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Production technology for a high yielding early transplanted rice variety CR Dhan 320

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CR Dhan 320 (CRR 807-1/IET 27914) is an inbred rice variety developed at Central Rainfed Upland Rice Research Station (ICAR-National Rice Research Institute), Hazaribag, Jharkhand from the cross between IR 10L146 x IR 10L137. It has been released and notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops (CSC on CSN&RV) in 2021 for irrigated areas of Jharkhand, Bihar, and West Bengal under early duration transplanted condition. It is suitable for cultivation in both *kharif* an *rabi* under both high and low fertility conditions.

It has semi-dwarf, erect, highly vigorous, non-lodging plant type with long panicles (23.2 cm). The variety is 99 cm tall and matures in 117 days in both *kharif* and *rabi* seasons. CR Dhan 320 possesses very good grain quality attributes of hulling (79.5%), Milling (70.0%) and head rice recovery (62.4%), long slender (LS) grains, chalk absent, low gelatinization temperature (ASV, 7.0), intermediate amylose content of 26.82% and soft gel consistency (GC) of 62.5 mm. It is moderately resistant to major disease such as blast, brown spot and sheath rot. It has also moderate tolerance to brown plant hopper (BPH), leaf folder and stem borer. CR Dhan 320 has a high response towards fertilizer application and showed high average yield of 5.35 t/ha. This variety has also performed well under moderate drought stress in rainfed trials and will require less number of irrigation even in irrigated condition. This variety can be effective substitute of old mega varieties like Lalat, IR64, MTU1010, NDR97, Abhishek, Naveen, etc. in early irrigated ecology.

PACKAGE OF PRACTICES FOR HIGHER YIELD

Seed selection

- Ensure genetic purity with more than 80% germination by obtaining seeds from a reliable source.
- Select well-filled seeds from a healthy crop.
- The unfilled seeds could be rejected by dipping in 2% brine solution which helps in selection of high density seeds.

Land situation

- CR Dhan 320 is suitable for irrigated medium lands in both *kharif* and *rabi* season. This can also be grown in favourable rainfed lowland ecology (Don 2 land in Jharkhand and similar ecology in other states).

Seedbed preparation

- Select suitable land near a water source in June for *kharif* and December for *rabi* crop.
- Plough the soil 3-4 times and level properly. Apply sufficient Farm Yard Manure (FYM)/ compost in the nursery land.
- Make raise beds of one-meter width of any convenient length keeping a gap of 30 cm around the beds. About one-tenth of the area of the main field is required as the seedbed.
- Sow the sprouted seeds on leveled and drained wet nursery beds with no standing water.

Seed rate

- 40-50 kg seeds are required for transplanting in one hectare.

Seed treatment

- Treat the seeds with Beam 75WP @ 2.0 g/kg of seed or pre-soak the seeds in the solution of Bavistin 10 g, and tetracycline 1 g, dissolved in 10 liters of water for 24 hours before sowing.
- In wet seedbed conditions, seed treatment can be done at the time of seed soaking for sprouting.

Sowing time

- *Kharif*/ wet season: second to third week of June

  Rabi/ Dry season: end of November to mid-December.

Nursery management

- After 24 hours of seed soaking, drain the water and keep the seeds in a gunny bag for germination. Sow the seeds in a nursery bed and keep the bed moist for few days.

- Maintain a shallow layer of water in the nursery when seedlings reach about one inch height. Top dress the nursery bed with 1.5 kg powdered DAP or 2.0 kg of 17:17:17 NPK, seven days before uprooting.

Main field preparation

- Prepare the land using a tractor-drawn plough.
- Apply and incorporate 5 t/ha of FYM/ compost during the early ploughing.
- Green manuring with sun hemp or *dhaincha* may be done.
- Puddle the field twice and give a gap of at least 7-8 days between initial and final puddling for better weed control and nutrient availability.
- Level the field with a leveller to maintain a uniform water level throughout the plot.

Transplanting and stand establishment

- Transplanting with a spacing of 20 cm x 15 cm by mid-July in *kharif* and mid-January in *rabi* season.
- 25-30 day-old seedlings should be transplanted in the puddled field with 2-3 seedlings/hill.
- Gap filling should be done within 7 days of transplanting

Fertilizer management

- Apply NPK @ 70:40:40 kg/ha. Half of N and entire amount of P, and two-third of K as basal, Rest quantity of N to be applied in two splits at 3 weeks after transplanting and at panicle initiation (PI) stage. Also apply remaining one-third of K at PI stage.
- Apply Zn @ 25 kg/ha in zinc deficient soils as basal dose.
- Use Leaf Colour Chart (LCC) based N application for better N use efficiency.

Weed management

- Nursery: Pretilachlore (Refit) @ one litre/200 litres of water per one acre.
- Main field: Butachlor @ 1.5 kg a.i./ha in 500 litres of water at 3-6 DAT, followed by Nominee gold @ 250 ml/ha at 25-30 DAT after draining the standing water.
- Keep the field and bunds free from weeds to minimize disease and pest attacks.

Water management

- Keep the field under saturated conditions for a week after transplanting for proper crop establishment and root growth.
- Continuously maintain a water level of 3-5 cm during the entire crop growth period to suppress weed growth.
- The field should be drained before the top dressing of fertilizers and irrigate after 24 hours of application.
- Drain out water 15 days after milk formation stage.

Disease and insect pest management

- If bacterial blight appears, drain the field, apply extra dose of K fertilizer @ 20 kg/ha and delay the top dressing of nitrogen fertilizer.
- Protect the crop from insect pests with regular monitoring of pest attacks by following need-based pesticide application.
- During *rabi* season, yellow stem borer is a major pest at the initial stage of plant growth. Therefore, dip the roots of the seedling in Chlorpyriphos solution @ 2 ml/liter of water overnight before transplanting. Give soil application of Chlorantraniliprole granules @ 10 kg/ha at 30 days after transplanting to reduce the incidence of stem borer and other insect pests.
- Application of Chlorantraniliprole (Ferterra 0.4% GR) @ 10 kg/ha at brood emergence is also very effective in controlling yellow stem borer.
- When insect crosses economic threshold level, apply foliar spray of Triflymezopyrim @ 0.5 ml/liter or Imidacloprid @ 0.5 ml/l for brown planthopper, WBPH, and leaf folder management.

Harvesting

- Harvest the crop at physiological maturity that is 25-30 days after flowering when 80% of grains in the panicle are ripened.
- Threshing, winnowing, and proper drying should be done before storage.
- Thresh immediately after harvesting and dry up to 12% grain moisture level for storage.

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