

# Production Technology of Early Direct Seeded Rice

## CR Dhan 108

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Rice variety CR Dhan 108 (IET 29052), developed at ICAR-Central Rice Research Institute (CRRRI), Cuttack, is an early-maturing, semi-dwarf variety designed for direct-seeded rice cultivation in rainfed upland environments. The development of a resilient variety with drought tolerance is necessitated by prevailing conditions. Integrating drought tolerance with high yield potential presents a significant challenge. This variety was released by the Central Sub-Committee on 'Crop Standards, Notification and Release of Varieties for Agricultural Crops' in 2024 for cultivation in Odisha and Bihar. It shows moderate drought tolerance and exceptional adaptability to water-scarce and upland environments. The grain yield ranges from 3 to 4 t/ha under direct-seeded conditions, with timely crop establishment and moderate fertilization. It features semi-dwarf plant type, compact panicles with medium slender grains, and matures in 108 to 112 days. The genotype has good hulling and milling quality, white kernels, no grain chalkiness, and desirable alkali spreading value. This variety is moderately resistant to leaf blast, neck blast, and bacterial blight, tolerant to lodging and responsive to fertilizer application.

## PACKAGE OF PRACTICES

### Land preparation

Prepare the soil to a fine tilth using a moldboard plough or, preferably, a rotavator. The seeds should be sown in a leveled field.

### Seed Treatment

To ensure optimal crop yield, it is essential to select high-quality, healthy seeds and discard those of lesser quality. A 20% sodium chloride solution can be utilized to facilitate the rejection of lighter seeds. This is achieved by dissolving 200 grams of salt in one liter of water, into which the seeds are immersed. Upon stirring the solution, seeds that float are removed. For a batch of 5 kilograms of seeds, 10 liters of this salt solution should be prepared, and it can be reused 3-4 times. The seeds that do not float should be thoroughly washed and then dried under sunlight for two days before planting. This method promotes a robust crop stand in the field, ensuring uniform growth and flowering, ultimately leading to increased yield.

### Sowing time

Sowing should be conducted based on the soil's moisture condition, which is influenced by the onset of monsoon rains. The optimal period for sowing commences in the second week of June and should ideally be completed by the end of June or the first week of July.

### Seeding

The sowing of 25-30 kg of seed per hectare should be conducted using a seed drill behind a bullock-drawn country plough, at a depth of 4-6 cm, with a line-to-line spacing of 20 cm to ensure a robust plant stand and high yield. In the context of intercropping, it is recommended to sow rice with pigeon pea in a 4:1 ratio, maintaining a row-to-row distance of 20 cm.

### Fertilizer application

Apply nitrogen, phosphorus, and potassium (N:P:K) at a ratio of 50:30:30 kg/ha. Administer the full amount of phosphorus and potassium fertilizers as a basal dose in the furrows prior to sowing. Distribute the nitrogen application in three stages: initially, apply 20 kg/ha (equivalent to 44 kg urea/ha) following the first weeding, which occurs 20 days post-sowing. Subsequently, apply 20 kg/ha in the second stage, 35-40 days after seeding. Finally, apply the remaining 20 kg of nitrogen fertilizer at the booting or panicle initiation (PI) stage of the crop.

### Weed management

The application of the herbicide bispyribac sodium at a rate of 30 gm/ha is recommended for the management of predominant grasses, sedges, and broadleaf weeds in direct-seeded rice. This herbicide is classified as a post-emergence treatment and should be applied 12 days after sowing. It is commercially available under various brand names, including Nominee Gold, Segard, Cropstar, Longstar, and Longcan. If necessary, a single hand weeding may be conducted 25-30 days following rice emergence. In the absence of herbicide application, manual weeding should be performed twice, with the first weeding occurring 20-25 days after emergence and the second 40-45 days after emergence.



## Plant protection

To effectively manage insect pests and diseases, it is essential to implement regular field surveillance and adopt plant protection measures as needed. Pesticides should be applied using approximately 500 L of water per hectare, and maintaining field and bund hygiene is crucial to reducing the incidence of pests and diseases. During the rabi season, the yellow stem borer (YSB) is a significant early-stage pest. It can be managed through root-dip treatment of seedlings in chlorpyrifos (2 ml L<sup>-1</sup>) prior to transplanting, soil application of carbofuran at a rate of 30 kg ha<sup>-1</sup> at 30 days after transplanting (DAT), or the application of chlorantraniliprole 0.4% GR at 10 kg ha<sup>-1</sup> at brood emergence. For the management of planthoppers and leaf folders, imidacloprid (1 ml L<sup>-1</sup>) or chlorpyrifos (2 ml L<sup>-1</sup>) should be applied as necessary. In the case of bacterial blight, it is important to ensure proper drainage, apply additional potassium at 20 kg ha<sup>-1</sup>, delay top dressing, and spray a mixture of plantomycin (1 g) and copper oxychloride (3 g) per liter of water.

## Harvesting

Harvesting should be conducted when 80-85% of the grains have reached maturity. Subsequently, threshing, winnowing, and adequate drying should be performed to achieve a moisture content of 12% for optimal seed storage. If proper land preparation, crop management, fertilizer application, and pest control are done, one can get a yield of 40 quintals or more per hectare.



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