

New high yielding greengram variety : VBNGg 2

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Abstract: Greengram culture VGG 9 is a cross derivative from VGG4 x MH 109. It matured in 65-70 days and attained 50% flowering after 30-35 days. The average seed yield was 750 kg/ha and 825 kg/ha during rainfed and irrigated condition respectively. The seeds were shining green in colour with 3.60-3.90 g as 100-seed weight. Grain yield was 11.7, 11.8, 11.7 per cent increase over Vamban 1, 14.9, 6.2, 30.5 per cent increase over CO 5 during kharif, rabi and summer seasons respectively. It was recorded 23.0, 14.9 per cent increase over CO 6 during Kharif and rabi seasons respectively while it was on par with CO 6 during summer season. Hence the culture VGG 9 was released as new greengram variety VBNGg 2 for large scale cultivation in Tamil Nadu during January 2001.

Key words : Green gram, variety, VBNGg 2.

Introduction

Greengram (*Vigna radiata* L. Wilczek) an important pulse crop in Tamil Nadu, occupies 1.29 lakh hectares with the production of 0.60 lakh tonnes. The average productivity of greengram is 467 kg/ha which is very low when compared to other countries like Australia, Taiwan, etc. (Anonymous, 2000). Hence attempts have been made to increase the productivity of greengram at National Pulses Research Centre, Vamban. This resulted in the development of promising culture VGG 9 and it was released as an improved

variety during January 2001 as VBNGg 2 greengram for cultivation in Tamil Nadu.

Materials and Methods

The culture VGG 9 greengram was evolved at National Pulses Research Centre, Vamban. The crosses were made between VGG 4 and MH 109 and elite plants were selected from F₂ onwards, evaluated for their sustained performance and homozygosity and the culture VGG 9 was identified as the best. The culture VGG 9 was evaluated with checks at National Pulses Research Centre, Vamban starting from

Table 1. Performance of greengram culture VGG 9 at various trials

Culture	No. of trials	VGG 9	Vamban 1 (ch)	CO 5 (ch)	CO 6 (ch)	Per cent increase over		
						Vamban 1	CO 5	CO 6
<i>Kharif</i>								
Station	(6)	528	417	313	278	26.5	68.7	89.9
MLT	(9)	644	611	542	-	5.4	18.8	-
ART	(67)	823	737	716	669	11.7	14.9	23.0
<i>Rabi</i>								
Station	(5)	414	321	392	-	29.0	5.6	-
MLT	(6)	724	608	646	-	19.1	12.1	-
ART	(51)	750	671	706	653	11.8	6.2	14.9
<i>Summer</i>								
ART	(34)	823	737	633	856	11.7	30.0	-

Table 2. Performance of greengram cultuer VGG 9 at various districts under ART

District	No.of trials	VGG 9	Vamban	CO 5 (ch)	CO 6 (ch)	Per cent increase		
						Vamban 1	CO5	CO6
<i>Kharif 1998 and 1999</i>								
Tirunelveli	(3)	1031	834	514	-	23.6	100.6	-
Madurai	(3)	764	664	727	-	15.1	5.1	-
Vellore	(3)	950	754	725	-	26.0	31.0	-
Tiruchy	(6)	500	459	499	819	8.9	0.2	-
Pudukkottai	(6)	952	959	622	888	-	53.1	7.2
Thiruvannamalai	(5)	824	712	750	613	15.7	9.9	34.4
Dindigul	(6)	663	574	550	645	15.5	20.5	2.8
Kancheepuram	(6)	752	706	598	810	6.5	25.8	-
Namakkal	(6)	966	799	768	702	20.9	25.8	37.6
Coimbatore	(6)	1093	975	1140	1053	12.1	-	3.8
Sivagangai	(3)	915	816	768	-	12.1	19.1	-
Tiruvallur	(3)	832	751	-	427	10.8	-	94.8
Salem	(3)	952	902	-	712	5.5	-	33.7
Dharmapuri	(2)	856	816	-	819	4.9	-	4.5
Theni	(3)	678	679	-	708	-	-	-
Villupuram	(3)	447	380	-	339	17.6	-	31.9
Mean	(67)	823	737	716	669	11.7	14.9	23.0
<i>Rabi 1998-99 and 1999-2000</i>								
Vellore	(3)	733	800	633	-	-	15.8	-
Namakkal	(6)	1002	929	963	901	7.9	4.0	11.2
Dindigul	(6)	723	583	590	555	24.0	22.5	30.3
Coimbatore	(3)	1067	956	1063	-	11.6	0.4	-
Kancheepuram	(6)	910	819	703	963	11.1	29.4	-
Ramanathapuram	(6)	353	317	284	373	11.4	24.3	-
Thiruvannamalai	(3)	667	609	-	621	9.5	-	7.4
Tirunelveli	(3)	889	820	-	712	8.4	-	24.9
Thanjavur	(3)	545	454	-	456	20.0	-	19.5
Pudukkottai	(3)	781	854	-	734	-	-	6.4
Madurai	(3)	497	425	-	394	16.9	-	26.1
Salem	(3)	750	619	-	685	21.2	-	9.5
Tiruchy	(3)	840	733	-	785	14.6	-	7.0
Mean	(51)	750	671	706	653	11.8	6.2	14.9
<i>Summer 1998-99 and 1999-2000</i>								
Kancheepuram	(6)	1001	876	756	995	14.3	32.4	0.6
Pudukkottai	(3)	976	882	827	-	10.7	18.0	-
Erode	(3)	1051	1001	880	-	5.0	19.4	-
Thanjavur	(3)	484	417	427	-	16.1	13.3	-
Tirunelveli	(3)	573	476	379	-	20.4	51.2	-
Dindigul	(6)	712	603	593	660	18.1	20.1	7.9
Tiruchy	(3)	655	533	568	-	22.9	15.3	-
Madurai	(3)	986	961	-	937	2.6	-	5.2
Salem	(3)	943	955	-	928	-	-	1.6
Cuddalore	(1)	700	525	-	575	33.3	-	21.7
Mean	(34)	823	737	633	856	11.7	30.5	-

Table 3. Pest and disease reaction of greengram culture VGG 9

Disease	VGG 9	Vamban 1 (ch)	CO 5 (ch)	CO 6 (ch)
Yellow mosaic virus disease at Vamban kharif 1999) (1-9 grade)*	5.0	6.0	5.0	5.0
Yellow mosaic virus at Panpozil, Tenkasi Taluk Rabi 1999-2000)	1.0	1.0	9.0	1.0
Powdery mildew (1-9 grade)* Rabi 1999-2000)	6.0	6.0	5.0	3.0
<i>Cercospora</i> leaf spot (1-9 grade)* Kharif 1999)	4.0	6.0	3.0	4.0
Pod borer damage (%) Kharif 1999)	15.0	17.1	14.2	13.6
Rabi 1999-2000)	8.6	7.9	7.2	8.8

Grade : 1 = Highly Resistant; 3 = Resistant; 5 = Moderately resistant; 7 = Susceptible; 9 = Highly susceptible.

1995 to 2000, multilocation trial during 1997-98 and ART during 1998-99 and 1999-2000 on farmers holding at various districts of Tamil Nadu. Thus, a total of 178 trials was conducted. Besides, the reaction of the culture was also scored against important diseases at natural and artificial screening as per the standard procedure (Anonymous, 1999).

Results and Discussion

The evaluation trial report of the culture VGG 9 from the station trial at National Pulses Research Centre, Vamban are presented in Table 1. The culture VGG 9 which was tested in station trials from 1995 to 2000 at National Pulses Research Centre, Vamban has recorded an average seed yield of 528 and 414 kg/ha, which is 26.5 and 29.0 per cent increase over Vamban 1 and 68.7 and 5.6 per cent increase over CO 5 during *kharif* and *rabi* seasons respectively. Similarly under multilocation trials during *kharif* and *rabi* seasons of 1997-98, recorded an average of seed yield 644 and 676 kg/ha during *kharif* and *rabi* seasons respectively, which is 5.4 and 10.8 per cent increase over Vamban 1, 18.8 and 15.8 per cent increase over CO 5 during *kharif* and *rabi* seasons respectively.

Under Initial variety Trials of All India Coordinated programme for MULLaRP during *kharif* 1999 at all the zones of India the culture VGG 9 has recorded an average seed yield of 553 kg ha⁻¹ which is 14.7 per cent increase over the national check ML 5. Finally the performance of the culture VGG 9 was tested under Adaptive Research Trials during *kharif*, *rabi* and summer seasons of 1998-2000 at various districts of Tamil Nadu. It recorded an average seed yield of 823, 750, 823 kg ha⁻¹ during *kharif*, *rabi* and summer seasons respectively with an increased seed yield of 11.7, 11.8, 11.7 per cent over Vamban 1, 14.9, 6.2, 30.5 per cent over CO 5. The culture also recorded an increased seed yield of 23.0 and 14.9 over CO 6 during *kharif* and *rabi* seasons respectively while the culture VGG 9 was par with CO 6 in seed yield during summer season.

Reaction to pest and diseases

The greengram culture VGG 9 recorded moderate resistance reaction for yellow mosaic disease (grade 5) as that of Vamban 1, CO 5 and CO 6 at the hot spot area of Vamban during *kharif* season. However, VGG 9, Vamban 1 and CO 6 recorded resistant reaction at Ponpzhil village of Tenkasi Taluk while CO 5 was found

to be highly susceptible (grade 9) to yellow mosaic disease during rabi season. With regard to powdery mildew, the culture VGG 9 recorded moderate reaction (grade 6) as against Vamban 1, CO 5 and CO 6 which recorded grades 6, 5 and 3 respectively. The culture recorded moderate resistant reaction (grade 4) for *Cercospora* leaf spot while the check variety Vamban 1, CO 5 and CO 6 recorded 6.0, 3.0 and 4.0 respectively. In case of pod borer damage, this culture recorded moderate level of pod damage of 15.0 and 8.6 per cent during *kharif* and *rabi* seasons respectively which is equal to that of check varieties.

Morphological characters

The culture VGG 9 matures in 65-70 days and attains 50% flowering after 30-35 of sowing. It is an erect plant type with 50-60 cm plant height. The leaves are trifoliate with lobbing. The flower colour is yellow, pods develop sparse hairiness and consist of 10-12 seeds/pod and the 100 seed weight is 3.60-3.90 g. The seeds are shining green in colour. This culture recorded an highest yield

of 1750 kg ha⁻¹ at Panavoor, Tirunelveli district during Kharif season. The average seed yield is 750 kg and 825 kg ha⁻¹ during rainfed and irrigated conditions respectively. The cooking characters are desirable and cooked seeds are with good appearance, flavour, texture and taste. The protein content (22%) is equal to Vamban 1, CO 5 and CO 6.

Considering the superior performance of VGG 9 over check varieties namely Vamban 1, CO 5 and CO 6, the culture VGG 9 was released as a new greengram variety VBNGg 2 for large scale cultivation in Tamil Nadu during January 2001.

References

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