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Rice variety, MTU-1318 in Krishna district- enhanced productivity replacing other varieties sustenance

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Abstract

Rice is the most predominant crop in Krishna district which offers food more than 70 percent of the population. Paddy variety MTU 1318 is suitable for Kharif and recommended for Krishna districts under transplanted conditions. Farmers are majorly cultivating long duration, coarse and medium slender grained varieties of paddy such as MTU 1061 and fine grained varieties such as BPT 5204. But due to weather disturbances and late onset of monsoons lodging of crop plants was seen. So, need non-lodging varieties are required to cope up with the climatic conditions. MTU-1318 non-lodging and moderately resistant to diseases. MTU-1318 which is of 150 days duration and has a potential yield of 7,500 kg ha⁻¹, has special features like non-lodging, low grain shattering and performs well even under low 'N' management conditions (recommended N 75%) as that of Swarna. It is moderately resistant to leaf blast, neck blast and sheath rot and has field tolerance to BLB and BPH. Frontline demonstrations were conducted by Krishi Vigyan Kendra, Ghantasala during *Kharif* 2023 and 2024 across 10 villages of Krishna district to demonstrate rice variety MTU-1318 in Krishna district- enhanced productivity replacing other varieties sustenance. Pooled data of two years revealed that demo variety MTU-1318 had shown highest average yield (66.5 q ha⁻¹) as compared to MTU-1061 (62.7 q ha⁻¹). Its adaptability and yield advantage have made it a popular choice among farmers and a significant contributor to the rice production economy. Hence cultivation of non-lodging rice variety (MTU-1318) will enhanced productivity replacing other varieties sustenance.

Keywords: Rice, nonlodging, low nitrogen and yield

Introduction

Rice (*Oryza sativa* L.) is one of the most important crops in the world that offers food for more than 50% of the world's population. A 100 g of rice provides 345.0 k cal, 78.2 g of carbohydrates and 6.8 g of protein. Rice is cultivating in 22 lakh hectares in Andhra Pradesh state with 8.79 million tonnes production (G. P. Sunandini *et al.* 2023) [8]. The average productivity of paddy is 6661 kg ha⁻¹. In Krishna district paddy is cultivating in 1.62 Lakh ha. Rice crop is highly suitable for warm and humid climate. Acharya NG Ranga Agricultural University (ANGRAU) introduced several new seed varieties, including rice types such as MTU-1318. This variety designed to be high-yielding and resistant to lodging, helping farmers increase income and crop resilience. The SVRC varieties, MTU Rice 1318 is highly non-lodging and has become popular as non-lodging Swarna. It has replaced more than 2.0 lakh hectares of Swarna area in the State of Andhra Pradesh and is poised to become a mega rice variety in the coming years (B Tejasri and B Aparna, 2022 & Vishnuvardhan Reddy *et al.*, 2022) [9, 10]. KVKs are grass root level organization meant for application of technology through assessment, refinement and demonstration of proven technologies under micro farming situation in a district (Das *et al.*, 2010, Sharma *et al.*, 2017) [3, 7]. Hence, the study was planned with the objective to demonstrate non-lodging paddy variety MTU 1318 during *kharif* season through Frontline demonstrations in the district.

Materials and Methods

The present experiment was conducted by Krishi Vigyan Kendra, Ghantasala during the *Kharif* season for two consecutive years during 2023 and 2024 in the farmers fields of different 10

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villages thus a making of total 10 demonstrations. A total of ten farmers were selected based on their innovativeness, progressive and activeness in adoption of latest technologies with the help of department officials and direct observation while during field visits and other interactive meetings. The frontline demonstration was conducted in two consecutive years in the farmer fields with a main objective to demonstrate the rice variety MTU-1318. The high yielding and nonlodging rice variety MTU-1318 was used as a demo and MTU-1061 used as control. Pedhamuthevi, Mangalapuram, Devarakota, Tattiveru, Ghantasalapalem, Devarakota, Vemulamada, Kosuru, Bodagunta and Matlammalapalli villages of Krishna district were selected as experimental units during *kharif* 2023 and 2024. The testing varieties MTU-1318 were provided to the selected farmers and the package of practices for paddy cultivation followed as per ANGRAU recommendations. The data on yield and economics of all the varieties were recorded. The data obtained from experiments were subjected to statistical analysis. Statistical significance was tested by applying T-test at 0.05 level of probability and critical differences were calculated for those parameters, which were found significant ($p < 0.05$) to compare the effects of different varietal treatments.

Results and Discussion

Krishi Vigyan Kendra, Ghantasala has conducted Front line demonstration of paddy crop in 10 locations during two consecutive years. Results of the Pooled years data (Table-1(a)) MTU-1318 recorded significantly higher plant height (Cm) (104.3 cm), higher number of productive tillers hill⁻¹ (19.5),

higher panicle length (Cm) (29.2 cm) and higher number of grains per panicles (323) over farmer use variety MTU-1061 showed lowest plant height (Cm) (101.2 cm), lower number of productive tillers hill-1 (16), lower panicle length (Cm) (23.4 cm) and lower number of grains per panicles (297). Hence most of the farmers shifting variety MTU-1061 to MTU-1318 due to lodging condition of MTU-1061. MTU-1318 considering high yield potential as a major factor for selection of a variety, high market rate, non - lodging trait, submergence tolerance traits. So most of the farmers are preferring MTU 1318. Similar findings were recorded with Bhuyan *et.al.*2022 ^[1], Kumari *et.al.*2022 ^[5] and MV Krishnaji *et al.* 2025 ^[4]. Results of the pooled data (Table-2) indicated that MTU-1318 variety recorded higher yield (66.5 q ha⁻¹) which was significantly superior over MTU-1061 (62.7 q ha⁻¹). The overall two years pooled yield increased was 5.9% under MTU-1318 demo variety compared to MTU-1061. Regarding economics, highest net returns (Rs.72,206.00 ha⁻¹) noted with MTU-1318 where as in MTU-1061 it was Rs.53,742.00 ha⁻¹ and B:C ratio 1.94:1 was more in treatmental varieties (MTU-1318) where as 1.61:1 in MTU-1061. Similar findings were recorded with Roy *et.al.*2023 ^[6], B Tejasri and B Aparna, 2022 ^[9], Chinni *et.al.*2023 ^[2]. The reason for above results due to that the new varieties MTU-1318 was non-lodging & submergence tolerant rice variety during these two consecutive years. Economics of any crop plays a major role in making recommendations for dissemination of a new technology and its adoption to the farmers. The data related to net returns and B:C ratio of demo and farmer practice were presented in Table 3.

Table 1: Characteristics of paddy variety selected for study

Treatment	Year of release	Duration	Characteristics
MTU-1318 (T ₁)	2022	155 days	Yield – 6.5 to 7 t ha ⁻¹ Non-lodging, Low nitrogen responsive, High HRR and desirable grain quality, Moderately resistant to blast and sheath rot
MTU-1061 (T ₂)		150 days	-

Table 1(a): Biometric observations (Pooled years during Kharif 2023 and 2024) recorded for MTU-1318 in comparison with MTU-1061

Treatments	MTU-1318	MTU-1061
Plant population - No of hills/m ²	19	18
Plant height (Cm)	104.3	101.2
No of productive panicles per hill	19.5	16
Panicle length (Cm)	29.2	23.4
No of grains per panicles	323	297
Grain yield (Kg ha ⁻¹)	6656.5	6271.5

Table 2: Yield of Paddy (Year wise)

Year	No. of Demonstrations	Yield (q/ha)		% increase in yield
		MTU-1318	MTU-1061	
2023	5	67.5	63.7	5.8
2024	5	65.6	61.8	6.0
Pooled	10	66.5	62.7	5.9

Table 3: Economic parameters (Pooled data) of demo and control varieties of paddy

Year	Net returns (Rs ha ⁻¹)		B:C ratio	
	MTU-1318	MTU-1061	MTU-1318	MTU-1061
2023	71475	51435	1.95	1.59
2024	72937	56050	1.94	1.64
Pooled	72206	53742	1.94	1.61

Statistical analysis

Interference: P value is above 4.6 reveals that calculated test statistic value is greater than standard value indicating rejection

of null hypothesis and accepting alternate hypothesis. And the result indicated that MTU-1318 recorded higher yield (66.56 q ha⁻¹) which was significantly superior over MTU-1061 (62.81 q ha⁻¹).

Conclusion

From the two years of demonstrations, it could be concluded that the Demonstration of paddy variety MTU-1318 along with regular advises, frequent monitoring, timely operations and need based training programmes by KVK, Ghantasala leads to higher yields and nonlodging condition. It could be considered as a better option for achieving higher productivity and profitability of paddy crop in areas of Pedamuthevi, Mangalapuram, Devarakota, Tattiveru, Ghantasalapalem, Devarakota, Vemulamada, Kosuru, Bodagunta and Matlammalapalli villages of Krishna district.

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