

1. Name of the University / Department under which the centre is functioning:

Acharya N.G. Ranga Agricultural University.

2. Name of the centre with postal address, tel. & fax e-mail:

Rice Section, Agricultural Research Institute, Rajendranagar, Hyderabad-500030.

Telephone No. 040-24015817, Fax : 040-24015817

3. Name of the person in-charge ID & mobile phone No. :

Dr. G. Rama Subba Reddy, Principal Scientist (Agronomy) & Head, Rice Section, ARI, Rajendranagar, Hyderabad-30. Mobile No. 9989825323

4. Next contact person with e-mail ID & mobile phone No.:

Dr. T. Ratna Sudhakar, Principal Scientist (Entomology)

e-mail : ratnasudhakart @ yahoo.com

5. Year of establishment as AICRIP centre:

The section was established in 1928 to develop suitable varieties for the Telangana region in particular 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.

6. List of Scientists currently on AICRIP roll – discipline wise :

1. Dr. G. Rama Subba Reddy, Principal Scientist (Agronomy)

2. Dr. T. Ratna Sudhakar, Principal Scientist (Entomology)

3. Dr. G. Uma Devi, Senior Scientist (Plant Pathology)

4. Dr. Ch. Surender Raju, Senior Scientist (Breeding)

7. List of other AICRIP staff:

1. Smt. K. Susheela, Sr. Assistant

2. Sri. M. Narsing Rao, Agril. Extension Officer

3. Sri. V. Bikshapathi, Agril. Extension Officer

4. Sri. S. Murthy Rao, Agril. Extension Officer

5. Sri. M. Sreeramulu, Agril. Extension Officer

6. Sri. D. Buchamaiah, Tractor cum Jeep Driver

8. Region of the state represented by the centre : Southern Telegana Zone of Andhra Pradesh.

9. Rice ecologies represented :

- Shallow lands, medium black to light soils under tanks
- Shallow light soils under open wells/ bore wells
- Shallow medium black soils under minor lift irrigation projects
- Saline/ problem soils under tanks/wells

10. Districts of the state covered :

- Ranga Reddy
- Mahaboobnagar
- Nalgonda

11. Rice area in each of these districts – ecology wise :

District / Ecology	Normal (ha)	Area covered Kharif, 07 (ha)
Ranga Reddy	21134	18018
Mahaboobnagar	69934	75150
Nalgonda	118945	160000

12. Normal rain fall :

The normal rainfall of the zone is 700 – 900 mm but the distribution is not normal. Delayed monsoon with 1-2 intermittent prolonged dry spell is also a common phenomenon of the zone.

13. Soil type & fertility status:

Light, loamy to sandy loam mixed red soils; medium clay (Alfisols) and black soils (vertisols) calcareous soils (free calcium carbonate > 10 % in deeper layers) in parts of Nalgonda and Mahaboobnagar districts. Saline soils, in patches, are common in Ranga Reddy, Nalgonda and Mahaboobnagar districts. The soils are low in available N (< 280 kg/ha⁻¹), high in available P₂O₅ (> 60 kg P₂O₅/ha⁻¹) and medium available K₂O (145 – 340 kg/ha⁻¹) and low to very low in available sulphur (< 10 ppm) and low in organic carbon.

14. Popular rice varieties :

Samba mahsuri is the most popular variety of the zone. The other popular varieties in the zone are Tellahamsa, Cotton dora sannalu, Satya, Early Samba, Sumathi, IR 64, JGL 384, JGL 1798, Rajendra and Erramallelu.

15. Major production constraints:

- Due to late onset of monsoon and delayed water availability from tanks and wells, Planting of over aged seedlings and delayed planting leads to poor growth and occurrence of pests and diseases.
- Intermittent dry spells of 10-20, days duration 2-3 times during crop period.
- Non-availability of good quality seed of choice variety.
- Lack of high yielding drought resistant rice varieties for cultivation in rainfed black soils.
- Imbalanced use of fertilizers, i.e., applying more N and no application of potash and zinc.
- Occurrence of blast disease during *rabi* season especially under Musi river irrigation.
- Sterility due to cold injury is the another common feature in the zone particularly with the crop planted late water flowers during November month.
- Incidence of stemborer, leaf folder and gallmidge under late planting situations.

16. Major contribution of the centre in terms of varieties / technologies developed :

Varieties released :

é First cold tolerant variety 'Tellahamsa' released from this section during 1968 still occupies larger areas of the state and also other parts of the country.

é First mutant variety 'Early Samba' (RNR M7) released from this section during 1999 is popular in parts of Rayalaseema A.P. and part of Karnataka.

é First scented variety of the state 'Sumathi' released from this section during 2002. It is also identified as a donor in breeding programme for selection of scented rice varieties of our country.

é The other varieties released by Rice Section are given below.

<i>Year</i>	<i>Name of the Variety released</i>	<i>Duration (days)</i>
1968	Tellahamsa	120
1971	Hamsa	120
1972	Mahsuri	140-150

1976	Rajendra	105 + 10
1987	Satya	120-125
1987	Saleema	130-135
1989	Chandan	145-150
1993	Sagar Samba	145-150
1993	Rajavadlu	130-145
1999	Early Samba	135
2002	Sumathi	140

è Production Technologies :

- Rationalization of fertilizer dose for hybrid rice.
 - 120-60-50 kg NPK/ha & 20 kg Zn /ha is optimum and economical
 - 75% 'K' as basal and 25% at panicle initiation stage reduced sterility
 - Yield potential upto 9.0 – 10.0 t/ha (DRRH-1 & KRH-2)

è Direct seeding :

- Sowing of sprouted seed of 60 kg/ha in lines using 8 row seeder at 20 cm distance + herbicide application (Butachlor @ 1.0 kg a.i./ha at 7-8 DAS) + spot hand weeding and application of fertilizer @ 120-60-30 kg, NPK/ha and 50 kg Zn/ha gave maximum yields.
- This has proved superior than simple broadcasting of seed @ 100 kg/ha.
- Suitable for tail end areas of canal and tank fed irrigation areas.

è Low cost input technology:

- Seedling root dip with Azotobactor + application of 60 kg N/ha yielded 5.12 t/ha at par with 120 kg N/ha (5.6 t/ha).
- Encouraging results with PSB which is cheaper and reduce inorganic fertilizers.

è Weed management :

- Pre-emergence application of Butachlor + Safner @ 1.5 kg a.i./ha at 4-5 DAT is cheaper than hand weeding.
- Butachlor + Safener @ 1.0 kg a.i./ha at 10 DAS is effective under direct seeding in puddled soil.

è Contingency plan for rice based cropping system :

- Direct seeding with short duration varieties gave yield advantage over planting of aged seedlings of long duration varieties like BPT-5204.

è I.N.M. :

- *In situ* incorporation of dhaincha benefited rice crop and following rabi maize.
- It saved about 20-30 kg N/ha.

- GM + 50% RFD is equal to 100% RFD.

è Identification of economic cropping systems :

The following economic cropping systems were identified by this centre and few are popular in the zone. Particulars are given below.

<u>Cropping system</u>	<u>Returns (Rs.)</u>
Rice – Cabbage	33,569-00
Rice – Tomato	29,684-00
Rice – Maize	19,094-00
Rice – Groundnut	18,194-00
Rice – Rice	17,430-00

è Organic Farming in rice :

Among various organic manures evaluated for their efficacy against insect pests. *In situ* incorporation of green manuring + 50% recommended 'N' gave sustainable yields in spite of damage caused due to different insect pests.

è Protection of winter nursery :

- Covering nursery bed with polythene sheet during night time at 2 height protect nursery from cold.

è Protection Technologies :

- Application of carbofuran 3 G @ 1.5 kg a.i./ha at 5 days before pulling (DBP) the nursery protects crop from insect pests upto 25-30 days in main field. This is the best alternative to seedling root dip technology with chlorpyrifos @ 0.02% for 12 hrs. This practice is adopted by the majority of the farmers of the zone and also state of A.P.

è Management of Gundhi bug :

- Research on Gundhi bug was initiated, first time in the A.P.
- Hot spot locations identified in A.P. and also the periodicity of the damage of gundhi bug.
- Spraying twice once at panicle emerging stage, and another at milky grain hardening stage with endosulfan @ 2.0 ml or monocrotophos 1.6 ml or carbaryl 3 g/lit. of water or endosulfan dust @ 7-10 kg/Ac. is recommended.

è Integrated Pest Management :

- Seed treatment with carbandezium @ 4 G/kg seed; selection of resistant variety; deep summer ploughing, carbofuran 3 G @ 1.5 kg a.i./ha nursery at 5 DBP, formation of alleys; need based plant protection, release of *Trichogramma Sp.*, pheromone traps @ 4/acre established higher cost:benefit ratio (CBR) than farmers practice.

è Testing of new molecules / insecticide :

- Evaluation of new molecules / insecticides against insect pests are being taken up under part of AICRIP programme. This helps in recommending the effective molecules against insect pests in the zone.

è Host Plant Resistance :

- Various cultures developed from this section were screened against insect pests and found that Chandan is tolerant to BPH; RNR 19994 is tolerant to GMB 1 and 3; Sagar Samba is tolerant to BPH and Rajavadlu to gundhi bug.

è IPM under Musi river bed areas :

- Rajavadlu and Saleema are suitable for Musi area.
- Need base application of fungicides tricyclazole @ 0.6 g or edephenphos @ 1.0 ml per liter of water to manage blast disease.

è Evaluation of fungicides / new molecules / botanicals :

- Tricyclazole @ 0.6 g, benomyl @ 1.0g /litre are effective to blast disease.
- New molecules are being tested.
- Neem based formulations are effective under low disease pressure conditions.

17. Any other information:

The following are the Future Research Thrust Areas of this centre :

Breeding :

- Developing varieties sustainable under limited water supply conditions for tail ends of canal system, well and tank bed areas.
- To continue programme on developing grain quality rices of short and medium duration.
- To continue programme on developing cold tolerant varieties better than Tella Hamsa suitable for Telangana region.
- Improvement of locally existing scented rices in respect of yield potential and quality.
- To generate high yielding and fine grain rice varieties with multiple pest and disease resistant.
- Improvement of locally available rainfed rices.

Agronomy :

- Management practices for varieties suitable under limited water supply condition for tail ends of canal system, well and tank fed areas.
- Standardization of package of practices for SRI cultivation.
- Testing the feasibility of bio-fertilizers like PSB in rice culture.

Plant Protection:

- To generate protection technologies to suit the water stress conditions of the zone.
- Identification of multiple resistance material against pests and diseases.
- Identification of low cost protection technologies involving plant organic materials.