

KARJAT

Regional Agricultural Research Station Maharashtra

Regional Agricultural Research Station, Karjat is one of the pioneer rice research station in Maharashtra which was established in 1919 by the Government of Bombay with a view to develop an improved strains from existing tall varieties of Thane and Raigad.



Major contributions to AICRIP

Crop Improvement

Plant Breeding

- i) Breeding material generated : ~1716 crosses
- ii) Promising lines identified : 555
- iii) Attempts on biotic & abiotic stress tolerance breeding : FL 478 x Valai, FL 478 x KJT 4
- iv) AICRIP nominations : 62

Varieties/ Hybrids developed & released

Sahyadri 2 (Rice hybrid) : 2004

An early duration (115-120 days) rice hybrid,

Average grain yield 6.0 – 6.5 t/ha.

Long slender grain type

High milling recovery (70.2%)

Resistant to leaf blast, neck blast, brown spot and rice tungro virus.

Identified for commercial cultivation in five states of the country *viz.*, Punjab, Haryana, UP, WB and Maharashtra, by the CVRC, during 2008.



Karjat-5 : (2005)

Mid-late duration (125-130 days)

Long bold grain type

15-20% grain yield advantage over check Jaya.

Average grain yield 50-55 q/ha.

Multiple resistance to major diseases and pests.



Karjat-6 : (2005)

Mid-late duration (125-130 days)

Short slender grain type

High milling percent (75.8%) & HRR 70.2%

Average grain yield - 40-45 q/ha.

Moderately resistant reaction to BLB



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Sahyadri 3 (Rice hybrid) : 2005

An early duration (125-130 days) rice hybrid.

Average grain yield 6.5 – 7.5 t/ha.

Long slender grain type.

Resistant to neck blast, moderately resistant to BLB, brown spot, sheath blight and sheath rot.

High milling recovery (74.5%), HRR (60.2%)



Sahyadri 3

Karjat-7 : 2007

Early duration (115-120 days),
Long slender grain type, grain chalkiness
absent.
15-20% grain yield advantage over check
Ratna.
Average grain yield 45-50 q/ha.
Moderately resistant reaction to major
diseases and pests.



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Karjat 184 : 2008

Early duration (100-105 days), dwarf
stature,
Medium slender grain.
35-40q/ha average grain yield.
Moderately resistant to leaf blast and BLB
and tolerant to BPH and WBPH.



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Sahyadri 4 (Rice hybrid) : 2008

An early duration (115-120 days) rice
hybrid.
Average grain yield 5.5–6.0
t/ha.
Long slender grain type,
Resistant to leaf blast, neck blast, brown
spot and tungro Virus.
Identified for commercial cultivation in
five states of the country. viz., Punjab,
Haryana, UP, WB and Mah, by the CVRC



Sahyadri- 4

Karjat-8 : 2012

Late duration - 140 to 145 days
Short slender, translucent grain type.
Recorded 17.31 % increased grain yield
over check.
Average grain yield - 47.24 q/ha.
Moderately resistant to leaf blast, neck
blast, BLB and tolerant to BPH, WBPH
and gall midge.



Karjat - 9:(2014)

Medium duration- 125 to 130 days of maturity.

Medium slender, translucent grain.

Moderately resistant to leaf blast, neck blast, BLB and tolerant to BPH, WBPH and stem borer.

Recommended by Joint Agrosco for pre-release in Konkan and Vidarbha region of Maharashtra state.



- i) Varieties/Hybrids registered with NBPGR/PPV&FRA : KJT CMS 1A, KJT CMS 2A, KJT CMS 3A, KJT CMS 4A, KJT CMS 5A, KJT CMS 6A and KJT CMS 7A
- ii) Seed production activities (including maintenance breeding, BSP as per DAC & other indents) : 2542.91 q (since 2001)
- iii) Germplasm available : 779
- iv) Licensing and commercialization of technologies, popular varieties (both traditional and high yielding rice varieties) : 9
- v) Speciality rices if any : BM 4 - is a mutant of land race Botvel having slight flavour is good for preparing 'Modaks' on auspicious occasions

Crop Production

Agronomy

- Integrated nutrient management study in rice-maize cropping system consistently produced higher yield of rice and maize. Application of 5 t glyricidia green leaves /ha along with 150 % highest RFD to *kharif* rice (KJT-3) and to *rabi* maize (PMZ-103) gave the highest net returns.
- In the experiment to develop appropriate techniques for growing direct seeded rice in puddled condition, it was observed that maximum net returns of Rs.10438/ha were realized with the sowing of sprouted seed with 8 row drum seeder same day after final puddling +RFD +one hand weeding and herbicide application, followed by line transplanting +RFD and herbicide application (Rs.10278/ha) whereas saving in labour cost was 13.30% to 16.51% as compared to line transplanting.

- Methods of crop establishment through SRI technique was found promising but it remained at par with integrated crop management (ICM) and paired row transplanting but superior over direct sowing and farmers practice of random transplanting with 6-7 seedlings per hill.
- 90 experiments on various agronomical aspects were conducted. In nitrogen response studies, 44 experiments were conducted comprising 410 rice cultures of different durations. Total 89 rice cultures showed better response to 100 kg nitrogen /ha.
- Four experiments conducted on rice based cropping system under INM revealed that rice cowpea cropping system with 100% RFD +5t glyricidia green leaf manuring/ha appeared to be highly economical.
- Development of appropriate technique in direct seeded rice in puddling with RFD + one hand weeding and herbicide application was found to be a better alternative to line transplanting with RFD and herbicide application under upland soil condition.
- In weed management, Bensulfuron methyl, Trisulfuron + Pretilachlor, Penoxsulam and Butachlor weedicides were found to be comparable with integrated crop management (ICM) but it appeared superior to direct sowing and farmers practice of random transplanting with 6-7 seedlings per hill. Different genotypes (hybrids and HYV) under SRI and ICM practices, hybrids showed better performance in yield over high yielding varieties.
- Package of practices for optimum seedling per hill for hybrid rice was recommended and popularized among the farmers in region.
- Drum seed use in planting of rice crop was popularized in the region by conducting large scale demonstrations on the farmer's field. This technology was benefited to the farmers for labour saving.

Crop Protection

Entomology

- Cultures viz., IR67431-CN9-2, OR2093-4, OR2060-9, OR2077-5, RRU96-30, OR2089-4, OR1659-3, CNB1259-52-1, RPBIO 197, CR2056-1, NDR 9930028 accessions viz., 2261, 2997, 4063 IET 18632, IET 18666, IET 20666, IET 20668 accession viz., IC No. 324094, 334173, 346905 and 2261, 328 2997, 3167 and 4063 are highly promising against stem borer.
- Cultures viz., ARC 13516, ARC 14378, ARC 13564 and PTB 33 found to be promising against gundhi bug.
- Insecticides viz., Imidacloprid 200 SL@ 25g a.i/ha., Ethiprole 10 SC@ 50g a.i/ha., Profenophos 50 EC@ 500g a.i/ha., PI 0111@ 25g a.i/ha., Chlorpyrifos 20

EC @ 500g a.i./ha., Chlorpyrifos (50%)+ Chlorpyrifos (5%) 55 EC@ 344g a.i./ha., Flubendiamide 36% + Fipronil 30% 66WG @ 33 g.a.i./ha. Monocrotophos 36 WSC @ 500 g.a.i./ha, E2 Y 45 20 SC @ 40 g.a.i./ha. Acephate 75 SP @ 667 g.a.i./ha found to be highly effective against stem borer.

- A low cost eco-friendly integrated approach involving cultivation of stem borer tolerant variety 'Ratna', use of 20 pheromone traps/ha and need based application of insecticides *viz.* Carbofuran 16.5 kg/ha or Cartap hydrochloride 300 g.a.i./ha appeared to be effective in reducing stem borer infestation.
- Trap crop technology (planting of one line of Pusa basmati after every 9 lines of main crop) for the management of yellow stem borer was demonstrated on the research field and farmer's field in the region and it is popularized among the farmers.
- Eco-friendly, low cost Integrated Pest Management special model was popularized among the farmers by conducting large scale demonstrations in the region.

Plant Pathology

- Total 9428 rice entries were screened against resistance to bacterial leaf blight. Ajaya, Karjat-1, HR-12 have shown resistance to bacterial leaf blight and these entries have been used as donor parents in rice improvement programme.
- Total 10607 rice entries were screened against resistance to leaf blast disease of rice. Rasi, IR-36, Indrayani, Karjat-1 found resistant to leaf blast disease and these have been recommended as donors in rice improvement programme.
- Foliar spray of fungicide Kocide DF 54 (35% metallic copper) @ 3g l was found to be effective in controlling bacterial leaf blight of rice.