

**DRR Dhan 54 [IET 25653 (RP 5943-421-16-1-1-B)] – A new aerobic rice variety****Ram T, Jyothi Badri\*, Subba Rao LV, Revathi P, Abdul Fiyaz R, Sreedevi B, Prasad MS, Laha GS, Jhansi Lakshmi V, Mahender Kumar R and Nirmala B**

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\*Corresponding author email: [jyothirishik@gmail.com](mailto:jyothirishik@gmail.com)Received: 12<sup>th</sup> March 2021; Accepted: 20<sup>th</sup> April 2021**Abstract**

DRR Dhan 54 [IET 25653 (RP 5943-421-16-1-1-B)] was released for aerobic system of cultivation in water limiting areas of Zone II (Haryana), III (Odisha, Bihar and Jharkhand), VI (Gujarat) and VII (Telangana) through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops vide S.O. 500(E) dated 29<sup>th</sup> Jan 2021 [CG-DL-E-03022021-224901]. DRR Dhan 54 was developed from the cross of RP 5124-11-4-3-2-1/IR 78877-208-B-1-1. It was tested in Aerobic trials in AICRIP during 2015-2018 and found to be a top ranking entry on overall basis in three years (2018, 2016 and 2015). Across multiple zones, DRR Dhan 54 ranked 1<sup>st</sup> with 15.8%, 4<sup>th</sup> with 12% and 5<sup>th</sup> with 17% yield advantage over the BVC in 2018, 2016 and 2015, respectively indicating its wider adaptability and yield stability. It has desirable grain quality traits in terms of high HRR%, intermediate AC% and multiple pest and disease resistance.

**Keywords:** aerobic rice, water limiting areas, zone, yield, grain quality

DRR Dhan 54 [IET 25653 (RP 5943-421-16-1-1-B)] was released and notified through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops vide S.O. 500(E) dt. 29<sup>th</sup> Jan 2021 [CG-DL-E-03022021-224901]. It is suitable for aerobic system of cultivation under water limiting conditions and recommended for growing in Zone II (Haryana), III (Odisha, Bihar and Jharkand), VI (Gujarat) and VII (Telangana). It was developed from the cross of RP 5124-11-4-3-2-1/IR 78877-208-B-1-1 using pedigree method of breeding. Superior segregants from the cross were selected in F<sub>2</sub> generation and single plant selection was practised till F<sub>5</sub> generation. Progenies were evaluated in F<sub>5</sub> generation for yield and other traits, yield trial was conducted in F<sub>6</sub> generation and promising line designated as RP 5943-421-16-1-1-B in the station trial, was nominated to AICRIP testing in IVT-Aerobic in 2015.

**Performance across states:** On overall basis, DRR Dhan 54 ranked 1<sup>st</sup>, 4<sup>th</sup> and 5<sup>th</sup> with 15.8, 12 and 17% yield advantage over the best varietal check (BVC) in 2018, 2016 and 2015, respectively indicating its

wider adaptability and yield stability. In the notified states, it was evaluated at 18 locations during 2015-2018 and was a top ranking entry (among top 5) at 14 locations yielding 19.14, 24.94, 30.89% higher than national, zonal and local checks, respectively. It recorded superior performance with a yield advantage of 15.1, 22.6, 10.0, 10.6, 16.1 and 5.0% over the BVCs in Odisha, Bihar, Jharkhand, Telangana, Gujarat and Haryana, respectively.



**Field view of DRR Dhan 54 A. Aerobic conditions-IIRR farm, kharif 2019, B. Transplanted conditions in farmer's field-Rabi 2021**



Figure 2a. DRR Dhan 54-paddy (whole grain),  
2b. Hulled rice, 2c. Polished rice

**Zonal performance:** In Zone II, DRR Dhan 54 ranked 3<sup>rd</sup> and 2<sup>nd</sup> with 6.4 and 13.8% yield advantage over BVC in 2018 and 2016, respectively. In Zone III, it ranked 3<sup>rd</sup> with 16.8, 11.0 and 38.0% yield advantage over BVC in 2018, 2016 and 2015, respectively and in Zone VI, it ranked 2<sup>nd</sup> and 1<sup>st</sup> with 14 and 30% yield advantage over BVC in 2018 and 2017, respectively.

**Morphological distinguishable features:** DRR Dhan 54 has thick and strong culm, medium green foliage

and deflexed compact panicle with strong secondary branching. Mild pubescence is observed on lemma and tip of the lemma is yellowish. IET 25653 has short bold grain with high hulling recovery (78.1%), milling recovery (69.7%), a high head rice recovery (HRR) of 65.3% and desirable cooking quality traits in terms of intermediate amylose content (AC) (21.6%), GC of 44mm, ASV of 4.0, white kernel appearance and very occasional chalkiness (Figure 2).

**Agronomic performance and biotic stress resistance:**

In nutrient management trials under aerobic system of cultivation, DRR Dhan 54 recorded significant response in terms of high % of germination (76.34%), vigor index (43.5), number of panicles per m<sup>2</sup> (487), test weight (25.11g), high spikelet fertility (89.36%) and yield (4.67 t/ha) with application of 150% of recommended dose of fertilizer (RDF) with N: 120-180 kg/ha, P: 40 kg/ha and K: 50kg/ha. It is resistant to leaf blast, sheath rot, RTD and false smut and moderately resistant to neck blast, bacterial leaf blight, brown spot, glume discoloration and stem borer.

Owing to its suitability under aerobic system of cultivation with high yielding performance under water limiting conditions, wider adaptability, multiple pest resistance and desirable grain quality traits, cultivation of DRR Dhan 54 would stabilize rice yields in the country under constrained water resources.