The hybrid also has tolerance to excess stagnant water for a period of 7-10 days and can tolerate brief spells of submergence. It was also found promising under lowlight conditions prevailing in Eastern India and will be suitable for coastal shallow lowlands of the country. The hybrid was recommended for late-irrigated/shallow water areas of Bihar and Gujarat and has also shown good performance in the states of Odisha, Chhattisgarh and Karnataka. 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.

Suitable agronomic management practices are to be followed to obtain the potential yield of the hybrids. This bulletin gives information on production technologies to be followed for obtaining optimum yields by cultivating the hybrid, CR Dhan-701 (CRHR-32).

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 at the rate of 500: 500: 500 g/ 100 m^2 of nursery area and 100 kg of farmyard manure (FYM) for every 100 m^2 of nursery area before final land preparation.
- Use 20-25 gm of seeds per 1 m^2 of nursery area. Nursery area of 600 m^2 is required for one hectare of main field.

Selection of seeds

- Use faithfully labelled hybrid seeds. Procure fresh hybrid seeds each time only from approved seed agencies.
- 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) at the rate of 2 gm/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 1st week of December for dry season.
- 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) at the rate of 250 gm/ 100 m^2 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 Chlorpyriphos solution at the rate of 1 ml/ltr 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) at the rate of one to two seedlings/hill with a spacing of 20 cm (row-to-row) and 15 cm (plant-to-plant) or 15 x15 cm between plants and rows. Rows should preferably be in the north-south direction.

Fertilizer application

- Apply NPK at the rate of 100: 50: 50 kg/ha in wet season and at the rate of 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 fourtth 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 water level to a 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

- Protect the crop from insect pests and diseases with regular monitoring of pest attacks and by following need based pesticide application.

- While spraying pesticide, use 500 liters of water/ha in case of power sprayer. Keep the field bund clean to minimize disease and pest attack.

Insect pest control

- Give soil application Furadan 3G at the rate of 30 kg/ha at 30 days after transplanting to reduce insect pest incidence.
- For the control of Gundhi bug, apply dust formulation of Methyl parathion at the rate of 25 kg/ha or foliar spray of Ethofenprox 10 EC 2 ml/ltr.
- For the control of leaf folder, spray Quinalphos 25 EC at the rate of 2 ml/ltr.

Disease control

- For controlling fungal diseases spray Bavistin 50 WP 2 ml/ltr for blast and Tilt 1ml/ltr for brown spot. Sheath blight can be controlled by spraying Sheathmar 3 L at the rate of 2 ml/ltr.
- For controlling bacterial diseases such as bacterial leaf blight (BLB) and bacterial leaf streak, drain the field, and apply an extra dose of K fertilizer at the rate of 20 kg/ha. Delay top dressing of N.
- For controlling viral diseases such as tungro and grassy stunt, remove the infected plants and control the insect vector by applying Furadan at the rate of 30 kg/ha.

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, 21 DAT, panicle initiation and panicle emergence.
- Apply K in two splits 3/4th in basal and 1/4th at panicle initiation stage .
- Nursery sowing should be very thin (20 gms/sq.m.) to get robust seedlings.
- Transplant only one or two seedlings /hill at 15 cm x15 cm or15 cm x 20 cm.

CR Dhan-701 (CRHR-32)

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Production Technology for Rice Hybrid

CR Dhan-701 (CRHR-32)

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Rice hybrids have higher yield potential due to the phenomenon of heterosis or hybrid vigour. Hybrids can produce 7-8 t/ha, which is more than 1 t/ha over the best high-yielding varieties of similar duration. So far, in India, 59 rice hybrids have been developed and released for cultivation, which are suitable for irrigated and shallow lowlands. The Central Rice Research Institute has recently developed a rice hybrid named CRDhan-701 having the same maturity duration as the most popular rice variety Swarna for both irrigated and shallow lowlands. This is the first long duration hybrid in the country. It (CRHR-32, IET-20852) was identified for release during 2010 by the Central Variety Release Committee (CVRC) and notified in 2012. CR Dhan-701 was developed from a cross, CRMS 31A/CRL22R. The cytoplasmic male sterile line CRMS31A used as the female parent was developed at CRRI and is different from IR58025A most commonly used in hybrid breeding in India. The hybrid is medium tall (117 cm) with erect non-lodging plant type and matures in 140-145 days. It has high spikelet fertility, non-shattering habit and non-aromatic medium slender grains with intermediate alkali value, intermediate-high amylose content and medium gel consistency with good cooking and eating qualities. It has good milling and hulling characterstics with moderate head rice recovery (HRR). It is moderately resistant to rice tungro disease (RTD), blast, sheath blight and green leaf hopper (GLH). The hybrid can be grown in both the wet and dry seasons. The hybrid has a yield potential of 6.5-7.0 t/ha, which is more than 1.0 t/ha over the comparable popular check variety, Swarna.