

Significant Achievements

- ❖ Development of first MAS derived product “Improved Samba Mahsuri” which possesses 3 BB resistant genes *xa5*, *xa13* & *Xa21* conferring resistance to BLB of rice. The area under this variety has gone up to 90,000 hectares.
- ❖ Development of first medium slender hybrid “DRRH3” which is similar to Samba Mahsuri with 25-30% higher yield.
- ❖ IIRR has been recognized as one of the best DUS centers for maintaining a large reference collection of 629 varieties and for promotion of registration of rice varieties. On IIRR initiative, 71 extant, notified varieties of rice were IPR enabled with PPV&FRA granting registration certificates.
- ❖ IIRR has developed a rapid and reliable assay for assessment of purity of seed-lots of rice hybrids and CMS lines.
- ❖ Identification molecular markers for the major fertility restorer genes *Rf3* and *Rf4* for use in hybrid rice programme and for targeted improvement of elite restorer and maintainer lines for disease resistance.
- ❖ Identification of superior alleles of blast resistant genes *Pi54*, *Pita* and *Pib* from germplasm collections and fine mapping of novel resistant genes *Xa33* (for BB), *Gm3* & *Gm8* (for gall midge).
- ❖ Development of functional markers have been developed for major blast resistant gene *Pi54* and the major QTL controlling grain length, *Gs3*, for aroma (*BADEX 7-5*).
- ❖ Several candidate genes associated with yield, quality and nutrition have been identified and the outcome of transgenic research is visible with 3Bt transgenic rice events with *Cry1A* showing resistance to stem borer and 3 independent events with *DREB1A* gene in Samba Mahsuri background short listed for Bio-Safety Research Level (BRL-1) testing.
- ❖ Modification of leaf colour chart (LCC) by IIRR under SSNM and distribution of 2-3 lakhs of LCC to farming community has significantly reduced N application and recorded 5-16% higher yields over RDF.
- ❖ Development of suitable package for aerobic rice system which reduced the water requirement by 30-40% over continuous flooding.
- ❖ Seed priming by soaking paddy seed in water and shade drying for $2\frac{1}{2}$ to 3 hours, and repeating the cycle for 5-6 times before sowing improve germination, seedling vigor and establishment in direct sown rice.
- ❖ Regular application of Zinc sulphate @ 50 kg/ ha once in 3 seasons for normal soils and 100 kg initially for sodic soils is recommended for sustaining rice production in intensively cultivated rice soils.
- ❖ An efficient 8 row drum seeder has been designed and developed to save cost of labour and to enhance yield.
- ❖ Organic farming systems requires 4-8 crop cycles to stabilize productivity and improvement of physical and biological properties of soil.

- ❖ A number of donors like Velluthacheera, Banglei, Aganni, ADR 52, Pandi, Chennellu *etc.* with proven multiple resistance to gall midge, BPH and WBPH have been identified. Utilizing these donors, multiple resistant varieties have been developed.
- ❖ Identification of Effective ecofriendly insecticides such as granular formulations of carbofuran, chlorantrinirole and spray formulations of chlorpyrifos, ethofenprox, cartap hydrochloride, fipronil, imidacloprid, buprofezin and pymetrozine.
- ❖ Pheromone mediated monitoring (8 traps with 5 mg impregnated lures per hectare) as well as mass trapping (20 traps per hectare) of yellow stem borer was developed as a practical, cost effective and environmental friendly option for the farmers.
- ❖ Planting of one row of Pusa Basmati 1 (PB1), an aromatic cultivar as trap crop for every 9 rows of any main crop to manage stem borer damage with additional income from PB1 crop.
- ❖ Utilizing some of the resistant donors, several disease resistant varieties have been developed like Swarnadhan, Rasi, Sasyasree, Kasturi, VL Dhan 39, Himalaya, Sujatha, Co43 for blast and Nidhi, Vikramarya for rice tungro virus.
- ❖ A national facility of AICRIP MIS was developed and successfully hosted at the URL <http://www.aicrip-intranet.in> and links are available with IIRR.
- ❖ New products like Rice Riche Pain Relieving Gel, Rice Riche Moisturizing Lotion, Rice Riche Cream for Dry and Cracked heel and Rice based face scrub which keeps skin smooth, soft and moist are developed.
- ❖ Transfer of rice production technology is being successfully carried out through Transfer of technology and training (TTT) centre of IIRR by organizing as many as 242 training programmes during the last 25 years catering to the farmers and extension functionaries.
- ❖ DRR coordinates the Rice frontline demonstration which is organized every year all over the country demonstrating suitable elite cultivars and appropriate crop management technologies in farmers' fields in association with SAU's and state department of agriculture. Since 1990 to 2000, about 16404 FLDs of 1 acre each have been conducted benefitting rice 33100 farmers. From 2001- 02 to 2013-14, about 12150 FLDs of 1 hectare each have been conducted benefitting 30200 rice farmers.
- ❖ Rice Knowledge Management Portal (www.rkmp.co.in) is the largest repository of knowledge on any single crop (rice) across the globe. With 16000 pages of knowledge, 18 platforms, more than 50 videos, 6000 minutes of audio, "user specific" platforms like Service domain, Data repository, Diagnostic tools, E-Learning platforms *etc.*, this is one- stop solution for the rice related information.
- ❖ Aerobic rice developed by IIRR - DRR Dhan 41 (IET 22729) is the rice variety developed and released under aerobic ecology utilizing less water. It is identified for release in Bihar and Karnataka.
- ❖ The year 2015 witnessed several distinct innovations in terms of new varieties and technologies through AICRIP as well as multidisciplinary lead research programs.
- ❖ DRR Dhan 45, a high Zn variety; DRR Dhan 42, a drought tolerant and high yielding; DRR Dhan 43 and DRR Dhan 44 short duration varieties with moderate tolerance to biotic (BPH and blast) and abiotic stress (drought) were released.