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DRR Dhan 55 (IET 26194) - A high yielding, early maturing aerobic rice variety

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Abstract

DRR Dhan 55 [IET 26194(RP 5591-123-16-2)], an aerobic rice variety developed from MTU1010/ IR79915-B-83-4-3 cross combination. It was evaluated in AICRIP multi-location aerobic rice trials during wet seasons of 2016 to 2019. DRR Dhan 55 consistently out-performed the check varieties in Eastern Zone (Zone III) and Central Zone (Zone V) with a mean grain yield 4974 kg/ha, which is 15%, 19% and 18 % higher than National check, Zonal and Local checks, respectively. In addition, it exhibited moderate resistance to Leaf blast and Neck blast; and also resistance to gall midge and rice thrips; and moderate resistance to plant hoppers. DRR Dhan 55 has medium duration of 120-130 days (seed to seed) and possess desirable grain and cooking quality parameters. It was released for cultivation in aerobic ecosystems of Bihar (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. 500(E) dt. 29th Jan 2021[CG-DL-E-03022021-224901].

Keywords: aerobic rice, resistance, grain yield, cooking quality

Rice (*Oryza sativa* L.) is cultivated in 22 million hectares under irrigated ecology which accounts about half of the total area under rice production in India. 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 initiated emphasis on aerobic rice and with concerted efforts started in 2011 with crossing of MTU 1010/ IR79915-B-83-4-3, the segregating populations were evaluated under direct seeded aerobic conditions. The promising line RP 5591-123-16-2 was identified and nominated in AICRIP Aerobic 2016 trial. Subsequently, the entry performed all the three years and released as new direct seeded aerobic rice variety DRR Dhan 55 through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops vide S.O. 500(E) dt. 29th Jan 2021 [CG-DL-E-03022021-224901] suitable for cultivation in Bihar State of eastern zone (Zone III) and Chhattisgarh State of central zone (Zone V).

The overall mean grain yield of DRR Dhan 55 in Zone III and V was 4974 kg/ha, which is 15, 19 and 18 % higher than National check, Zonal and Local checks, respectively. The mean grain yield in Zone III was 4981 kg/ha, which was 17, 13, and 19% higher than National check, Zonal and Local checks, respectively. The mean grain yield in Zone V was 4958 kg/ha, which was 10, 36, 16 % higher than National check, Zonal and Local checks, respectively. The weighted mean grain yield was 5317 kg/ha in Bihar and this was > 10% higher than the best check. In Chhattisgarh state, the weighted grain yield mean was 4728 kg/ha and out yielded the national, regional and local checks by 18, 32 and 20 %, respectively **(Table 1).**

Table 1: Yield performance of IET 26194 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	4974	15	19	18
Z-III	4981	17	13	19
Z-V	4958	10	36	16
Bihar	5317	7	8	15
Chhattisgarh	4728	18	32	20

It exhibited resistance to major insect pests and diseases such as leaf blast, neck blast, gall midge and rice thrips and moderate resistance to plant hoppers. It has good hulling (78.07%), milling (68.90%) and head rice recovery (55.53%) in comparison with the checks and qualifying varieties. It possesses intermediate amylose content (22.58), medium alkali spreading value (7.0), medium gel consistency (22mm), long bold grain type (KL- 6.22 mm; KB- 2.22 mm) and other desirable grain and cooking quality parameters **(Figure 1).**

Figure 1A. Field view of DRR Dhan 55, 1B. Grain, Brown rice and Polished rice view of DRR Dhan 55

The variety DRR Dhan 55 is highly suitable for dry direct seeded aerobic conditions with intermittent irrigation. Dry direct seeding is preferably during the second week of June to second week of July (with the onset of rain or with pre-sowing irrigation). Immediately after sowing, lifesaving irrigation should be ensured for uniform germination and crop establishment. Weed management is a big menace in aerobic rice. In order to resolve this, apply Pendimethalin herbicide @1 kg per hectare at field capacity moisture within 3 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 more weeds) during crop growth period. Need based irrigation should be followed upto physiological maturity.

The DRR Dhan 55 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 area of adoption and recommended climate conditions and adoption of package and practices. It is suitable for direct seeding of both early *Kharif* and *Rabi* seasons.