

RAJENDRANAGAR

Rice section, Agricultural Research Institute

Professor Jayashankar Telangana State Agricultural University (PJTSAU)
Telangana State

The section was established in 1928 to develop suitable varieties for the Telangana region in particular, AP state in general and later strengthened with rice specialist in 1950 to develop varieties for kharif and rabi seasons. Later the section was strengthened through AICRIP during 1964-65 with 4 disciplines viz. Rice Breeding, Agronomy, Entomology and Pathology.



Major Achievements

Crop Improvement

Plant Breeding

- With the efforts of Breeders 15 promising varieties with high yield potential, resistant to pests and diseases suitable for Telangana region were developed and they became popular. In addition, cost effective crop production and plant protection technologies were developed and propagated for the benefit of farmers.

Varieties released

S. No.	Name	Parentage	Duration (days)	Characters	Year of release
1.	Hamsa	HR 12 / T (N)1	115	Tolerant to cold	1968
2.	Tellahamsa (RNR 10754)	HR 12 / T (N)1	110	Tolerant to cold	1971
3.	Rajendra (RNR 12392)	IJ 52 / T(N)1	110	Suitable for I.D.	1976
4.	Mahsuri	T65/Mayang Ebos 80 / Mayang Ebos 80	150	Fine grain	1972
5.	Saleema (RNR 29692)	GEB 24/Sigadis/IR8/ RNR 8102	135	Resistant to blast	1987
6.	Satya (RNR 1446)	T.Hamsa/Rasi	120	Tolerant to cold	1987
7.	Chandan (RNR 74802)	Sona/Manoharasali	145	Tolerant to BPH & Blast	1989
8.	Sagar Samba (RNR 52147)	IR 8/Siam 29/IR 8/ Ptb 21	150	Resistant to blast and GM	1993
9.	Rajavadlu (RNR 99377)	Rajendra / IR 30	135	Resistant to blast	1993
10.	Early Samba (RNR M7)	Mutant of Samba Mahsuri	135	Excellent cooking quality	1999
11.	Sumati (RNR 18833)	Chandan / Pak basmati	140	Scented	2002
12.	Taramati (RNR-23064)	Tellahamsa / BPT-5204	135	Tolerant to cold & salinity.	2009
13.	Sugandha Samba (RNR-2465)	RNR M7 / RNR-19994	135	MS, Aromatic	2010
14.	Krishna (RNR 2458)	Chandan/ BPT 5204	135	MS, Blast resistance	2012
15.	Shobhini (RNR 2354)	RNR M7 / RNR-19994	135	MS, Aromatic	2014
16.	RNR 15048*	MTU 1010/ JGL 3855	125	SL, Blast R	2015
17.	RNR 15038#	MTU 1010/ JGL 3855	135	SL, Blast R	

*Proposed for release in SVRC; # Variety in pipeline

- About 450-500 quintals of breeder seed of various varieties is being produced, each year and provided to public and private agencies.



Crop Production Technologies

- Fertilizer dose of 120-60-50 kg NPK and 50 kg Zn ha⁻¹ was optimized for hybrids (DRRH-1 & KRH-2).
- Developed technology of direct seeding with 8 row seeder + herbicide application (Butachlor @ 1.0 kg a.i. ha⁻¹ at 7-8 DAS) + one hand weeding and application of 120-60-30 NPK ha⁻¹ and 50 kg Zn ha⁻¹ found effective over broadcasting of seed @ 100 kg ha⁻¹.
- Pre-emergence application of Butachlor + Safener @ 1.5 kg a.i. ha⁻¹ at 4-5 DAT was found to be cheaper than manual weeding. The same combination @ 1.0 kg a.i. ha⁻¹ at 10 DAS was effective under direct seeding in puddled soil.
- In situ incorporation of dhaincha benefited rice crop as well as following rabi maize, saving 20-30 kg N ha⁻¹ and green manuring + 50% RDF was on par with 100% RDF.
- Covering nursery beds with polythene sheet during night time at 2 feet height protected nurseries from cold injury in rabi season.
- Developed organic farming package for rice.
- On farm trial on selective mechanization for enhancing the production and profitability of rice cultivation revealed that maximum grain yield was obtained with use of Kuboto transplanter followed by SRI method of cultivation compared to Yanji transplanter and farmers method.
- Transplanting of 15 days old seedlings and pre-emergence application of

butachlor @ 1.50 a.i. ha⁻¹ / anilophos 0.6 kg a.i. ha⁻¹ at 5 DAT + one hand weeding or 2 times cono-weeder at 10, 20 days after transplanting was recommended.

- Three row power operated weeder was found suitable for weeding in rice, resulting in 10% higher yield.
- Medium duration varieties (MTU 1010) and hybrids (KRH 2, PA 6291 and PA 6444) realized higher yields under rice-wheat cropping system. However, early varieties will have the advantage of facilitating timely sowing of wheat.

Crop Protection Technologies

- Donors viz., ARC 5984, ARC 6650, BM 71, MTU 4870, MTU 1001, MTU 1071, MTU 1010, MTU 1064, MTU 1075 for BPH; Siam 29, PTB 21, Vibhava, JGL 1798, Kavya, JGL 13595, JGL 11690, WGL 32100, WGL 14, RNR 19994 for gall midge; Sigadis, Tetep, IR 72, NLR 34449, Mandya Vijaya, NLR 145, IR 64 for blast; RNR 19994, Pakistan Basmati, Pusa Basmati, Kalanamak, Chittimutyalu, Badshabhog, Sumati, Vasumati, Pusa 1121, Ranbir Basmati, Yamini for scent; HR 12, IET 9994, IR 64, Tellahamsa, Rajendra, Erramallelu for cold and BPT 5204, WGL 14, WGL 32100, JGL 384, JGL 1798, RNR M7, Chandan, Mahsuri, White Ponni, PKV Sona for quality were identified.
- Technique of spraying twice (panicle emergence and milky stage) with monocrotophos @ 1.6 ml or carbaryl @ 3 g/lit. of water from periphery to the centre of the field was developed for the management of gundhi bug.
- Application of carbofuran 3 G @ 1.5 kg a.i. ha⁻¹ at 5 days before pulling the nursery was identified as an alternative technique to seedling root dip with chlorpyrifos.
- Developed comprehensive scale for screening against panicle mite, *Steneotarsonemus spinki*.
- Generation of rice cultivation system based insect pest information to evolve suitable protection package is under progress.
- A new combination of Spiromecifen @ 1ml + Propiconazole @ 1ml/l of water resulted in reduced incidence of panicle mite / grain discolouration.
- Effective components of IPM in rice viz., dry seed treatment with carbendazim @ 3 g/kg seed; resistant variety; deep summer ploughing; carbofuran 3 G @ 1.5 kg a.i. ha⁻¹ nursery at 5 days before pulling; formation of alley ways; need based plant protection, release of *Trichogramma* sp., pheromone traps @ 20/ha for yellow stem borer were established.
- Protective spraying of Fenoxanil + Isoprothiolane combination (RIL 013/F1) @ 2.0 ml/l twice at 15 days interval during maximum tillering to panicle initiation was effective against leaf blast and neck blast.