

Rajendranagar Vari-1 [IET 27077 (RNR 11718)] - Multiple stress resistant, high yielding rice variety

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Abstract

Rajendranagar vari-1 was derived through pedigree method of breeding from a cross MTU 1010 x NLR 34449 with an aim to develop high yielding multiple stress resistant variety. It is a medium duration variety having medium slender grain. It has recorded 6.81% and 9.7% increase in yield over check variety in station trials and minikits, respectively. Rajendranagar vari-1 (IET 27077) was evaluated during 2017 to 2020 in AICRIP trials and recorded 23.29, 18.61, 39.69, 40.12 and 12.46 percent increase in yield over alkaline, inland saline, saline tolerant, sensitive and local check, respectively in in zone VI and VII states (Puducherry, Telangana and Gujarat). It is identified as fertilizer responsive with potential to yield about 8.0 t/ha. It has multiple resistance to different □□ □□ □□ □□ □□ □□ □□ □□ □□ □□ □□ H, Blast, Brown Sp besides having salinity tolerance. Rajendranagar vari-1 was released through Telangana State Variety Release Committee and notified vide gazette number S.O. 8 (E) Dated 24.12.2021.

Keywords: Rice, variety, multiple resistance, high yielding, Telangana

Introduction

In Telangana, majority of the famers prefer to grow medium duration, high yielding varieties. However, the available medium duration varieties are susceptible to major insect pests and diseases resulting in high cost of cultivation and realizing less profits to the farmers. Moreover, due to rice-rice system of cultivation, the area under salinity is also being increased in Telangana state. Hence, there was a need to develop a medium duration variety having resistance to multiple insect pests and diseases apart from salinity tolerance. Accordingly, a cross was attempted between MTU 1010 (High yielding, short duration variety) and NLR 34449 (High yielding, fine grain variety with blast and salinity tolerance) during the year 2006 with an objective to develop high yielding multiple resistant variety and carried forward the breeding material through pedigree method. Rajendranagar vari-1 was identified during 2010 in F6 generation and promoted for replicated yield testing.

Morphological traits

Rajendranagar vari-1 is a medium duration (135-140 days), medium slender grain culture suitable for *kharif*. It has erect, semi dwarf nature, dark green foliage and good tillering habit with good panicle exertion (**Figure 1**). It has erect and medium size flag leaf with



Figure 1: Field view of Rajendranagar vari-1 (RNR 11718) variety



no pigmentation on any plant part. The grains have 5.43 mm kernel length, 2.08 mm kernel breadth and 2.61 L/B ratio. Matured grains have straw coloured

glumes, translucent kernel with no abdominal white. The test weight ranges from 17 to 19 g (**Figure 2**).



Figure 2: Grain, rice and panicle of Rajendranagar vari-1 (RNR 11718) variety

Yield performance

Rajendranagar vari-1 recorded 6.81% yield superiority over check, MTU 1001 in station trials (2011 to 2015). It recorded 9.7 per cent higher yield (6555 kg/ha) compared to check, MTU 1001/BPT 5204 (5975 kg/ha) in minikit testing over three years across 173 test locations at farmers' fields. Rajendranagar vari-1 recorded 16.7% higher grain yield (4400 kg/ha) than saline tolerant check, CSR 23 (3770 kg/ha) and identified as salinity tolerant, nominated to AICRIP trials. It was evaluated during 2017 to 2020 under IET 27077 and recorded 23.29, 18.61, 39.69, 40.12 and 12.46 percent increase in yield over alkaline, inland saline, saline tolerant, sensitive and local checks, respectively in zone VI and VII states (Puducherry, Telangana and Gujarat). It was found to be fertilizer responsive with higher yields at high nitrogen doses and recorded significantly high grain yield (7256 kg/ha) compared to checks, MTU 1010 (6097 kg/ha), BPT 5204 (4413 kg/ha) and RNR 15048 (5792 kg/ha). Agronomy trials conducted at different locations with different nutrient levels indicated highest Grain Yield Efficiency Index (GYEI) of 1.27 for Rajendranagar vari-1 followed by checks, CSR 36 (1.05), CSR 23 (1.0), CSR 10 (0.84) and local check (1.04).

Reaction to biotic and abiotic stresses

Perusal of data on the reaction of Rajendranagar vari-1 against different diseases in station and AICRIP

trials, indicated that it has moderate resistance to leaf blast, neck blast, bacterial leaf blight and brown spot. Similarly, it has moderate resistance to insect pests BPH, stem borer and leaf folder. However, it was found susceptible to gall midge. It can be concluded that Rajendranagar vari-1 offers multiple insect pest and disease resistance, which can help in reducing the plant protection costs of the farmers by Rs. 3000 to 5000/- per acre. Performance of Rajendranagar vari-1 under alkalinity and inland salinity trials clearly depicts that it has salinity tolerance.

Grain quality parameters

Rajendranagar vari-1 has good grain quality parameters of high milling percentage (67.7%) and head rice recovery (60.5%). It has intermediate amylose content of 23.7%, alkali spreading value of 6.0, gel consistence of 39.0 with very occasional chalkiness. The kernels have 10.35% crude protein and found to be nutritionally rich.

Release and notification

Rajendranagar vari-1 was recommended for released through State Sub-Committee on Crop Standards and Release of Varieties during the year 2021 and notified by Government of India vide Gazette Publication No. S.O. 8 (E) Dated 24.12.2021 for cultivation in Telangana state.