. At Lonavala, severe incidence of blast, neck blast, brown spot, sheath blight was observed. At Igatpuri, Nashik, stem borer, blast and BPH incidence were observed.
4	R.M. Sundaram, K. Surekha, A.P. Padmakumari, M.S. Prasad and R. Suresh (Nodal scientist)	Puducherry, Karaikal Aduthurai Maruteru	7-10, October 2015 and 2-3, November 2015	Monitored southern 3 region trials. All the trials were conducted as per lay out. At Maruteru, the trials were in flowering stage and many entries in the trials lodged due to heavy rainfall and stem borer, leaf folder, BLB, brown spot, sheath blight and sheath rot were observed in the trials.
5	Suneetha Kota D. Subramanyam, Gururaj Katti and N.P. Mandal (Nodal Scientist),	Hazaribagh, Ranchi, Hathwara, Faizabad, Varanasi.	26-09-2015 to 1-10-2015	Monitored Upland-2/salinity trials. At most of the locations, the crop growth was severely affected by drought both in the Research stations and Farmers fields except at Varanasi. Low incidence of sheath blight was noticed in the farmer's fields at Varanasi. In general due to drought conditions, low pest pressure was noticed. However, the incidence of leaf folder, YSB, hispa and GLH was found to be more in the late planted crop.
6	Vijay Pal Bhadana, K. B. Kemparaju, D. V. K. Nageswar Rao, P. B. Patel and Vijay A. Patil (Nodal Scientists)	Navsari, Vyara, Danti, Derol, Nawagam, Banswara and Kota	14 to 20 October, 2015	Monitored North west-2 region trials. Overall conduct of the trials was good. There was no major incidence of diseases and insect pests in these centres except sheath mite incidence at Navsari.
7	T. Ram, GS Laha, B Sreedevi, Vidhan Singh and Indrani Dana (Nodal Scientist)	Gangtok, Kalimpong, Pundibari, Chakdah, Chinsurah, Gosaba. Canning, Kolkata	27-10-2015 to 3-11-2015	Monitored North eastern-2 region trials. The crop condition was good and the trials were conducted according to the plan. Moderate to severe incidence of sheath blight, brown spot and false smut at Gosaba; brown spot at Canning, Kolkatta and Pundabari; Moderate to severe leaf folder incidence in all the trials, moderate to high incidence of Sheath blight, low to moderate incidence of brown spot and sheath rot at Chinsura were observed.
8	P. Revathi, N. Somasekhar, Amtul Waris and Manonmani (Nodal Scientist)	Vytilla, Moncompu, Pattambi, Coimbatore, Trichy, Gudalur	12.10.2015 to 18.10.2015	Monitored Southern 1 region trials. All the trials were conducted according to the plan and no major weather abnormalities were observed in these centres. At Moncompu, weedy rice is a problem and black bug and new leaf miner pest are becoming serious problems. Severe blast was incidence was observed in Gudalur.
9	Drs. Jyothi Badri, CN Neeraja, AP Padma Kumari, P. Valarmathi, B Nirmala and Lingaiah (Nodal Scientist)	Warangal, Kunaram and Rajendranagar	28.11.2015, 17.10.2015, 24.11.2015	Monitored southern-2 trials. The trials were conducted well and the crop was at maturity or harvesting stage. The rainfall received was scanty. Yellow stem borer incidence was observed in the trials.
10	Drs. G. Padmavathi, Soumya Saha, M. Sampath Kumar and P. Perraju (Nodal scientist)	Raipur, Bilaspur, Ambikapur, Jagdalpur and Rewa	2-7 October, 2015	Monitored Upland region trials. Trials in general were conducted as per the guidelines in all centres. Entries were in vegetative to maturity stages of growth. Crop experienced severe drought stress as evidenced by leaf rolling and stunted growth in AVT-1-NIL (Drought) trial at Rewa and Raipur. Moderate to severe incidence of brown spot was observed at Raipur, Rewa and Jagdalpur. Heavy infestation of brown spot was found in agronomy trials under direct seeding.

Research Highlights

Early seedling vigour and associated traits in rice (*oryza sativa* L.)

Sruthi K, Senguttuvel P, Beulah P, Eshwari B, Naganna P, SravanRaju N, Revathi P, Kemparaju KB, Hariprasad AS, Suneetha K, Kalyani MB, Sreedevi B, Bhadhana VP, Sundaram RM, Madhav MS, Ananda Kumar P, SubbaRao LV, Padmavathi G, Mahenderkumar R, Subrahmanyam D, Brajendra and V Ravindra Babu

Indian Institute of Rice Research, Rajendranagar, Hyderabad-30.

Seedling vigour is an important trait for uniform crop stand establishment and increasing weed competitiveness in aerobic rice systems. The increasing importance of aerobic rice in Asian countries makes it critical to breed new rice varieties having all associated traits and incorporating early vigour in the genetic background of high-yielding varieties through the conventional breeding and marker-assisted selection (MAS) approach could improve seedling establishment under water limited condition. Thus, it is important for rice breeders to exploit appropriate genetic difference among the rice cultivars for seedling vigour.

An experiment was conducted at Indian Institute of Rice Research, Hyderabad with three upland (Sabita, Nagina 22 and Vandana) and two lowland (MTU1010 and Swarna) cultivars evaluated for seedling vigour related traits such as germination percentage, seedling height, coleoptile length, mesocotyl length, shoot length and root length and observations were recorded under controlled conditions on 14th day of germination.

Germination percentage ranged from 93.5 to 97.0 per cent and the traits *viz.*, seedling height, coleoptile,

mesocotyl, shoot and root length ranged from 6.99 to 10.76, 2.06 to 3.3, 0.41 to 2.06, 2.34 to 4.19, 2.82 to 6.43 cm respectively, whereas shoot, root and total fresh and dry weights varied from 1.55 to 2.87, 0.13 to 0.44, 1.92 to 3.31, 0.18 to 0.35, 0.04 to 0.12 and 0.25 to 0.45g respectively. Among the cultivars, Sabita recorded highest germination percentage (97%), coleoptile length (3.3cm), mesocotyl length (2.06cm), shoot length (4.19cm), shoot fresh weight (2.87g), root fresh weight (0.44g), total fresh (3.31g) and shoot and root dry weights (0.35 & 0.11g) except for root dry weight, while Vandana exhibited high seedling height (10.76cm), root length (6.43cm) and root dry weight (0.12g) and has lowest value for germination percentage and mesocotyl length.

Among the five cultivars studied sabita exhibited high seedling vigour and may be a valuable resource for development of genotypes that possess high seedling vigour in rice. However, identified varieties must be improved for weed competitiveness, drought tolerance and yield to enable them as resilient varieties for direct seeded system under changing climatic conditions.

Figure showing the comparison between sabita and swarna for seedling vigour traits

S.No	Variety	Germination Percentage (%)	Seedling Height (cm)	Coleoptile Length (cm)	Mesocotyle Length (cm)	Shoot Length (cm)	Root Length (cm)	Shoot Fresh Weight (g)	Root Fresh Weight (g)	Total Fresh Weight (g)	Shoot Dry Weight (g)	Root Dry Weight (g)	Total Dry Weight (g)
1	Sabita	97.0	10.3	3.7	2.5	4.7	3.8	2.9	0.8	0.4	0.1	3.3	0.5
2	Nagina22	95.0	9.4	2.2	1.5	4.1	3.3	2.1	0.2	0.3	0.1	2.3	0.4
3	Vandana	93.5	10.8	2.4	0.4	2.8	7.7	2.0	0.4	0.3	0.1	2.4	0.4
4	MTU1010	95.5	8.6	1.9	1.3	1.7	5.2	2.4	0.25	0.3	0.1	2.8	0.4
5	Swarna	94.6	6.9	1.9	1.6	3.6	2.4	1.6	0.6	0.2	0.1	1.9	0.3
	CD	NS	1.75	1.08	0.37	0.48	0.47	0.79	0.11	0.10	NS	0.57	0.065
	SE(m)	1.47	0.47	0.29	0.10	0.13	0.13	0.2	0.03	0.03	0.03	0.15	0.02



Sabita at 14 days after germination



Swarna at 14 days after germination



Growth difference among five different genotypes

Development of Accurate Phenotypic Method for Stigma Exsertion in Rice

KB Kemparaju, Akilesh Singh, Virupaxa Gouda Patil, Jayaramulu, AS Hari Prasad, RM Sundaram, V Ravindra Babu, Lalitha Shanti, Vinay Shenoy and Sheshu Madhav

Indian Institute of Rice Research, Rajendranagar, Hyderabad-30.

There are several traits contributing to the hybrid seed production efficiency, such as days to heading, pollen load, pollen longevity, and morphological traits of floret, *viz.*, size of stigma and style, stigma exsertion, stigmatic receptivity, spikelet opening angle and duration. Among them, stigma exsertion is a major component in increasing pollination and seed set and is an important trait that contributes to the improvement of seed production in hybrid rice and is closely related to seed productivity in hybrid rice. Presently the classification of stigma exsertion is based on the exsertion levels, but the methods used for phenotyping are varied and there are no studies comparing them in a systematic manner. An attempt has been made to compare four genotypes by two natively developed methods of phenotyping *viz.*, the whole panicle method and the panicle zone method, both of which are improvements over the reported ones.

The genotypes were grown in the field and at the time of complete anthesis (when all spikelets were completely opened from top to bottom), 15 main panicles for each genotype for observation were collected. Collected panicles were brought to lab after treating with fungicide and wrapping the panicles in paper towel to avoid any fungal and microbial attack during the storage for long time (15-20 days) and also to increase the retention of stigma characteristics. These panicles were stored in refrigerator with 4°C using plastic zip bag/Aluminium foil paper to maintain the moisture content of panicle.

For Stigma Exsertion trait, each panicle was divided in to three zones *viz.*, upper, middle and lower zones. In each zone, five spikelets were randomly collected *i.e.*, 15 spikelets per panicle per genotype were counted for stigma exsertion ratio (Ratio of spikelet with exserted stigma to the total number of spikelets in panicle). The separated spikelets were grouped into dual stigma exsertion (the spikelet exserted in both sides-DSE), Single (one side-SSE) and no stigma exsertion. Based on these counts, following observations were calculated.

Single stigma exsertion (SSE, %) = (Number of spikelets showing single stigma exsertion / Total number of spikelets per panicle) * 100

Double stigma exsertion (DSE, %) = (Number of spikelets showing double stigma exsertion / Total number of spikelets per panicle) * 100

Total Stigma Exsertion (TSE, %) = SSE % + DSE %

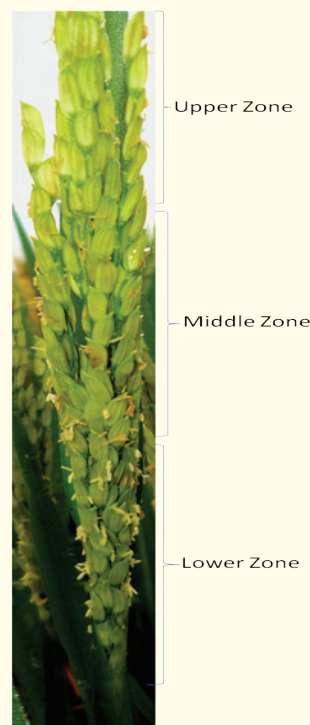
No Stigma Exsertion (NSE, %) = 100 - TSE %

Whole Panicle Method:

The panicles were collected and preserved as explained in earlier method and all the spikelets in the panicle were separated using forceps and with the help of illuminated magnifier lens. The spikelets were grouped into three classes *viz.*, single, dual and no stigma exsertion, counted and the respective class of stigma exsertion was calculated using the formula explained in the earlier method.

The Bland and Altman plot approach (Bland and Altman, 1986) was adopted for assessing agreement between the whole panicle and panicle zone methods, employing 'Analyse-it' software V 2.27 (Analyse-it, 2009).

The two phenotyping methods showed considerably high degree of agreement for all the counts of method agreement analyses parameters *viz.*, Comparison of means, Comparison of correlation and regression coefficients, Intra-class Correlation Coefficients, leading to inference that any of the two methods can be adopted for phenotyping stigma exsertion trait quantitatively.



Impact of Conservation Agriculture on Rice under Rice Based Cropping Systems

B. Gangaiah¹, B. Sreedevi, Mangal Deep Tuti, Soumya Saha, M.N. Arun, R. Mahender Kumar and V. Ravindra Babu
Indian Institute of Rice Research, Rajendranagar, Hyderabad
¹Central Island Agricultural Research Institute, Port Blair

In recent years, the major emphasis in the rice based cropping system has been on alternative resource conservation technologies (RCTs) for both rice and succeeding crop to reduce the cost of cultivation and energy consumption, to sustain productivity, and to increase the profit margin of farmers. Benefits of conservation tillage, especially zero-tillage (ZT) systems that leave crop residues on the soil surface helps in conservation of soil moisture and maintains temperature, improves soil aggregate stability and increases soil organic matter, enhances water infiltration rates, controls soil erosion and weed population. Further, the high fuel costs, difficulties in the establishment of succeeding crops including long turnover periods have given scope to reduce tillage operations. However, negative effects of long-term ZT farming include nutrient accumulation in surface soil, increased bulk density and soil penetration resistance and increased weed competition.

In this direction, an experiment was planned to assess the impact of conservation agriculture on rice and rice based cropping system. The trial consisted of 3 tillage treatments {Conventional tillage (CT), minimum tillage (MT) and zero tillage (ZT)} and 2 rice varieties {(hybrid and high yielding variety (HYV)) laid out in strip plot design with three replications. The

yield data was compiled from 7 locations of India.

Conventional tilled rice produced the highest grain yield (4.77 t/ha) followed by minimum tilled rice (4.09 t/ha) across the locations (Fig.1). Zero-tilled plots produced the lowest grain yield (3.83 t/ha) which was 19.7 and 6.4% less than conventional and minimum tilled grain yield, respectively. Similarly, hybrids recorded 5.1% higher grain yield (4.33 t/ha) than HYV (4.12 t/ha). It is concluded that reduced tillage negatively affected the rice grain yield and hybrids performed better than HYVs in conservation agriculture.

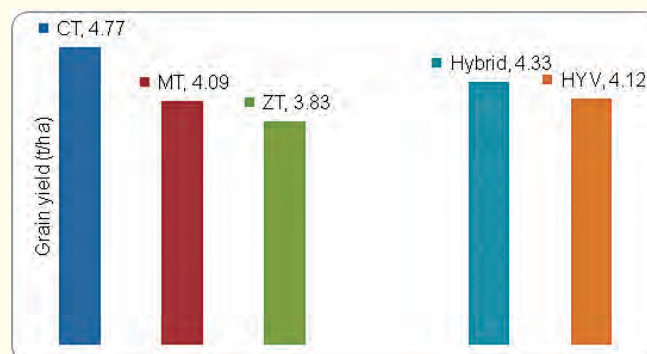


Fig.1. Impact of tillage intensity and rice cultivars on grain yield of rice under different rice based cropping systems.



(a)



(b)

Fig. Conventional (a) and minimum tilled (b) plots.

Trends in India's Rice Consumption

B. Nirmala

Indian Institute of Rice Research, Rajendranagar, Hyderabad-30.

In India, there is a declining trend in the consumption of rice for the past two decades. Rice consumption both in urban and rural areas began to trend downwards from the early 1990s. The consumption of rice has declined by 14.5 per cent in the last 24 years in rural India with 82.86 kilograms per capita per year in 1987-88 to 70.8 kilograms per capita per year in 2011-12. Rice consumption per person per year in rural India was estimated at 70.8 kg in 2011-12 compared to 77.62 kg in 2004-05, a fall of 6.82 kg in 7 years. In urban India the fall in rice consumption between these two years was 3.43 kg per person per year from 53.88 kg to 57.31 kg. Per capita consumption of PDS rice has, however, doubled in rural India and risen by 66% in urban India since 2004-05, implying that the share of PDS purchases in rice consumption has risen substantially. Economic growth in post-1990's, increasing urbanization, expanding trade liberalization and globalization and changing lifestyle patterns may be the factors for the shift in domestic consumption patterns in the economy away from basic staples such as rice, and towards high-value agricultural commodities. The food basket is found to be diversified both in rural and urban areas with higher levels of per capita consumption expenditure on milk and milk

products, fruits and vegetables and meat. The decline in per capita consumption of rice will be offset by the population growth increasing the net demand for rice. Though the per capita consumption of rice is flattened during the recent years, India has to increase rice productivity to meet the demands of the growing population and also to sustain its top position as exporter in the world market. Also there is an immense scope for promotion of rice based products for domestic and international markets.

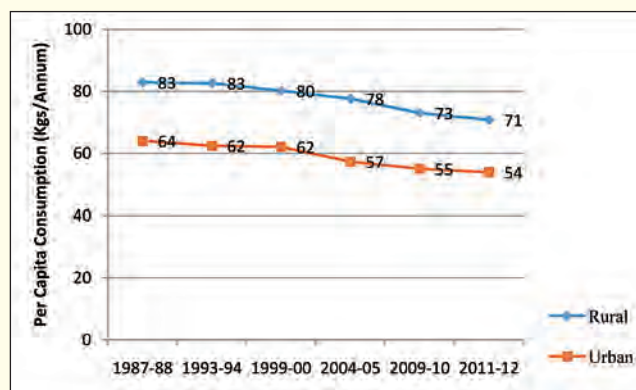


Fig. Rice Consumption trends in India

Source: Various Rounds of NSS Reports

Is Rice Cultivation Losing out Labour to other Crops?

Amtul Waris

Indian Institute of Rice Research, Rajendranagar, Hyderabad-30.

Rice cultivation is a highly labour intensive activity and is currently facing an acute shortage of both skilled and unskilled labour. The women agricultural labour do not prefer rice, as transplanting, weeding and harvesting are perceived to be drudgery prone activities. Moreover, young women and girls lack the skills in transplanting rice and

are unwilling to work in rice fields as reported in the study areas of six states viz. Andhra Pradesh, Bihar, Karnataka, Tamilnadu and Telangana. Paddy is losing out its area and labour to other crops especially cotton and vegetables and the following issues were highlighted by farm women in comparing paddy to other crops.

Paddy Vs other crops

Paddy	Other crops (cotton, vegetables)
Transplanting is highly skill-full, young girls and women do not possess skills	Activities like weeding grading, picking are not skill-based
Middle aged women only are involved	Young girls and old women are also involved
Tedious and more drudgery prone	Relatively easy and less drudgery prone
Time taking	Less time is required
Fixed wages	Depends on quantity harvested (cotton)



Sociological issues in farming

- Youth from both small and large farm size are not interested in farming
- Big farmers are diverting farm land to real estate
- Farmers' are the least preferred as a marriage alliance
- Big farmers lease out farms and lease farmers are not interested for collective activities like rodent campaign *etc.*
- Labour now have many employment opportunities and not interested in farm work.

Farmers' suggestions for overcoming labour shortages in rice cultivation

- Increased mechanization is required
- Need for Combine Harvesters suitable to all soil types
- Low cost mechanization for different paddy production activities (laser leveller and mechanical transplanter are costly)
- Corporate farming can be one of the options to overcome labour problem
- MGNREGA labour may be employed for agricultural activities during peak crop season.

Dr V Ravindra Babu takes over the charge as the first Director of IIRR

Dr V. Ravindra Babu Principal Scientist and Head Crop improvement section and Acting Director has taken over the charge as the first Director of Indian Institute of Rice Research Hyderabad on 9th November, 2015.

Dr V. Ravindra Babu is a renowned rice breeder, having been associated with rice crop for three decades. He has done pioneering research in identification of stable salt tolerant genotypes in different crops *i.e.* paddy, wheat, barley, bengalgram, mustard and cotton, and registered four salinity tolerant rice lines with NBPGR with IC Nos. 296497 (VRS-17), IC296498 (VRS-2), IC 296499

(VRS-11), IC 296500 (VRS-12), evaluated popular rice varieties and hybrids at national level and identified genotypes with high Iron and Zinc and used them in breeding programme for developing varieties with high iron and zinc and identified paddy varieties suitable for SRI method of cultivation.

Dr V. Ravindra Babu has guided several M.Sc and Ph.D students. He is acting as the Secretary for the Society for Advancement of Rice Research (SARR), IIRR. He has 58 referred publications, 15 technical bulletins and 17 awards.



Panorama of Institutional activities

Rythu Sadbhavana Yatra – 2015 (ICAR- PJTSAU- DOA) organised

In view of the seriousness of drought situation prevailing in the Telangana state, a Rythu Sadbhavana Yatra 2015 was organized during 5 - 6 October, 2015 by joint multi-crop and multidisciplinary teams comprising of Scientists from ICAR, PJTSAU and officials from State Agriculture Departments such as ADAs, DDAs and JDAs covering 150 villages across nine districts of the state to instill confidence among the farmers and to suggest mitigation measures for drought stress and related problems through field visits and interaction with farmers in their villages. The teams visited several villages in 9 districts covering the drought affected mandals in 9 districts in the state and interacted with 5000 farmers and visited nearly 200 fields. The visit was flagged

off from IIRR, Hyderabad by the Directors of IIRR, IIMR, CRIDA, IIOR, PDP and Director (Research) PJTSAU in the morning of 5th October, 2015.

The crops grown in the districts are rice, maize, cotton, soybean, sorghum, turmeric, vegetables such as brinjal, ridge gourd, bitter gourd, tomato, chilli. In the districts surveyed, the abiotic stresses like deficit rainfall leading to prolonged drought in most of the areas and terminal drought in other regions, depleting ground water levels, soil salinity, micronutrient deficiency in cotton, severe chlorosis in paddy and biotic stresses like planthoppers, gallmidge, stem borer, mites, blast, sheath blight, BLB, sheath rot in rice; stem borer, monkeys, wild boars and birds in maize; sucking pests, physiological wilt, alternaria leaf spot, root rot in cotton; Rhizome fly, Rhizome rot and leaf spot in turmeric; brinjal shoot and fruit borer were observed. The farmers need urgent support from concerned agencies for reclamation, soil testing, soil mapping and recommendation of suitable crops as per mapping. The farmers are facing problems related to bank loans also. The diagnostic teams suggested the following steps to mitigate the drought stress Crop diversification, inter cropping, water conservation and rainwater harvesting measures, reclamation of paddy fields, integrated farming systems approach, adoption of micro-irrigation, classification of farmers fields for suitability to crops, supply of acoustic devices *etc.*

The visits enthused the farmers and helped to build the confidence among farming community in all the districts of Telangana.



Ayudha Pooja performed

Ayudha Pooja was performed in connection with DUSSERA festival at IIRR Farm ICRISAT, Workshop and farm at IIRR on 21st October, 2015.



IIRR observes vigilance awareness week 26-31 October, 2015

Vigilance awareness week was observed in IIRR during 26-31 October, 2015. A pledge was administered to all the staff on 26th October and vigilance banners were displayed at prominent spots in the institute. Various events such as debate, essay writing on moral values and ethics, ideas and methodology to prevent corruption in institutes were conducted. A lecture was delivered by Sri Anil Bihari SAO (retd), IIOR, Hyderabad during the closing ceremony.



Institute Research Council Meeting organized

Field Institute Research Council (IRC) meeting was organized under the chairmanship of Dr V. Ravindra Babu, Director, IIRR on 6th November, 2015. Chairman and all the members of the IRC visited the field experiments laid out by different sections including the field trials under the National Professor Project at the IIRR-Rajendranagar farm during which the scientists appraised the Director on various field trials being conducted. An interim IRC meeting was also conducted for the newly joined scientists on 30th November and 1st December, 2015 in which eight new project proposals were approved.



Farmers' day organized at IIRR

Farmers Day 2015 was organized at IIRR on 7th November, 2015. The technologies developed by IIRR and other ICAR Institutes were showcased on this occasion. About 600 farmers from Telangana state participated in the event. Honourable Minister of State Sri Bhandaru Dattatreya, Chief guest emphasised that Telangana state should be developed as Seed Hub and appreciated the efforts of all the Agricultural Institutes working in Hyderabad. Sri C. Parthasarathi, IAS, Agri. Production Commissioner (APC) and Secretary, Govt. of Telangana, emphasised the need for helping small and marginal farmers for enhancing the productivity. Smt. V. Usha Rani, IAS, Director General, National Institute of Agricultural Extension Management (MANAGE), informed about various training programmes organised by MANAGE for the benefit of the farming community. All the Directors of the Institutes gave a brief account of their activities and technologies for farmers. Some of the progressive farmers were awarded and the queries raised by the farmers were clarified by the Scientists. Latest technologies developed by different institutes were exhibited. The meeting ended with vote of thanks by Dr R.M. Kumar, Convenor, Farmers Day 2015.



International Rice Symposium organized

On the occasion of Golden Jubilee celebrations of All India Coordinated Rice Improvement Project (AICRIP), an International Rice Symposium was organized in Hyderabad, during November 18-20, 2015 with the theme 'Rice Science for Global Food and Nutritional Security' to bolster the ongoing thought process to make rice cultivation a profitable endeavour. The event was jointly organised by IIRR Hyderabad, NRII Cuttack, IRRI Philippines, PJTSAU, ANGRAU and Society for Advancement of Rice Research, Hyderabad.

As many as 500 delegates participated in the symposium, including 20 foreign delegates. Many eminent scientists delivered lead lectures on latest developments in rice science and shared their experiences and expertise with the young research scholars, students who also participated in large numbers. In the symposium, a panel discussion on road map for 2nd Green Revolution, four plenary sessions, twelve concurrent sessions were organised in which around 120 oral presentations were made and in the poster sessions, around 450 posters were displayed.

In the inaugural Session, Dr J.S. Sandhu, DDG (CS), ICAR welcomed the dignitaries and highlighted the country's remarkable achievements in increasing the rice production, productivity that resulted not only in attaining self-sufficiency, but also to become top ranker in the global rice exports. Shri Bhandaru Dattatreya, Hon'ble Minister of State (Independent Charge) for Labour & Employment, Govt. of India complemented IIRR on account of 'Golden Jubilee Year of Celebrations of AICRIP' and its role in the development and release of more than 1050 rice varieties that helped in resolving the difficulties faced by the farming community. Dr. Robert Zeigler Director General, IRRI congratulated the staff of IIRR for 50 years of productive and active contribution to the rice research. Dr David Bergvinson, Director General, ICRISAT stressed on the utilization of germplasm resources for obtaining substantial genetic gains in rice research. Dr A. Padma Raju, Vice Chancellor, ANGRAU highlighted the prominent

role of ANGRAU in rice research & development. Shri R. Rajagopal, Additional Secretary (DARE) & Secretary (ICAR) reiterated that “No nation can be great without food security” and mentioned that farmers undertake rice cultivation with pride and they are sentimentally attached to it. Dr. V. Ravindra Babu, Director, Indian Institute of Rice Research (IIRR) briefed about programme.

On this occasion, the following publications were released viz., Programme booklet, Abstracts of the presentations (soft version as Pen drive), bulletins on Rice Production Practices in India, Rice Bran oil, Rice; JS Nanda & PK Agrawal, IIRR Newsletter, Mobile applications from RKMP (IIRR + 28 partners, CDAC), Web based expert system for rice varieties, pests and diseases, APRRI – Rice Diseases and their Management (in Telugu) and APRRI – Rice Insect pests and their Management.

The meeting ended with vote of thanks by Dr. V. Ravindra Babu, Director, ICAR-IIRR, Hyderabad. On this occasion, a pylon was erected to signify the Golden Jubilee year of AICRIP which was inaugurated by Shri Bandaru Dattatreya, Hon’ble Minister of State (Independent Charge) for Labour & Employment, Govt. of India.

A panel discussion on the road map for 2nd Green Revolution was organised and eminent rice scientists, researchers, policy makers, farmers’ representatives participated in the discussion and gave valuable ideas, suggestions on rice research and to make rice cultivation, a profitable venture. The following suggestions were made by the eminent panellists:

- Development of rice varieties with NPT features viz., more productive tillers, upright top leaves, larger panicles and hybrids through inter sub-specific hybridization.
- Intensive adaptation of hybrid rice technology with the cultivation of new generation hybrids.
- Adaptation of green super rice varieties which are ecologically and economically sustainable and produce better yields.
- Breeding strategies to pool up non-allelic QTLs from donors into region specific popular varieties, development of promising lines from multi-parent programmes for yield and biotic / abiotic resistant genes.
- Search for novel QTLs from land races, wild species etc.,
- Encouragement of transgenic breeding strategies for developing rice genotypes with water and nutrient efficiency, and acceptance of GM technology in the development of rice varieties for specific biotic / abiotic stress resistance.
- Supplying quality seeds to the farming community.

- Refinement of agronomical practices to achieve high target yields upto 12-15 t/ha.
- Strategies for soil health management and micro nutrient deficiencies for sustainable production systems.
- Postharvest management, making consumer oriented policy – secondary agriculture.
- Integration of technologies and policies for effective 2nd green revolution.
- Refinement of extension methodologies to cover all sections of farmers including small and marginal farmers.
- Refinement of strategies to move from supply driven to demand driven agriculture and need for efficient value chains.
- Four plenary sessions were organised and 12 distinguished scientists from India and abroad delivered invited lead talks on researchable issues of global importance.
- The focus of the first plenary session was on use of genomic tools in rice and consisted of talks on (i) Green-super rice breeding technology, (ii) Mutant resources and their use for identification of novel alleles, (iii) Understanding pathogenic pathways through genomic tools, (iv) Genomic-assisted transfer of major QTLs for abiotic stress tolerance, (v) Tailoring plant type for maximizing rice yields.
- The second plenary session focussed on improvements in rice breeding and had talks on (i) Meeting challenges in rice breeding, (ii) Progress in breeding for tolerance to abiotic stresses, (iii) Advances in Basmati breeding, (iv) Integrated approach of genomics and conventional breeding to breaking yield barrier in rice, (v) Rice breeding perspectives in salt affected soils, (vi) Seed systems and supply chain in India
- The third plenary session was on research networking in rice and had interesting talks on (i) Yield improvement in rice through networking, (ii) Breeding for green super rice, (iii) Extension reforms for second green revolution rice, (iv) Prospects of conventional rice breeding and (vi) Strategies for hybrid rice parental line development.
- The fourth plenary session was on sustainable rice farming and consisted of talks on (i) Seed systems and supply chain related to hybrid rice, (ii) Sustainability assessment in different rice farming systems, (iii) Changing pest and disease dynamics in rice and (iv) Precision nutrient management system in rice.

Green Super Rice Phase II completion work shop held

The Green Super Rice Phase II (between November

2012 to December, 2015) completion work shop was held during 21-23 November, 2015 at IIRR in Hyderabad. 35 participants from different Asian countries namely Bangladesh, Sri Lanka, Philippines, Vietnam, Indonesia, Lao, IRRI and India and one private company BOSHIMA from China participated. The meeting was presided over by Dr Jauhar Ali, IRRI and GSR project director Dr Zhikang Li of the Chinese Academy of Agricultural Sciences (CAAS). The participants discussed about the achievements made during the project period in their respective countries. Dr V. Ravindra Babu, Director IIRR mentioned that farmer-to-farmer interaction on-farm adaptive trials by GSR varieties farmers in different target locations in India is needed. The participants also discussed about future strategies for next upcoming GSR Phase-3.



DUS test Guidelines review meeting was organized

The first review meeting of the DUS test Guidelines was organized on 2nd December, 2015 under the chairmanship of Dr E.A. Siddiq at Indian Institute of Rice Research. Dr L.V. Subba Rao, Principal Scientist, IIRR and Nodal Officer DUS gave a brief account of DUS test guidelines. The Task force consisted of Dr P. Raghava Reddy, former VC ANGRAU, Dr A. K. Singh Principal Scientist and Head, IARI (represented Dr T. Mahapatra, Director, IARI), Dr V. Ravindra Babu, Director, IIRR, Dr L.V. Subba Rao, Principal Scientist and Nodal Officer DUS, Dr Dipal Roy Chowdhury, Joint Registrar, PPV &FRA and Member Secretary of the meeting. The other members associated were Dr B.C. Patra, NRRI, Cuttack, Dr M.P. Rajanna, ZARS, Mandya, Dr Rakesh Seth, IARI Regional Station, Karnal, Dr P. Anand kumar, Principal Scientist and Head, Crop Improvement Section, IIRR, Dr B. Rama Krishna, Nuziveedu seeds. Committee proposed certain amendments that will be discussed in detail in 2nd second review meeting.



Institute Management Committee Meeting conducted

The XX Institute Management Committee meeting of IIRR was held on 4.12.2015 to discuss and fine tune the requirements of the institute. The meeting was attended by Dr V. Ravindra Babu, Director, IIRR; Dr Raji Reddy, Director of Research, Prof. Jayashankar Telangana State Agricultural University; Dr (Mrs) Mayabini Jena, Principal Scientist and Head, Crop Protection, NRRI, Cuttack, Dr B. Dayakar Rao, Principal Scientist, IIMR; Smt. Vijaya Gowri, Deputy Director of Agriculture., Govt. of Telangana; Shri Athmakuri Brahmaiah and Shri M. Vittal Reddy, Farmers' representatives; Shri D.D. Verma, Comptroller (Finance) NAARM; besides Senior Administrative Officer (i/c), finance and accounts officer and Heads of various sections, farm in-charges of IIRR and convenor Dr D. Krishnaveni, Principal Scientist, Plant Pathology, IIRR. Dr V. Ravindra Babu, Chairman briefed about the IMC, research highlights and different activities carried out by IIRR during the Golden Jubilee Year. Action Taken Report (ATR) and the response from ICAR with respect to the XIX IMC proceedings was presented by Dr D. Krishnaveni.



Women in Agriculture Day Celebrated

Women in Agriculture Day was celebrated at ICAR-IIRR on December 4, 2015 to signify the important contributions of Women in agriculture. A series of activities were organized on this occasion. Dr V. Ravindra Babu, Director felicitated all the Women Scientists and Women Farm workers of the Institute and highlighted the significant role played by them in research and farm activities. Dr K. Manorama and Dr K. Aparna, PJTSAU deliberated upon Women, Hormones and Food Plans to reiterate the

importance of healthy eating for healthy lifestyles. A set of team building games were organized for farm workers. The program was coordinated by Dr Amtul Waris and Dr B. Nirmala.



ICAR (Crop Sciences) – Industry Meet held

As a part of the ICAR initiative, the ICAR (Crop Sciences) - Industry Meet 2015-showcasing of ICAR Technologies & Services organized was held at the Indian Institute of Rice Research on 5th December, 2015 with the prime objective of forging Public-Private Partnership in Agriculture in general and crop production, in particular. Six other ICAR crop science institutes viz., 1) Directorate of Rapeseed - Mustard Research, Rajasthan 2) Indian Institute of Maize Research, New Delhi 3) Directorate of Soybean Research, Indore 4) Sugarcane Breeding Institute, Coimbatore 5) Indian Institute of Oilseeds Research, Hyderabad and 6) Indian Institute of Millets Research, Hyderabad also participated in this meet to showcase their technologies. A total of 65 representatives from private companies and ICAR institutes participated in the meet and took part in subsequent deliberations. Various technologies developed by ICAR viz., newly released varieties and hybrids, rice based health care products, Customized leaf colour chart for Nitrogen Management in Rice for Irrigated Rice and Soil health kit, Sugar cane juice powder, Soil moisture indicator, Low cost and liquid formulation of microbial bio control agents, Millet based ready to cook products, *Corcyra cephalonica* Rearing Cage were presented to the industry representatives. Several key issues such as popularization of ICAR technologies and products in local languages, exclusive licensing methodology, adoption of uniform set of procedures and guidelines for licensing and commercialization of technologies were discussed.



World Soil Day Celebrated

At ICAR- IIRR, Hyderabad

World Soil Day was celebrated at IIRR, Hyderabad on 5th December, 2015. Thirty farmers from three villages viz., Kondagadapa (Mothkur Mandal), Thukkapuram and Thimmapuram (Atmakur Mandal) of Nalgonda district participated in this function. Dr V. Ravindra Babu, Director, IIRR stressed the importance of soil in food production and human well-being and the maintenance or enhancement of soil resources for food, water, and energy security. On this occasion, soil health cards were distributed to thirty farmers by the Director. The farmers thanked IIRR scientists for collecting soils, analysing and giving recommendations on fertilizer use and felicitated Dr V. Ravindra Babu, Director, IIRR for the soil testing services extended to their villages.



At KVK, Kampasagar, Nalgonda district, Telangana state

Soil day was celebrated at KVK, Kampasagar, Nalgonda district, Telangana state. Soil samples from Miryalguda and Tripuraram mandals of Nalgonda district were received from KVK Kampasagar, Nalgonda district, analyzed and soil health cards were distributed to 250 farmers. The function was graced by Dr Raji Reddy, Director of Research, PJTSAU, and scientists from IIRR and KVK Kampasagar.



IIRR Foundation Day celebrated

IIRR celebrated its first Foundation Day on 15th December, 2015. Dr V. Ravindra Babu, Director, IIRR,

welcomed the staff and the guests. Dr S.V.S. Shastry, Founder Joint Co-ordinator, of the then AICRIP was the Chief Guest, Dr Seetharaman Ex. Project Director, DRR and Dr E.A. Siddiq, Ex, DDG (CS) were the other Guests of Honour. Dr Thingnganing Longvah, Special Guest NIN, delivered the Foundation day lecture on "Nutritional Challenges in India". All the Directors and other representatives of ICAR institutes were also present at the function. Director, IIRR gave a brief account of the achievements and activities taken up at IIRR during the Golden Jubilee year 2015. He also deliberated upon the various outreach activities taken up by the institute for the benefit of farmers. He made a special mention about the new initiatives taken and creation of additional facilities to newly joined scientists at IIRR. Dr S.V.S. Sastry reminisced the initiation of AICRIP coordination with only three scientists. Dr Seetharaman emphasized the need to focus more on the IPM, INM and integrated farming systems research, cost effective technologies and Water saving Drip system for enhancing the productivity. Dr E.A. Siddiq outlined the journey of DRR and mentioned that the hybrid rice research and biotechnology programs were started in a humble way and today these programs have become role models at National and International levels.

Awards were given under three categories for the outstanding contributions of the staff which were named after three doyens of rice research (Prof. E.A. Siddiq award for sincere and dedicated staff, Prof. Seetaraman award for best young scientist, and Prof. S.V.S. Sastry award for outstanding Scientist) and 32 scientists were awarded under the above three categories. In addition, 25 Administrative, Technical and Supporting staff were also felicitated for their contributions. Games and cultural programmes were conducted on this occasion and the elders gracing the occasion were felicitated.



Jai Kisan Jai Vigyan Week celebrated

Indian Council of Agricultural research celebrated 'Jai Kisan Jai Vigyan' week from 23-29 December,

2015 to commemorate the birth anniversaries of former Prime Ministers Shri Atal Bihari Vajpayee and late Shri Chaudary Charan Singh. The celebration was organised keeping in view their immense contribution for promoting use of science for the welfare of farmers. Dr V. Ravindra Babu, Director, IIRR briefed about the importance of the programme and discussed about different schemes like Front line Demonstrations, Tribal Sub-Plan, Tribal Sub-Plan under National Seed Project, Visit of scientists to villages, Mera Gaon Mera Gaurav programme, Production Oriented Survey, Drought mitigation team visit to distressed villages, Popularisation of SRI method of Rice Cultivation, Soil testing and Distribution of Soil Health Cards taken up under this programme.



DDG (Crop Sciences) visited IIRR

Dr. J.S. Sandhu DDG (Crop Sciences) ICAR visited IIRR on 11-09-2015 in connection with demonstration of use of drones in Indian Agriculture by Tech Bazz company on 07-10-2015



Asia Pacific Weed Science Society conference delegates visit agronomy field trials, at IIRR

The delegates of the 25th Asia Pacific Weed Science Society conference held in PJTSAU Hyderabad during 13-16 October, 2015 visited Agronomy field Experiments viz., comparative performance of new post-emergence herbicides against weeds in Aerobic rice and their effect on succeeding crop, new herbicide molecules for weed control in Direct seeded Rice and transplanted Rice, greenhouse gas emissions from rice fields, use of sensors for water application and Phosphorus sick plots conducted in the Research Farm, IIRR on 15-10-2015. The delegates interacted with Dr B. Sreedevi, Dr Mangal deep Tuti and Soumya saha regarding the field trials.



Outreach programmes by IIRR scientists

Field Day organised in villages of Ranga Reddy district

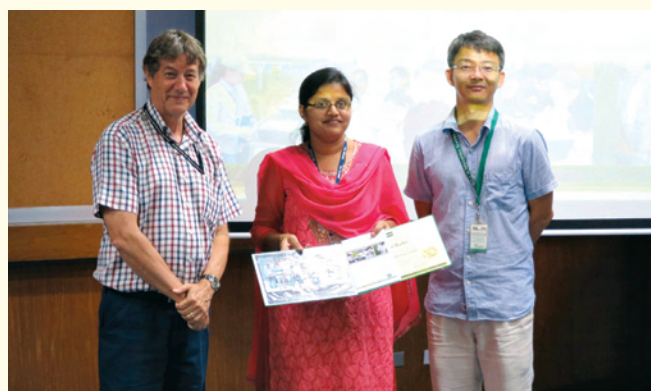
Field Day was organized on 2nd and 3rd at Chinna Solipet and Devunigadda villages of Rangareddy district of Telangana to showcase the technologies demonstrated under FLDs. In Devunigadda village, FLDs on 'Labour saving technologies' viz., Use of manual weeders and application of herbicides were demonstrated by Dr Amtul Waris during *Kharif* 2015. In Chinna Solipet village, the FLDs on 'Cost Effective Rice Production Technologies', viz., reduced seed rate and effective weed management were demonstrated by Dr B. Nirmala and sprayers were distributed to beneficiary farmers to promote mutual sharing of resources during *Kharif* 2015. A Farmer-Scientist interaction was organized at both the villages. The farmers posed a lot of questions on pest management which were answered by Dr V. Jhansi Lakshmi. The weed management module suggested by Dr B. Sreedevi was adopted by the beneficiary farmers. The labour saving and cost effective technologies resulted in reduced cost and labour requirement which were highly appreciated by the beneficiary and other farmers. The interventions demonstrated in FLDs resulted in horizontal spread of technologies that reduced labour and input costs in rice production.



Staff Activities

Deputations abroad

Dr Jyothi Badri, Scientist, Plant Breeding was deputed to attend "Molecular Breeding Course" at International Rice Research Institute, Los Banos, Philippines from 28-9-2015 to 9-10-2015 under IRRI - ICAR collaborative work plan project. The course comprised of various aspects of molecular breeding with series of lectures, hands-on, visit to field and lab facilities and conceptualization of network project proposals. Group comprising of Dr SK Pradhan (NRRI, Cuttack), Dr Jyothi Badri and Ms Verna (Phil Rice, Philippines) won **Best Project Proposal Award** for their concept note on "Molecular Breeding for broad spectrum bacterial leaf blight resistance with climate resilience traits in Low Land Rice of Eastern India".







Retirements

Sri Jangaiah skilled support staff retired from the service upon superannuation on October 31st 2015. Mr MK Nair Senior Administrative Officer and Sri Resham Bahadur Shah technician T1 retired from the service upon superannuation on November 30th 2015.






Promotions

The following IIRR Staff were promoted to the next higher grade

S. No	Name	Photo
1	Mr. P. Chandrakanth Technical Assistant T3 to Technical Assistant T4 w.e.f. 1-7-2015	
2	Mr. M. Ezra Technical Officer T5 to Senior Technical Officer T6 w.e.f. 18-1-2014	
3	Mr. M. Pullaiah Technical Officer T5 to Senior Technical Officer T6 w.e.f. 11-7-2013	
4	Mr. K. Chaitanya Technical Officer T5 to Technical Officer T6 w.e.f. 19-4-2015	

S. No	Name	Photo
5	Mr KH Devdas Senior Technician T2 to Technical Assistant T3 w.e.f. 17-11-2013	
6	Mr C Sadanandam Technical Officer T5 to Senior Technical Officer T6 w.e.f. 1-1-2012	
7	Mr C Muralidhar Reddy Senior Technician T2 to Technical Assistant T3 w.e.f. 12-1-2011	

MACP was granted to the next higher grade to the following staff

Name	Photo	Name	Photo	Name	Photo
Ms. TD Pushpalatha w.e.f. 27-6-2015		Mr. K. Mallikarjunudu w.e.f. 11-3-2015		Mr. SK Hussain w.e.f. 13-3-2015	

Name	Photo	Name	Photo	Name	Photo
Mr. Bharath Raju w.e.f. 13-3-2015		Mr. T.P. Sharma w.e.f. 1-9-2014		Mr. S. Vijay Kumar w.e.f. 20-1-2015	
Ms. S. Rekha Rani w.e.f. 1-9-2008					

Forthcoming events

- Raithu Sadbhavana yatra in Andhra Pradesh 26-30 January, 2016
- Third Hills workshop at ICAR Research complex for North-East Region, Barapani 27th February, 2016
- 51st Annual Rice Group Meeting at Raipur 2-5 April, 2016

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