

decreasing trend and in some cases it followed a plateau or even reduced considerably. This finding corroborates

the findings of Williams (1967), Dev and Kumar (1982) and Rajendra Prasad *et al.*, (1984).

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VAMBAN 1 - A YELLOW MOSAIC RESISTANT BLACKGRAM VARIETY



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ABSTRACT

An attempt was made to evolve a blackgram strain with high yield potential combined with resistance to yellow mosaic disease which resulted in the isolation of the culture, NPRB 1. This culture recorded a grain yield of 772 kg/ha with an overall increase of 57 per cent over Co 5. It matures in 60 days with synchronous flowering and fruiting habit. Hence, NPRB 1 was released as Vamban 1 blackgram especially for the hot spot areas of Tamil Nadu where yellow mosaic is a problem.

KEY WORDS : Black Gram, YMV Resistance, Flower synchrony.

Among the pulse crops, blackgram is cultivated in an extent of 1,18,580 hectares which is about 24.0 per cent of the total area of pulses

raised in Tamil Nadu. The average productivity of blackgram is about 340 kg/ha which is very low. One of the main reasons is the loss caused by

the yellow mosaic virus disease. This disease causes yield loss varying from 10 to 100 per cent depending upon the crop stage at which the plants get infected. Hence a varietal improvement in blackgram for superior yield and resistance to yellow mosaic virus is a long felt need. With the above objective, breeding work was initiated at the National Pulses Research Centre, Vamban, Pudukkottai, Tamil Nadu and the results are presented hereunder.

MATERIALS AND METHODS

For hybridization, a few types from the germplasm maintained in the

were also conducted in 25 locations in six districts of Tamil Nadu.

RESULTS AND DISCUSSION

In the pedigree method of selection, the recombinants of the cross KM 1 x H 76-1 were found to be promising in their yield performance and resistance to yellow mosaic virus. NPRB 1 recorded a grain yield of 772 kg/ha at the station trials conducted during kharif and Rabi seasons of 1983-85, with an overall increase of 57 per cent over Co 5 (Table 1).

During 1984-85 kharif, the culture was tested in five University research

Table 1 : Performance of NPRB 1 at National Pulses Research Centre, Vamban, Pudukkottai

S.No.	Season and Year	Grain Yield (kg/ha)	
		NPRB 1	Co.5
1.	1983 Kharif	502	138
2.	1983 Rabi	871	732
3.	1984 Kharif	874	388
4.	1984 Rabi	762	695
5.	1985 Kharif	727	213
6.	1985 Rabi	898	780
	Overall Mean	772	491
	Increase over Co.5	57%	-

centre viz., H 76-1, Cul.4 and PU 13 were used as donor parents for the YMV resistance and crossed with KM 1, Rewa and C 5-61 during 1979. Pedigree method of selection was followed from F2 to F5 generations. From the cross KM 1 x H 76-1, three promising genotypes were isolated in F5 generation and the yield evaluated. Based on the consistent performance, the culture-NPRB 1 was selected for large scale testing and forwarded to multilocation trial for testing in the five research stations of Tamil Nadu during Kharif 1984. Adaptive Research trials

stations in which NPRB 1 registered a mean yield of 872 kg/ha while Co 5 recorded only 537 kg/ha, the yield increase over cost being 62 per cent (Table 2). The adaptive Research trials at 25 locations during kharif season revealed the superiority of NPRB 1 over Co 5 with a yield improvement of 17 per cent (Table 3).

This culture, NPRB 1 is highly resistant to yellow mosaic virus disease while blackgram Co 5 recorded upto 100 per cent infection. Besides, NPRB 1 was found to be tolerant to root rot (15.0 per cent), stemfly (8.82 percent)

Table 2. Yield performance of NPRB 1 in the Research Stations in Tamil Nadu

S.No.	Research stations	Grain Yield (kg/ha)	
		NPRB 1	Co.5
1.	Vellore	1100	750
2.	Cuddalore	1625	500
3.	Kovilpatti	281	308
4.	Pudukkottai	874	388
5.	Periyar	482	737
	Mean	872	537
	Increase over Co, 5	62%	-

and pod borer (10.3 percent), when compared to Co 5 (Table 4).

The morphological description of NPRB 1 are:

habit	erect
Plant height	30-35 cm,
Pigmentation (stem)	Purple
branching	3-4
leaves	trifoliate, Lanceolate
Inflorescence	axillary raceme
Flower colour	Yellow
stigma	capitate
stamens	diadelphous
pod:	pubescent

pod length	4.5 - 5.5 cm
seeds per pod	6-7
1000 grain weight	45.8 g
days to 50% flowering	30-35 days,
days to maturity	60-65 days

Based on the above desirable features, the culture NPRB 1 has been released as Vamban 1 blackgram by the Tamil Nadu Agriculture University, Coimbatore during January 1987 for large scale cultivation in Pudukkottai, Periyar and Salem districts and other places where the yellow mosaic virus incidence is severe in Tamil Nadu.

Table 3 Yield performance of NPRB 1 in adaptive research trials in the districts

S. No.	Districts	No. of trials	NPRB 1	Co 5
1	Pudukkottai	15	502	347
2	Periyar	2	544	381
3	Salem	2	1052	1158
4	Dharmapuri	3	446	578
5	North Arcot	2	361	420
6	South Arcot	1	350	350
	Overall mean for 25 locations		525	448
	Increase over Co 5		17.0 per cent	

Table 4 Reaction of NPRB 1 to major diseases and pests under field conditions

S.No.	Culture/Variety	Yellow mosaic (%)	Root rot (%)	Stemfly (%)	Pod borer (%)
1.	NPRB 1	3.30	15.00	8.82	10.33
2.	Co 5	100.00	42.50	17.36	10.96
3.	KM 1	34.20	78.60	7.69	17.00
4.	T9	50.00	35.00	22.41	18.00

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INFLUENCE OF SALINITY ON OSMOTIC PRESSURE OF RICE (*ORYZA SATIVA* L.)

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ABSTRACT

Under NaCl salinity stress, the relatively salt tolerant rice varieties maintained a lower osmotic pressure in their plant parts, than the relatively salt susceptible rice varieties. Higher root-shoot ratios observed in the tolerant rice varieties than the susceptible ones facilitated for higher absorption of water and nutrients.

KEY WORDS: Rice, Salt tolerance, osmotic pressure.

The area under problem soils in India has been reported to be 6.9 million hectares of which 4.0 million hectares are subjected to salinity and alkalinity (Abrol and Bhumbla, 1976). As salt concentrations are injurious to high yielding varieties, the tolerant variety can perform well when compared to the salt susceptible ones (Tajuddin and Chandrasekaran, 1979). Rice, in general is reported as medium tolerant (Bernstein, 1964) and wide variations exist among the varieties for salt tolerance (Pearson, 1959; IRRI, 1967; Hegde and Joshi, 1974; Tajuddin and Chandrasekaran, 1978). Even though many explorative studies have been made, there is not much headway in understanding the physiological basis of salt tolerance in rice. Therefore an

attempt was made to study certain aspects of the mechanism of salt tolerance in the rice varieties with respect to the osmotic pressure in the cells that is generally associated with the salt tolerance.

MATERIALS AND METHODS

A glass house experiment was conducted during August, 1980 with 11 rice varieties viz., AU 1, Annapoorna, Pokkali, Getu, Dasal, Damodar, Non-abokra (all relatively salt tolerant), TKM 9, Triveni, ADT 31 and Co 13 (all relatively salt susceptible). Water culture technique was adopted as recommended by Yoshiad *et al.* (1976).

The sterilized seeds with 0.1 per cent Mercuric chloride were washed several times with de-ionised water to