

REWA

Jawaharlal Nehru Krishi Vishwa Vidyalaya Madhya Pradesh

In January 1968 All India Coordinated Rice Improvement Project was sanctioned for Madhya Pradesh with its lead centre at Raipur (Now under IGKVV) and sub center Rewa for rainfed rice research and voluntary center at Jabalpur. Later, Rewa under Jawaharlal Nehru Krishi Vishwa vidyalaya has become main center for upland rainfed rice research.



Major contributions to AICRIP

Crop Improvement

Varieties/ Hybrids released/ identified

Name of the variety	IET No.	Year of release	Flowering duration	Grain type	Avg. yield (q/ ha)
JR503	16783	2005	98	LS	40
JR201	13832	2005	76	LS	35
JR 3-45	13623	2001	90	LS	42
JRH 4	19496	2007	85	MS	70
JRH5	19497	2007	82	MS	70
JRH8	20414	2009	80	MS	70

- 21 Breeding lines nominated from AICRIP Rewa.
- 900 germplasm lines collected and being maintained for drought tolerance and quality lines

Rice hybrids developed by JNKVV



JRH-4

Duration : 100-105 days

Yield : 70-75 q/ha

Specific features:

Early maturing

Suitable for double cropping under rain fed situation (Rice-Gram or Rice-Oilseed)

Grain long bold

Most suitable for rice fallow area of MP, Chhattisgarh and Jharkhand.

JRH-5

Duration : 100 days

Yield : 70-75 q/ha

Specific features:

Early maturing

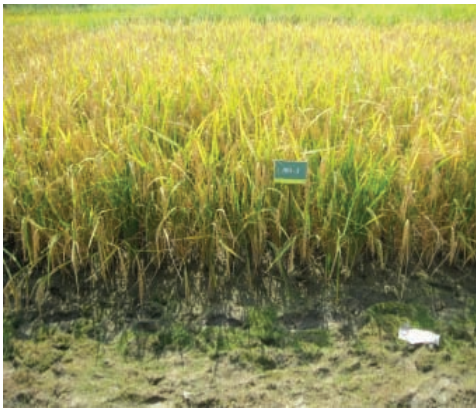
Suitable for double cropping under rain fed situation (Rice-Gram or Rice-Oilseed)

Shown excellent performance in rice fallow chickpea programme

Drought tolerant

Grain long bold

Most suitable for rice fallow area of MP, Chhattisgarh and Jharkhand.



JRH-8

Duration : 100-105 days

Yield : 65-70 q/ha

Specific Features:

Early maturing

Suitable for double cropping under rain fed situation (Rice-Gram or Rice-Oilseed)

Identified at national level for suitability under saline and rain fed situation

Shown excellent performance in rice fallow chickpea programme

Drought tolerant

Grain medium slender

Crop Production

Agronomy

- Yield maximization of rice under irrigated conditions- Increasing the fertilizer by 33% and plant stand by 33% to get maximum yield for which a spacing of 15 X 10 cm and fertilizer dose of 120: 80: 50 NPK Kg/ha was recommended.
- Weed control for direct sown rice under rain fed upland ecosystem -Application of Anilophos 30 EC 0.6 kg ai/ha followed by 2,4-D 80 (WP) produced maximum numerical grain yield 22.80 q/ha over unweeded check (9.20 q/ha.). Two hand weedings and herbicide application were equally effective.
- Techniques for transplanting under puddled conditions - Transplanting in lines, herbicides Butachlor application at 4-6 DAT, recommended fertilizer (120:60:40 NPK kg/ha) + Zinc 20 kg/ha produced maximum grain yield 40.98 q/ha over other local methods of sowing.

- Development of suitable agro techniques for aerobic rice in upland conditions - Among the management practices N75% .PE + Rice : Dhaincha (1:1) + 2,4 D Na salt application (0.80kg a.l./ha) at 25-30 DAS was found significantly superior for the management of weeds and increasing the grain yield.
- Integrated weed management in aerobic rice: Application of Pendimethalin or Butachlor at 3-4 DAS + Bispyribac sodium at 15-20 DAS proved next best alternative to need based hand weeding.
- Studies on suitable varieties and optimum date of sowing for aerobic rice- 20th June was found to be suitable for aerobic rice at Rewa center. Among the rice varieties tested for performance under aerobic condition PHB -71, BH - 21, Sahbhagi and Govinda yield was found suitable.
- Cultural management - Line sowing with mechanical row seeder (60kg/ha) + FYM 5t/ha application 15days before sowing and recommended N: P: K. (N in 3 splits-50% after 15days +25% at active tillering + 25% at panicle initiation stage) and weed control with herbicide recorded an average grain yield of 35. q/ha.

Plant Physiology

- *Photothermic indexing study in rice genotypes*: Photo thermal and dark period requirement in terms of cumulative degree days and nycto period for vegetative , reproductive and ripening period with yield related variable and development indicator exhibited that the number of days to PI and grain filling reduced by 14 and 11 days, respectively in 26 days sowing. The mean early set yield was 254 g/m² and the difference in early -late set was 76 g/m².
- *Variation in CDD and CNP*: Cumulative solar radiation in photo period (CDD) and nycto period (CNP) is calculated that at PI stage the difference was 96 CDD between early and late sown sets irrespective of genotypes, while CNP was 39 in early and late sown sets. The cumulative degree stages CDD at GF was 1122 and 1220 with the difference of 98 in early and late sown sets. Thus, the photo period is required for dry matter production and Nycto period required for flowering process.
- *Moisture stress study*: Higher grain yield under moisture stress conditions were found in IET-21638, IET-21629 IET-21602, IET 20708, IET 21626 and IET 21625 IET 20710, 21076, 21106, 21119, 21625, 21626 IET-20859, IET-22038 and Sahbagidhan. These entries were relatively tolerant to drought, could be promoted for rainfed situations.

- Heat tolerance of short duration elite rice cultures: A perusal of daily temperature data indicate that the crop was exposed to higher temperature during the month of September and October which corresponded to the anthesis and grain filling stage of the crop. Several tolerant genotypes viz., IET 20132, IET 20134 and PSD-3 hybrid, IET 20907, 20893, 20924, 21009 and 21523, Varadan, PA-6444, IET, 21601, 21582 and KRH-2 were found to be efficient genotypes under high temperature with marginal reduction.
- Influence of Boron on spikelet fertility: Boron applied @ 0.4ppm at anthesis significantly increased grain yield by 9.6% in IET 22218, 21540, 22225 and 21519 and yield attributes along with biomass by increasing grain filling and reducing spikelet sterility.
- *Partitioning of dry matter under Upland condition*: Pre sowing wetting and drying during seed treatment in IET 13170, 13652 and IET 13943 had higher grain yield due to higher LAI (4.52-5.5) at flowering and CGR (3.8-4.2g/m²/day), PGR and stem reserve during GFP.
- *Characterization of sink capacity in hybrid rice*: KRH2 and Sahayadri had efficient dry matter partitioning (87.7 and 80.0%), HI (34.2 and 34.0%) and yield 76.3 and 71.8q/ha, respectively. Thus, these hybrids were found suitable for Kymore plateau region in Madhya Pradesh.

Crop Protection

Plant Pathology

- Evaluation of new fungicidal formulation against leaf blast: Among the tested new formulations, the superiority of fungi toxicity was recorded in Sivic 75 WP (3566 kg/ha⁻¹) followed by Tricyclazole (3533 kg/ha⁻¹) over untreated check. Nativo and Filia were found the best formulations and found on par with the tricyclazole formulations in checking the disease. Among the tested fungicides none was found comparable with Propiconazole 25EC (4063 kg/ha) over untreated check (3000kg/ha). Among the other tested fungicides evaluated, Metaminostrobin20SC @200gai/ha was found highly effective for checking the leaf blast infection and in increasing the grain yield (7040kg/ha) followed by Tricyclazole (Baan) (6467kg/ha) over untreated check (4840kg/ha).
- Evaluation of fungicides against location specific disease: Of the tested products, Contaf 5EC (ie 1 ml/l) was found significantly superior in increasing the grain yield and reducing the leaf blast severity (9.9%) and brown spot (12.6%) over untreated check.
- Evaluation of Botanicals against leaf blast of rice: Bio pesticides Wanis (@ 5ml/l) was found most promising in controlling the leaf blast and increasing the grain yield (3704kg/ha-1) followed by Neem gold & Achook over untreated check (2893 kg/ha) .

- *Control of false smut of rice:* Control of false smut of rice was studied against hybrid PA 6444 under natural epiphytotics. Among the tested fungicides, Kavach 75WP @2g/l, Kocide 10177WP@2g/l Result25EC @1ml/l and Saaf 75WP @1.5g/l were found highly effective.
- Evaluation of Bio agent *Pseudomonas fluorescens*) and its formulation against location specific diseases: Among the tested fungicides under study Tricyclazole was found highly effective for checking the leaf blast (25.3%) and in increasing the grain yield (65q/ha) followed by Hexaconazole 75WG (61qkg/ha) over untreated check (3146kg/ha). *Pseudomonas fluorescens* Pf1 liquid formulation was not comparable with fungicides. However, it was effective for controlling the leaf blast infection over untreated check.

Entomology

- Gundhi bug control: Percent grain damage brought out the superiority of carbofuran check insecticide (12.7 % grain damage) as compared to Chlorpyrifos granules (28.7 to 37.6 % grain damage). Among the spray formulations, monocrotophos check insecticide recorded the least grain damage (12 %) followed by ethiprole + imidacloprid (17.3 % grain damage) as compared untreated control (47.31 %). Application of Acetamiprid 0.4%+ Chlorpyrifos20EC with trade name Gharda gave significantly good control the gundhi bug population and increased the grain yield under irrigated ecosystem.
- Insecticide evaluation for armyworm: Buprofezin + Acephate (20+50) @ 1000 ml / 500 liter water found effective to reduce the 100% population of armyworm caterpillar up to 10 days after spraying. Maximum yield was recorded in this treatment. It can be used by the farmers for the control of Army worm, which may increase 46.06% yield over control.
- Pesticide compatibility trial (PCT): The combination of Tricyclazole (Baan) 75WP + Flubenbendiamide 20WG gave superior results for controlling the gundhi bug and leaf blast of rice and in increasing the grain yield followed by Tricyclazole(Baan)75WP+ Fipronil 5SC over untreated check. Glamore + Contaf and Glamore + Baan combination gave highest grain yield and reduced the population of WBPH. Glamore insecticide was found to be compatible with both the fungicides whereas, Coragen insecticide was not compatible.