

IIRR - Industry Meet 2022: Display of IIRR Technologies & Services

Non-varietal technologies and services offered at ICAR-IIRR, Hyderabad



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Key novel germplasm registered at NBPGR, New Delhi

Total Nos: 40

Biotic Stress Lines

- ✓ BB Resistance Pyramided Line - 1
- ✓ BPH Resistant Lines- 6
- ✓ Gall Midge Resistant Line - 5
- ✓ Blast Resistant Lines – 2
- ✓ Sheath blight Resistant Line - 2
- ✓ Multiple Biotic stress Resistant Lines - 5

Abiotic Stress Lines

- ✓ Low Phosphorus Line - 3
- ✓ High Zinc & Salt Tolerant Line – 1
- ✓ Abiotic Stress Resistant Lines – 2

Biofortification / High Iron and Zinc Lines – 1

Basmati Line – 1

Strong culm Line – 1

CMS Lines - 4

Restorers Lines – 7

DRR-BL-31 (INGR15002)



- An Improved line INGR15002 in the background of PR114 with resistance to leaf blast and neck blast is developed and found that it carries novel blast resistance genes.
- Three MOUs were signed for licensing this line with two private companies for their research use.

Customized Leaf Color Chart for Nitrogen Management in Rice for Irrigated Rice

- 'Enhancement of N use efficiency in rice is very important.
- Application of 'N' through leaf colour chart (LCC) and SPAD – N technique gave nearly equal grain yield. **These techniques saves about 20 – 30 kg/ha.**
- SPAD meter values and colour charts reading recorded at critical growth stages were closely correlated with grain yield.
- Colour charts of different green colour gradient was prepared and made available to farmers.



Leaf color chart (left) is found to be an inexpensive alternative to SPAD chlorophyll meter (right) for effective N top dressing



Innovative Health care products from Rice/ Rice by-products



Rice Riche Pain Relieving Gel : The product is a topical formulation. It is highly effective for minor aches, pains of muscles and joints associated with simple strains, bruises and sprains. Because of Rice bran oil, absorption of active ingredients is fast and the product provides quick relief. **Patent Filed at Indian Patent Office with application no. 202241011157 dated 02/03/2022.**



Rice Riche Cream for cracked heel and dry skin : The product is a rice bran oil base cream useful for therapeutic and cosmetic applications such as cracked heels, dry skin disorder. It softens the heel and the foot skin. The formulation, apart from healing the cracks on heels, is useful in arresting the bleeding due to cracks and reducing the pain.



Rice Riche Moisturizing Lotion: The product is a skincare product made from rice bran oil and brown rice extract as key ingredients. The product is light, non-sticky and smooth, suitable for normal and oily skin. The oil and the brown rice extract contain various skin beneficial ingredients contributing to suppleness, tightening, lightening and preventing dryness of the skin.



Rice Riche Face Scrub: Rice Riche Face Scrub is an exfoliation product. It removes dead skin cells to give a more polished and healthy look by making skin softer and brighter. The product is mild enough to be approved for daily use by male and female both. Although the product is oil based, it can easily be washed off with water leaving behind the skin smooth, soft and moist. **Patent Filed at Indian Patent Office with application no. 202241006257 dated 05/02/2022.**



A process for preparation of stabilizer free silicic acid for foliar application

- This invention comprises a two part systems and relates to a method for achieving non-colloidal silicic acid solution through mixing of these two parts systems. The resulting solution of non-colloidal silicic acid, within 72 hours, is further diluted for foliar spray on crops.
- The primary advantage of this invention over prior arts is the reduction in production cost of the silicic acid formulation.
- Another advantage of the present invention is the higher production of silicon per unit volume of the formulation.
- **Patent Filed at Indian Patent Office with application no. 202141061758 dated 30/12/2021.**

Iron Riche Rice

- Iron deficiency is one of the major reasons of anemia wherein the level of hemoglobin is insufficient.
- In infants and young children, it impairs growth, cognitive development and immunity; In pregnant women, it is linked with an increased risk of maternal mortality, as well as an increased risk of pre-term delivery, retarded foetal growth, low birth weight.
- This problem can be overcome if the rice which is the staple food of majority of the Indian population, is fortified with iron.
- Keeping this view in mind, a protocol for production of IRON RICHE RICE was developed.
- Iron Riche Rice produced by this protocol is highly effective in alleviating iron deficiency condition.

Rapid Soil Health Testing Kit



- Designed for on-farm rice soil testing by a semi-skilled person.
- Portable and is highly suited for irrigated rice soils as well as dried soil samples.
- Most important soil physical parameter such as estimation of bulk density can be performed in two minutes time.
- Various chemical parameters such as Soil pH , Soil organic carbon / organic matter, essential nutrients such as available N,P,K,S, Ca and Mg can be performed rapidly.
- A very important biological parameter such as soil respiration test can be estimated which takes a little longer time.
- Several quantitative and qualitative visual colour charts have been developed which have been validated against the established scientific principles and methods of estimation.
- The kit is highly user friendly and can be used by anybody with minimal training/awareness.
- The kit is however, mostly suitable for testing a neutral, saline to alkaline soil.

Power operated 8 row drum seeder

Direct seeded rice is gaining popularity among farmers, especially wet DSR. Using the traditional drum seeder takes a lot of time as it has to be pulled manually by two persons. In the present Power operated seeder furrow openers have been provided so that the seed will not drift.

Benefits over conventional drum seeder: Field capacity is increased from 0.040 ha /h to 0.25ha/h, thereby saving time for sowing.

Specifications: No of rows: 8; Row to Row spacing: 20cm; Field capacity ha/h: 0.25; Power source: 4hp diesel engine; Cost of operation (Rs/ha): 1200; No of Furrow openers: 8



Pot Puddling machine

Rice is grown in pots for different screening purposes. Usually, the puddling of soil is done manually which is labour intensive and time consuming. To puddle the soil a mechanical device using electric motor has been developed.

Benefits over conventional method: Human drudgery is reduced.

Specification: Capacity: 250kg /h; No of persons: One; Power source: 1hp Electrical engine.





Services at ICAR-IIRR

Biotechnology



S. No	Item	Amount (Rs)
A	Hybrid rice – Hybrid and parental line purity testing/assessment – Seed purity testing (Seed lot of 100 Seeds/Seedlings)	10,000 per seed lot
B	Screening for genes of Fertility Restoration / WC / Bacterial blight / Blast / Gall midge (Minimum of 25 samples / genotypes)	7,500
C	Detection / Diagnosis of RTBV and RTSV from rice samples	
	<ul style="list-style-type: none"> ▪ RTBV/RTSV detection by PCR (Minimum of 5 samples) ▪ RTBV/RTSV quantification by Real Time PCR (Minimum of 5 samples) 	2,500 3,000
D	Training for Students (Excluding boarding & lodging): (ICAR guidelines): 6 Months / Student	30,000
E	Training for Industry (Excluding boarding & lodging): 1 week	25,000

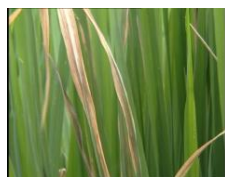
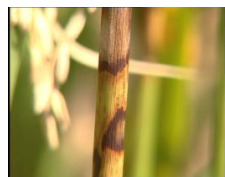
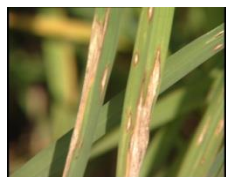
Plant Breeding

S. No	Item	Amount (Rs)
A	Grain quality parameters:	
	➤ Non- Basmati rice (14 Characters) / Samples	10,000
	➤ Basmati rice (15 Characters) / Sample	15,000
B	XRF analyses for iron and zinc in rice grain samples (Minimum of 10 samples)	
	➤ Unpolished	200
	➤ Polished	400
C	DUS Test (One entry for two seasons at two locations)	25,000

Agronomy

S. No	Item	Amount (Rs)
A	Field evaluation of herbicides, fertilizers and nutrient products	50,000

Plant Pathology



S. No	Item	Amount (Rs)
A	Fungicide formulations / treatment / season / disease <i>(The charges would be collected for the standard check and untreated check, in the trial concerned)</i>	50,000
B	Phytotoxicity observations	50,000
C	Residue sample collections (Seed, straw & soil)	20,000
D	Plant health effects (Shoot & root length, No. of tillers, overall crop stand at last reading)	50,000
E	Repeated inoculations (2 nd inoculation onwards / inoculation)	50,000
F	Screening for Disease resistance / Entry / Season	
	➤ Blast (minimum of 50 lines @ Rs. 600/line)	30,000
	➤ Sheath blight (minimum of 50 lines)	3,000
	➤ Bacterial blight (minimum of 50 lines)	3,000
	➤ Rice Tungro Disease (minimum	3,000
G	Quarantine testing (For Diseases, insect pests & nematodas / entry)	Contact NBPGR
H	One isolate – BLB/BL/FS/SAB (one vial/plate)	15,000
J	Training (For Industry personnel) / person / 1 Week (Excluding lodging and boarding)	25,000

High throughput Artificial Screening Facilities developed at ICAR-IIRR



- Artificial screening technique is developed and adopted to screen the genotypes both under glasshouse and field conditions
- Plants will be inoculated at Booting stage
- *Ustilaginoidea virens* conidial suspension is used for screening
- Injection method of inoculation is adopted
- Screening Technique is full proof and reproducible with more than 90% accuracy



U. virens conidia

High throughput Artificial Screening Facilities developed at ICAR-IIRR



Bipolar germination



Symptoms on susceptible variety

- ❖ Artificial screening technique for brown spot disease is standardized under field conditions and screening facility is created at IIRR, Hyderabad
- ❖ Screening will be done at seedling stage by spraying the spore suspension
- ❖ Large number of genotypes will be screened under this facility
- ❖ Few promising donors were identified



Entomology

S. No	Item	Amount (Rs)
A	<p>Toxicity of Insect Pest / Natural enemy per formulation / treatment / season / insect <i>(The charges would be collected for the standard check and Untreated check, in the trial concerned)</i></p>	50,000
B	Phytotoxicity observations	20,000
C	Screening for insect resistance / Entry / Pest / Biotype (minimum of 40 lines)	12,000
D	One insect culture (SB / GLH BPH / WBPH)	15,000
E	Training (For Industry personnel) / person / 1 Week (Excluding lodging and boarding)	25,000



Soil Science

Item		Amount (Rs)
A	Soil:	
	➤ pH, EC, Organic carbon, available N, P and K	1000
	➤ Available micronutrients – Zn, Mn, Fe, Cu, B, Mo	1000
	➤ Texture analysis, CEC, Exch. Na, Ca, Mg, K, ESP, SAR	1000
B	Plant (Grain, Straw, Plant residues, Green Manure):	
	➤ Major & Secondary Nutrients – N, P, Si	1000
	➤ Micronutrients – Zn, Fe, Mn, Cu, B*, Al*, Ca, Mg	1000

Transfer of Technology & Training

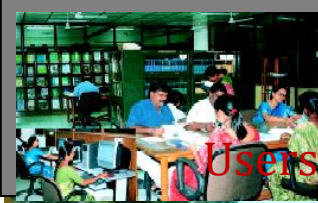
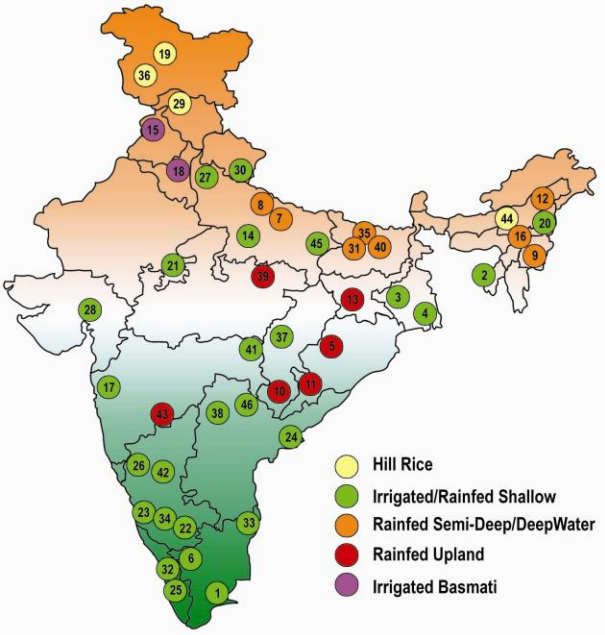
S. No	Item	Amount (Rs)
A	➤ Private Agro-input Agencies: Executives	25,000
	➤ Quality control of Rice: Officials of Export Inspection Council of India	25,000
	➤ Hybrid Rice Seed Production Technology: Personnel from Public & Private Sector Seed Companies	25,000
B	➤ Marker Assisted Selection: Private Seed Companies & SAUs (Breeders & Bio-technologists)	25,000
C	➤ Hybrid Rice Breeding: Breeders from Public & Private Sector Seed Companies	25,000

Coordinated Program of IIR

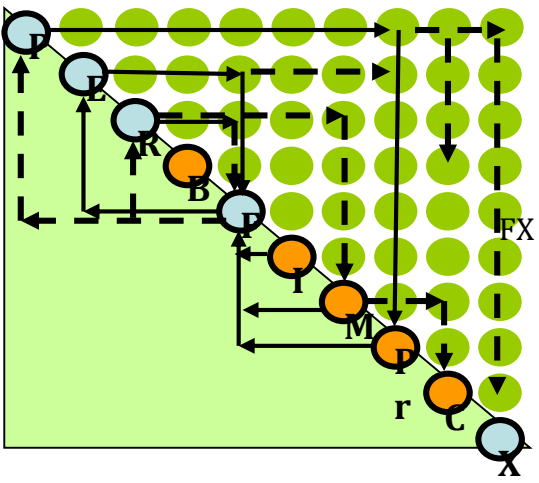
S. No	Item/ Parameter	Testing fee (Rs)
1.	Evaluation of transgenic crops/ entry / location / year	1,00,000
2.	Evaluation of hybrids or varieties / entry / year	1,50,000 - Hybrid 1,00,000 - Variety
3.	Testing of Molecules and Agro-input Products (Fungicides / Insecticides / Herbicides / IGR's/PGR'S / Micronutrients / Fertilizers / Bio-fertilizers, etc.): Per molecule / location / season (minimum 5 locations)	50,000

+GST @ 18% applicable for all the services

Rice Knowledge Management Portal



RKMP Mobile Apps





Thank you