CHIPLIMA (SAMBALPUR)

Orissa University of Agriculture and Technology
Odisha

AICRIP center at this location was initiated in 1971 under OUAT, Chiplima with the major mandate of breeding medium duration varieties for irrigated ecosystem. It was also a hot spot location for gall midge.

Brief summary of major contributions

Crop Improvement

Varieties developed and released from this center:

Variety	IET No.	Parentage	Year of Release (Noti-fication)	Average Yield (Q/Ha)	Ecosystem
Lalat (ORS 26-2014-4)	9947	OBS 677/IR 2071-625//Vikram/W1263	1988 (1989)	42.00	Irrigated Mid -Early
Meher (ORS 26-2008-4)	9849	OBS 677/ IR 2071-625//Vikram/W1263	1992 (1994)	40.00	Irrigated Medium
Pratikshya (ORS 201-5)	15191	Swarna/IR-64	2005 (2006)	50.00	Irrigated Medium
Siddhanta (ORS 102-4)	15296	Jajati/Annapurna	2005 (2006)	30.00	Rainfed Upland

- **Suitable rice varieties identified for different ecosystems: A**fter evaluation at AICRIP, Chiplima, the following high yielding varieties were identified and released by OUAT, for cultivation in different ecosystems in the West Central Table Land Zone of Odisha.

Upland	Khandagiri, Udayagiri.
Medium Land	Bhoi, Gajapati, Konark, Surendra, Kharavela and Sebati
Low land	Mahanadi, Indravati, Prachi and Ramchandi

Hybrid Rice Evaluation: Hybrid rice varieties like BS 025 (6155 kg/ha), Ajaya (4778 kg/ha), PHB 71 (4917 kg/ha) and Rajlaxmi (5130 kg/ha) have been found suitable for West Central Table Land Zone based on their performance.

Local Land Races Evaluation: Forty seven local land races of rice collected from the districts of Bargarh and Sonepur have been characterized.

Germplasm Maintenance: One hundred forty nine non-aromatic and seventy eight aromatic accessions of germplasm are being maintained.

Crop Production

Agronomy

The following herbicides were found effective for weed management in different ecosystems:

- Transplanted rice: Butachlor 50EC @1.0 kg a.i. /ha (800ml/acre) or Butachlor 50EC + 2, 4-D PE 32 EC@ (1.0+0.4) kg a.i/ ha (800ml +500ml/acre) or Butachlor +Almix (750 ml +20gms / acre).
- *Upland condition:* Pendimethalin 30EC @ 1kg a.i. / ha at 7days after rice emergence followed by 2, 4-D Na salt 80 WP @ 0.6 kg a.i./ha at 25 days.
- Direct sown puddled rice: Mixture of Butachlor + Safener @ 1.5 kg a.i. /ha at 3 days after sowing (DAS) is the most effective.

Intercropping in rice under rainfed upland condition: Out of three rice groundnut combinations (2:1, 3:1 and 4:1), intercropping of rice with groundnut (Var. OG 52-1) in 2:1 ratio was superior in land equivalent ratio (LER) and net returns giving maximum profit than sowing of sole rice (Var. Parijat).

- Sowing of sprouted seeds of rice by using 8-row drum seeder just one day after puddling, use of herbicide, Butachlor at 4-6 days after sowing and one hand weeding at maximum tillering stage is the best practice for direct seeding to get higher yield (4.7 t/ha).
- Application of NPK @ 40:20:20kg/ha (50% of the recommended dose) along with F.Y.M. @ 5 t/ha recorded maximum grain yield (2.6 t/ha) in rainfed upland rice.

- Basal application of Sulphur Coated Urea (SCU) or root zone placement of Urea Super Granules (USG) @ 87 kg N/ha recorded superior grain yield and was found to be remunerative than split application of prilled urea.

Package of practices for hybrid rice: To get higher yield from hybrid rice varieties viz., DRRH – 1, PA – 6201, PHB-71 and PAC-831, practices to be followed include seed density @ 10-20 g/m^2 of nursery, use of 2 seedlings/hill, timely planting with 120:60:60 kg NPK/ha + 25kg $ZnSO_4$/ha, application of 50% of N as basal, 25% N at tillering and 25% N at booting stage as prilled urea.

Crop Protection

Entomology

- Among the botanicals tested against rice pests, neem products like Rakshak @0.05% or Neemazol @0.3% or Econeem @0.5% effectively controlled plant hoppers. Pheromone traps @ 8/ac (1 for 500 m^2) can be used to reduce stem borer attack in rice field.
- Application of Fipronil 0.3G @ 15 kg/ha or Isazophos 3G @ 33.3 kg/ha or Carbofuran 3G @ 33 kg/ha 5 days before pulling seedlings control early stage pests like stem borer, gall midge, whorl maggot in transplanted rice.
- Among the new molecules tested Flubendiamide 20 WDG @ 175 g/ha is effective against stem borer. Dinotefuron 20 SG @ 200 g/ha against plant hoppers. The combination product (Flubendiamide+Buprofezin) 20 SC @ 875ml/ha was best against plant hoppers and stem borer. Cartap hydrochloride 50SP @ 1gm/l and Rynaxypyr 20 SC @ 0.3 ml/l were very effective against stem borer, leaf folder and case worm insects.
- Spinosad 45 SC (1ml/l)+ Carpopramid (0.25 g/l) and Buprofezin 20 +Acephate 50%WP in combination with Tricyclazole 75 WP were effective against stem borer and blast without any phytotoxicity. Imidacloprid 200 SL (0.25ml/l)+Propiconazole 25 EC (1ml/l); Imidacloprid 200 SL (0.25ml/l)+Validamycin 3L (2.5ml/l); Thiamethoxam 25 WG (0.2g/l) + Propiconazole 25 EC (1ml/l); Thiamethoxam 25 WG (0.2g/l) + Validamycin 3L (2.5ml/l) were all effective against brown plant hopper and sheath blight on rice without any phytotoxicity.
- The IPM module developed for this zone includes summer ploughing during May, use of gall midge resistant variety like lalat or pratikshya and transplanting within 15th July, nursery application of Furadan 3G @1 kg a.i./ha or Cartap 4G @ 1 kg a.i./ha 5 days before pulling the seedlings, use of pheromone trap @ 8/ac, application of conventional pesticides like chlorpyriphos or monocrotophos @ 500 ml/ha against stem borer, gall midge, leaf folder once or twice during vegetative period depending up on the ETL and need based application of Ethofenprox (500ml/ha) or Imidacloprid (125 ml/ha) or Buprofezin 25 EC @ 500 ml/ha against plant hoppers at late vegetative/reproductive stage.

- Seed treatment with Bavistin or Chlorothalonil followed by foliar spraying with Bavistin 50 WP @ 1g/l during active tillering and panicle initiation stages of the crop were recommended against leaf and neck blast, brown spot, sheath rot and sheath blight diseases for better grain yield.
- Use of Plantomycin, Carbendazim and Copper oxychloride mixture in proportion of 1:1:2.5 g/l was recommended against disease complex of blast, BLB & sheath rot. In BLB endemic pockets, use of resistant or tolerant varieties like daya, pratap, ananga, bhuban & lalat were recommended.
- Application of Tricyclazole (Beam 75 WP) @ 0.6g/l, thrice at maximum tillering, panicle initiation & milking stage was found effective against leaf and neck blast in rice. Application of combination of granular formulations of Coratop 5 G or Kitazin 17 G @ 40kg/ha at active tillering stage followed by one spraying with Bavistin @ 1g/l at boot leaf stage minimized the leaf & neck blast intensity in the main field without any seed treatment or nursery treatment.
- Application of Propiconazole (Tilt 25 EC) @ 1ml/l or Chlorothalonil 40 SC @ 2ml/l or ATEMI 50 SL @ 2ml/l of water at boot leaf stage twice at 15 days interval controlled the initial disease infection of false smut.
- Seed dressing with Fongorene 50 WP @ 4g/kg seed and foliar spraying of Fongorene on appearance of blast disease, at tillering and boot leaf stage was most effective in controlling leaf and neck blast.
- Rovral 50 WP @ 1g/l at initial sheath blight appearance or nursery application of Validacin 3L @ 2ml/l, 3 days prior to uprooting or application of Chlorothalonil 75 WP @ 1g/l proved effective in controlling sheath blight disease.
- Four spraying of RIL-FA 200 SC (Kresoxim methyl) @ 1.25 ml or Amistor 25 SC (Azoxystrobin) @ 1ml at 10-12 days interval starting from first appearance of blast disease effectively controlled leaf and neck blast with 6-30% higher yield. Two sprayings of Amistor 25 SC (Azoxystrobin) @ 1ml or Flusilazole @ 0.5 ml /l at appearance of sheath blight and 10 days after could effectively control sheath blight disease with 14-16% higher yield.
- A ready mix formulation of Flubendiamide 3.5 % + Hexaconazole 5 % WG (RIL -060/F_1 8.5 WG) @ 2g/l was found compatible and equally effective to control sheath blight, stem borer and leaf folder. Trifloxystrobin 25%+Tebuconazole 50% (Nativo75WG) @ 0.4g/l were found effective for both leaf blast & sheath blight.