

DRR Dhan 57 (IET 26171) - an Aerobic Rice Variety

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Abstract

DRR Dhan 57 [IET 26171 (RP 5601-283-14-4-1)], an aerobic rice variety was developed from BPT5204/Azucena cross combination. It was evaluated in AICRIP multi-location aerobic rice trials during the wet seasons of 2016 to 2020. DRR Dhan 57 consistently outperformed the check varieties in Eastern Zone (Zone III) and Central Zone (Zone V) with a mean grain yield of 4782 kg/ha, which is 13%, 17% and 16 % higher than the National, Zonal and Local checks, respectively. In addition, it exhibited moderate resistance to leaf blast and Neck blast; and to gall midge and rice thrips, and moderate resistance to planthoppers and whorl maggot. DRR Dhan 57 has a mid-early duration of 120 days (seed to seed) and possesses desirable grain and cooking quality parameters. It was released for cultivation in aerobic ecosystems of Jharkhand (Zone III), and Chhattisgarh (Zone V) states through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops; vide S.O. 8(E) dated 24th December 2021[CG-DL-E-04012022-232406].

Keywords: Aerobic rice, Grain yield, Cooking quality

Introduction

Rice (*Oryza sativa* L.) is cultivated on 22 million hectares of area under irrigated ecology, accounting for about 50% of India's total area under rice production. In view of climate change, limiting water and human resources, aerobic rice is the need of the hour for substantial and stabilized crop returns. Indian Institute of Rice Research (ICAR-IIRR) has placed emphasis on aerobic rice, and with concerted efforts that started in 2011 with the crossing of BPT5204/Azucena, the segregating populations were evaluated under direct seeded aerobic conditions. The promising line RP 5601-283-14-4-1 was identified and nominated in AICRIP Aerobic 2016 trial. Subsequently, the entry performed very well in all the three years and released as a direct seeded aerobic rice variety DRR Dhan 57 through the Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural

Crops vide S.O. 8(E) dt. 24th Dec 2021[CG-DL-E-04012022-232406] suitable for cultivation in Jharkhand State of the eastern zone (Zone III) and Chhattisgarh State of the central zone (Zone V). The overall mean grain yield of DRR Dhan 57 in Zone III and V was 4782 kg/ha, which was 13, 17 and 16 % higher than the National, Zonal and Local checks, respectively. The mean grain yield in Zone III was 4771 kg/ha, which was 13, 13, and 17% higher than the National, Zonal and Local checks, respectively. The mean grain yield in Zone V was 4800 kg/ha, which was 12, 23, and 13 % higher than the National, Zonal and Local checks, respectively. The weighted mean grain yield was 3617 kg/ha in Jharkhand, which was > 8% higher than the best check. In Chhattisgarh state, the weighted grain yield mean was 4546 kg/ha and out yielded the national, regional, and local checks by 16, 16 and 13 %, respectively (**Table 1**).



Table 1. Yield performance of DRR Dhan 57 in Zone III and Zone V regions

Zone/State	Mean Grain Yield (Kg.ha ⁻¹)	Superiority over checks		
		National Check (%)	Zonal Check (%)	Local Check (%)
Z-III & Z-V	4782	13	17	16
Z-III	4771	13	13	17
Z-V	4800	12	23	13
Jharkhand	3617	40	8	17
Chhattisgarh	4546	16	16	13

It exhibited resistance to major insect pests and diseases such as leaf blast, neck blast, gall midge and rice thrips; moderate resistance to plant hoppers and whorl maggot. It has good hulling (79%), milling (69.30%) and head rice recovery (60%) in comparison with the checks and qualifying varieties. It possesses

intermediate amylose content (23.4 %), medium alkali spreading value (4.0), medium gel consistency (53 mm), short bold (SB) grain type (KL- 5.21 mm; KB- 2.22 mm) and other desirable grain and cooking quality parameters (**Figure 1**).

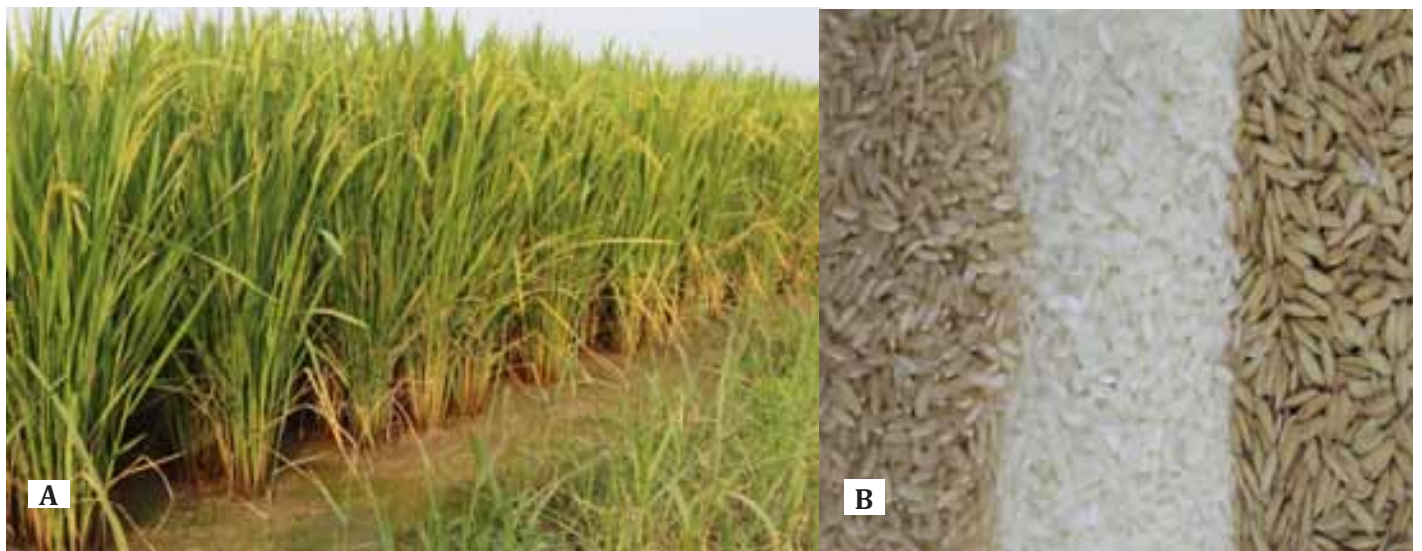


Figure 1A: Field view of DRR Dhan 57, 1B. Paddy, Brown rice and Polished rice of DRR Dhan 57

The variety DRR Dhan 57 is highly suitable for dry direct-seeded aerobic conditions with intermittent irrigation. Dry direct seeding is preferable from the second week of June to the second week of July (with the onset of rain or pre-sowing irrigation). Immediately after sowing, life-saving irrigation should be ensured for uniform germination and crop establishment. Weed management is a big menace in aerobic rice. To resolve this, Pendimethalin herbicide @1 kg per hectare at field capacity moisture is applied within three days of sowing. Further, it is recommended to apply Post Emergence broad-spectrum systemic herbicide like Bispyribac Sodium 10% SC (Nominigold) @50ml

per hectare at field capacity moisture within 5-15 days of sowing. One intermittent weeding is recommended (two if there are more weeds) during the crop growth. Need-based irrigation should be followed up to physiological maturity. The DRR Dhan 57 has an advantage of 10-15 days (115-120 seed-to-seed duration) in comparison with transplanted rice and can yield up to 5-5.5t/ha subject to use under the area of adoption and recommended climate conditions and adoption of package and practices. It is suitable for direct seeding of both early *Kharif* (wet) and *Rabi* (dry) seasons.