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Assessment of Suitable Yellow Mosaic Virus Resistant Black Gram Varieties

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ABSTRACT

Yellow mosaic virus is the most prevalent and destructive viral pathogen in black gram which resulted in decrease in area of blackgram cultivation. It causes yield loss up to 70-80 per cent and also reduces the seed quality. Therefore, suitable blackgram varieties with Yellow mosaic virus (YMV) resistance suitable for Tiruvallur district is need to be assessed. Hence on farm assessment for blackgram varieties resistance to YMV study was carried out in Tiruvallur district during 2022-2023. The results revealed that lower disease incidence of 5.5 per cent was recorded in VBN 11 which was superior to other varieties followed by 11.5 per cent in TBG 104 and highest of 25.50 per cent disease incidence was recorded in farmers practicing variety T 9. Variety VBN 11 recorded higher yield of 8.30 q/ha with higher net return of Rs. 32,125/ha and benefit-cost ratio of 2.49. Hence VBN 11 would be a better variety resistance for YMV and for enhancing the productivity of black gram in Tiruvallur district, Tamil Nadu.

INTRODUCTION

Blackgram (*Vigna mungo* L.) is a very important grain legume crop in Tamil Nadu being cultivated predominantly during rabi and is cultivated in 1560 ha in Tiruvallur district. It is the second important pulse crop of India in terms of area and production next to pigeonpea. One of the major reasons behind low productivity of blackgram is insufficient disease resistant and high yielding varieties, biotic and abiotic factors and lack of proper crop management practices. Plant viral diseases cause serious economic losses in many pulse crops by reducing the yield and quality. Among the various viral diseases, the yellow mosaic disease caused by Mungbean yellow mosaic virus (MYMV) is the most serious disease and major bottle neck for the production of blackgram. Hence the present study was undertaken to assess the latest released high yielding MYMV resistant blackgram varieties in Tiruvallur district, Tamil Nadu.

MATERIALS AND METHODS

TO 1: VBN 11 (TNAU, 2021): The variety VBN 11 is released during 2020 by suitable for Kharif, Rabi and Summer seasons of Tamil Nadu. It is a cross derivative of PU 31 x CO 6 and matures in 70-75 days. The plant type is determinate with synchronous maturity. The seeds are bold, black oval in shape with dull lustre and the mean 100 seed weight is 4.7 g. The variety manifests good battering and recorded an average of 21.6 per cent protein and 5.7% arabinose content. The average yield of VBN 11 is 899 kg/ha which is 11.8 per cent increased yield over VBN 6(783 kg/ha). It is resistant to Mung bean Yellow Mosaic Virus (MYMV), and moderately resistant to powdery mildew diseases.

TO 2: TBG 104 (RARS, Tirupathi, 2016): TBG 104 is a variety suitable for Rabi season released by ARS, Tirupathi during 2016. The variety is tolerant to Yellow mosaic virus and matures in 75-80 days with the average yield of 850 kg/ha.

FARMER'S PRACTICE

T 9 (IIPR, 1972): T9-Duration 65-70 days; Susceptible to YMV; Released during 1972 as Selection from Kanpur Local.

Critical inputs like Blackgram VBN 11 seeds and BlackgramTBG 104 seeds were distributed and trial was implemented in five villages during rabi season, 2022-2023. Periodical observation was conducted and critical parameters like number of pods per plant, yield per hectare, net returns, benefit cost ratio and yellow mosaic virus incidence were recorded.

RESULTS

Black gram varieties VBN 11 and TBG 104 were assessed for yellow mosaic virus resistance in comparison with the farmer's practice of T 9 in five locations *viz.,* Punnapakkam, Kilambakkam and Poorivakkam villages of Tiruvallur district, Tamil Nadu. Out of the two varieties, VBN 11 performed better with grain yield of 8.30 q/ha followed by TBG 104 with grain yield of 7.6 q/ha. VBN 11 fetched higher Net returns of Rs. 32125/ha with the BC ratio of 2.49, while TBG 104 gave Net returns of Rs. 26400 with BC ratio of 2.14. T 9 variety was found to be susceptible to yellow mosaic virus incidence and recorded grain yield of 6.15 q/ha with Net returns of Rs.16475/ha and BC ratio of 1.70. TBG 104 was observed moderately resistant to YMV incidence of 11.5 per

cent while VBN 11 recorded YMV incidence of only 5.5 percent. Hence among the two varieties assessed for YMV resistance, VBN 11 black gram variety was found to be highly suitable for cultivation in Tiruvallur district.

Table 1. Performance of the MYMV resistant blackgram varieties

Technology Option	No.of trials	No.of pods per plant	Yield (q/ha)	Net return (Rs./ha)	B:C ratio	MYMV incidence
FarmersPractice T 9	5	22.20	6.15	18050	1.80	25.50%
Technology 1 VBN 11		34.50	8.30	32125	2.49	5.50
Technology 2 TBG 104		29.00	7.60	26400	2.14	11.50

CONCLUSION

Farmers were satisfied with the performance of Blackgram variety VBN 11 in yield and resistance against yellow mosaic virus incidence. VBN 11 is high yielding with high net returns compared to TBG 104 and 78.43% of reduction in incidence of YMV was recorded in VBN 11 over the farmers practice.