

are given below in Table 11 may be utilized in successful management of major rice problems.

**TABLE 1: IMPORTANT PLANT PROTECTION MEASURES**

Name of insect	Management practice
Gundhi bug	Spray chloropyriphos 20%+ cypermethrin 2% EC @ 1 L in 200L water. Apply Malathion 5 % dust @ 6-8 kg/acre at morning time.
Stem borer	Apply Cartap hydrochloride 50 SG/ Fipronil 5 SG @1kg/ha in 200 litres water at 15 days intervals.
Plant hopper	Spray the Imidacloprid 17.8% EC @ 1.2 L/ha
Rice hispa	Spray the chloropyriphos+super methrin solution or qunolphos 25 EG @ 1.25 L in 200L water.
Name of diseases	Management practice
Bacterial leaf blight	Spray Streptocyclin/Agrimycin 60 or 80g+500g blitox or phytolon or fupravit in 500 litres of water 2-3 times at 10-15 days interval.
Blast and sheath blight	Early sowing and less nitrogen application may allow the crop to escape from blast and sheath blight. Spray fungicides like tricyclozol, hexaconozol or propiconozol @ 200ml/acre in 200 litres of water
False smut	Seed treatment with Thiram + Carbendazim (2:1 ratio) @ 3 g/kg seeds Spray Tricyclozol 75% WP @ 1.5 g/litre water
Khaira disease	Apply Zinc sulphate @ 20-30 kg/ ha.
Brown spot	Spray one of these: Carbendazim (0.1%), Diathane M 45(0.25%), Tilt (0.1%), or hinosan (0.1%) 2-3 times at 10-12 days interval

**HARVESTING, DRYING AND STORAGE**

Drain out water from the rice field after 15 days from the milk formation stage. Harvest the crop when 80% of the grains in panicles are ripened. Dry the harvested paddy. Thresh with paddle thresher or power thresher.

Clean paddy grains by winnowing. Dry gradually under shade. Store the rice in improved storage bins.

**POINTS TO REMEMBER**

- Never use the harvested hybrid rice grains for raising the next crop.
- Apply N in four equal splits at basal, 21DAT, PI and panicle emergence.
- Apply K in two splits 3/4<sup>th</sup> in basal and 1/4<sup>th</sup> at PI.
- Nursery sowing should be very thin (20-22 gms /sq.m.) to get robust seedlings.
- Transplant only one or two seedlings /hill at 15cm x 15cm or 15cm x 20cm.



**Production Technology for Hybrid Rice- CR Dhan-704 (CRHR-150)**

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**Production Technology for Hybrid Rice - CR Dhan - 704 (CRHR-150)**

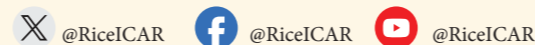


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RICE hybrids are impressive in yield, can produce 15-25% more yield over best HYVs of similar maturity duration. Till date, India has commercialized altogether 138 hybrids with duration of 110 to 145 days have been developed and released for cultivation in irrigated and shallow lowlands. The ICAR-National Rice Research Institute has developed a medium duration rice hybrid, CR Dhan-704 for both irrigated, favourable shallow lowlands and DSR conditions. This hybrid was released and notified during 2023 by SVRC, Odisha. The hybrid CR Dhan-704 (CRHR-150, IET28187) was developed from a cross, PMS17A/CR546R through heterosis breeding utilizing CGMS based three-lines hybrid system. This hybrid is based on an indigenous CMS line other than IR 58025A which was widely used for the development of hybrids. The hybrid is semi-dwarf (105-110 cm) with erect, non-lodging plant type and matures in 125-130 days during *Kharif* and 130-135 days during *Rabi* season. It has high spikelet fertility, non-shattering habit and possesses non-aromatic short slender (SS) grains

with intermediate alkali value, intermediate amylose content and medium gel consistency with good cooking and eating qualities. It has good milling and hulling characteristics with high HRR (68%). It is moderately resistant to false smut, leaf blast, neck blast, brown spot, sheath rot and glume discoloration. The hybrid can be grown in both wet and dry seasons. The hybrid has a yield potential of 7.0-7.5 t/ha which is more than 1.0 t/ha over the comparable popular check variety, hybrid 27P63 and inbred RP Bio-226 and BPT-5204 in duration and quality. The hybrid also has tolerance to excess stagnant water for a period of 7-10 days and can tolerate brief spells of submergence too. It was found promising under lowlight conditions prevailing in Eastern India and will be suitable for coastal shallow lowlands of the country. The hybrid is recommended for irrigated and favourable shallow lowland areas of Odisha and has also shown good performance in the states of Odisha, Bihar, West Bengal and Gujarat. Seed production of the hybrid was found to be commercially feasible as the flowering synchronization of the two parental lines could be achieved easily in seed production plots.

Hybrids exerts it full potential under optimum agronomic management. This bulletin gives information on production technologies to be followed for obtaining optimum grain yield in the hybrid, CR Dhan-704.

### **SUITABLE HYBRIDS FOR ODISHA**

Rice hybrids perform better in dry season than in wet season. Suitable hybrids should be chosen for different locations and ecosystems. Procure fresh hybrid seeds each time only from approved seed agencies before raising the crop. For Odisha, the hybrids, Ajay, Rajalaxmi, KRH 2, Sahyadri, PAC835, JKRH-2000, PA6444, CR Dhan-702, CR Dhan-703 and CR Dhan-704 are found suitable.

### **NURSERY BED PREPARATION**

- Plough the seed bed area twice when the land is dry. Impound water for four to five days. Drain excess water. Puddle the area twice or thrice. Level it by laddering.
- Prepare raised and levelled wet nursery beds of 1 m width with provision of drains of 30 cm width between the beds. Apply NPK @ 500:500:500 g/ 100 m<sup>2</sup> of nursery area and 100 kg of farmyard manure (FYM) for every 100 m<sup>2</sup> of nursery area before final land preparation.
- Use 20-25 g of seeds per 1 m<sup>2</sup> of nursery area. Nursery area of 600 m<sup>2</sup> is required for one hectare of main field.

### **SELECTION OF SEEDS**

- Use faithfully labelled hybrid seeds.
- As hybrid seeds are light, never use salt solution for discarding light and half-filled grains before sowing. These grains normally have good germination.

### **SEED RATE**

As the test weight of this hybrid is low, twelve to fifteen kgs of hybrid rice seeds are sufficient to transplant in one hectare of land.

### **SEED TREATMENT**

- Treat the seeds with Carbendazim (Bavistin) @2 g/kg of dry seeds after soaking in water for 24 hours.
- Spread the treated seeds on a hard floor under shade. Cover with wet gunny bag and straw and sprinkle water 2-3 times a day. Seeds will sprout in one to two days.

### **TIME AND METHOD OF SOWING**

- The right time for sowing seeds is mid-June for wet season and 1<sup>st</sup> week of December for dry season. Sowing in rabi season should not be delayed as there can be erratic flowering under delayed sowing.
- Sow the sprouted seeds on levelled and drained wet nursery beds with no standing water.

### **NURSERY MANAGEMENT**

- Irrigate with a thin film of water two to three days after sowing of sprouted seeds. Give light irrigation afterwards.
- After 15 days of seedling growth, apply Carbofuran (Furadan 3G) @ 250 g/ 100 m<sup>2</sup> of nursery.
- Keep the nursery weed-free.

### **LAND PREPARATION**

- Irrigated medium land with drainage facility is suitable for growing hybrid rice.
- Apply and incorporate 5 t/ha of FYM compost during the dry ploughing.
- Irrigate the field and puddle 7 to 10 days before transplanting to

incorporate the weeds, if any. Puddle the land again, and level it by laddering prior to transplanting.

### **TRANSPLANTING**

- Uproot seedlings and dip the roots of the seedlings in Chlorpyrifos solution @ 1 ml/litre of water, overnight before transplanting.
- Transplant 25 to 30 days old seedlings erect at a shallow depth of 2 to 3 cm on puddled and levelled land (with no standing water) @ one to two seedlings/hill with a spacing of 20 cm (row-to-row) and 15 cm (plant-to-plant) or 15x15 cm between plants and rows. Rows should preferably be in the north-south direction.

### **FERTILIZER APPLICATION**

- Apply NPK @ 100: 50: 50 kg/ha in wet season and 120: 60: 60 kg/ha in the dry season. Soil test based fertilizer application especially for P and K is preferred over blanket dose.
- Apply one fourth of total N, entire amount of P and three fourths of K as basal after draining out the standing water but before final puddling. Top-dress the remaining N in three equal splits, each at three weeks after transplanting, panicle initiation (80 days from the date of sowing) and panicle emergence stages. Also apply remaining one fourth of K at panicle initiation.

### **IRRIGATION AND CULTURAL PRACTICES**

- Irrigate the field two days after transplanting. Maintain continuous shallow submergence to a water depth up to 5 cm till mid-grain filling stage.
- Complete gap filling to replace dying plants within 7 to 10 days after transplanting.
- Weed out the rice field at least twice, once at 21 days after transplanting (DAT) and again at 42 DAT.

### **PLANT PROTECTION**

Rice is prone to many insect pests, diseases and other nutritional disorders, which cause great loss in production and seed quality. Therefore, preventive measures before severe damage in field should be taken to stop/eradicate such problems. Some chemical methods which