

The description of Paiyur - 2 is as follows:

Pedigree	: Pureline selection from germplasm accession IS 15845	Peduncle	: Well exerted above the boot leaf
Plant height (cm)	: 200-215	Glume colour at maturity	: Deep red
Duration (days)	: 90-95	Grain colour (at maturity)	: Red
No. of leaves/plant	: 8-9	Panicle compactness	: Semicompact
Leaf length (cm)	: 70-80	Panicle shape	: Elliptic
Leaf width (cm)	: 7.5-8.0	Panicle length (cm)	: 20-25
Pigmentation	: Tan	Panicle width (cm)	: 7.5 - 8.5
Leaf colour	: Green	Awn	: Absent
Sheath colour	: Green	Seed size	: Medium
Midrib colour	: White		

(Received: April 1995 Revised: May 1995)

Madras Agric. J., 82(9, 10): 517-519 September, October 1995
<https://doi.org/10.29321/MAJ.10.A01251>

K.1: A HIGH YIELDING, DROUGHT TOLERANT BLACK GRAM FOR RAINFED VERTISOL

S.CHIDAMBARAM, O.RAMANATHAPILLAI, P.MUTHUSWAMY, C.V.DHANAKODI and R.SANKARA PANDIAN
 Agricultural Research Station
 Tamil Nadu Agricultural University
 Kovilpatti

ABSTRACT

A high yielding drought tolerant black gram culture KBG 512 has been released as K 1 variety. It is a hybrid derivative of the cross Co.3 x US 131. It is suitable for cultivation in southern districts viz., V.O.Chidambaranar, Tirunelveli-Kattabomman, Ramanathapuram and Pasumponthevar Thirumaganar under rainfed conditions during *Purattasi pattam*. It has recorded an average grain yield of 711 kg/ha with an increase of 35.9 per cent over Co5. The crop duration is 70-75 days.

KEY WORDS : Black Gram, K 1, Yield, Rainfed.

Black gram (*Vigna mungo* (L.) Hepper) is one of the major pulse crops in Southern districts of Tamil Nadu under rainfed vertisol. Area under pulses as pure crop is found to be increasing year after year and sorghum area is being replaced by black gram as a pure crop in rainfed tract. Besides,

black gram is mostly grown as an intercrop in cotton under rainfed conditions. Hence, development of black gram varieties with high yield and drought tolerance is of paramount importance for enhancing black gram production as well as economic status of dry land farmers.

Table 1. Overall performance of black gram culture KBG 512

Trials	No. of trials	Yield (kg/ha)		% increase over Co 5
		KBG 512	Co 5	
Station trials	8	949	721	31.62
Multilocation trials	4	807	497	63.36
ART 1990-91	12	610	559	9.12
ART 1991-92	6	462	406	13.80
Co-ordinated trials	9	728	432	68.50
Mean		711	523	35.9

Table 2. Rainfall and yield of KBG 512 under ART

Year	Yield (kg/ha)		% increase over Co 5	Range of rainfall in mm
	KBG 512	Co 5		
1990-91	610	559	9.2	362 - 669
1991-92	462	406	13.8	172 - 416

Table 3. Performance of culture KBG 512 under inter-cropping trials in southern districts (Rabi 1992).

Village / locations	Yield of LRA 5166 cotton kg/ha	Yield of KBG 512 Black gram kg/ha	Total monetary return Rs/ha	Yield of LRA 5166 cotton	Yield of Co 5 Black gram kg/ha	Total monetary return Rs/ha
Mean of 11 locations	480	366	8100	489	336	7922

Increased monetary return over inter-cropping of Co.5 Black gram = 2.25%

Research efforts were carried out at the Agricultural Research Station, Kovilpatti for the isolation of such cultures from 1985 onwards.

MATERIALS AND METHODS

The genotypes and segregating materials received from the Department of Pulses, School of Genetics, Tamil Nadu Agricultural University, Coimbatore were screened for their drought tolerance (DT) in the rainfree months during summer and their drought index (DI) was worked out. Based on DI the promising genotypes and selection from segregating materials were utilised further in the breeding programme. Fresh crosses

were effected between drought tolerant genotypes and high yielding varieties. From the selection of segregating materials, cultures with high yield and drought tolerance were isolated. One hundred and eight entries were evaluated for the isolation of desirable types. Among them, the cultures KBG 512 (a cross derivative of Co.3 x US 131) was isolated as a high yielding, drought tolerant one. The analysis of rainfall pattern was also done during the test evaluation under rainfed condition. The culture KBG 512 was found to be promising in the drought year 1985 (262 mm of rainfall) registering higher grain yield than check Co 5.

RESULTS AND DISCUSSION

In the overall performance, in the trials conducted at Agricultural Research Station, Kovilpatti for seven years, multilocation trials conducted at four research stations in Tamil Nadu, 18 locations in adaptive research trials in farmers fields of southern districts of Tamil Nadu and 9 locations in the All India Coordinated trials, KBG 512 black gram has recorded a mean grain yield of 711 kg/ha with an increase of 36.9 per cent over Co5 (Table 1). The increased monetary return per ha accrued for the additional yield of 188 kg/ha to the dry land farmers in the southern district of Tamil Nadu in raising the high yielding drought tolerant culture KBG 512 in place of Co5 is estimated to be Rs.1562

The analysis of the rainfall pattern during 1990-91 and 1991-92 revealed that 1991-92 season was less favourable with rainfall ranging from 172 mm to 416 as against 362 to 669 mm during 1990-91. Thus, even under less rainfall situation, KBG 512 recorded higher grain yield than Co 5 (Table

Table 4. Reaction to pests, diseases and quality characters

Pests/Diseases	KBG 512	Co 5
Pests (under field conditions)		
Stem fly %	2.8	3.6
Pod borer %	4.0	6.0
Under Laboratory conditions		
Stem fly %	5.1	6.2
Pod borer %	17.1	17.6
Diseases (under field conditions)		
Powdery mildew (score)	5	7
Leaf spot (score)	2.6	3.8
Yellow mosaic disease (%)	3	8
Quality characters		
Protein %	24.18	22.97
Methionine (mg/100 mg of protein)	1.08	0.87
Cooking quality		
Flour out turn (g) (out of 400 g)	268	240
No. of Iddlies obtained from 800 g. sample	16	14
Weight of one Iddli (g)	57.5	60.7
Volume of one Iddli (ml)	85.0	80.0
Bulk density (weight/volume)	0.68	0.76

Table 5. Metric trials of KGB 512.

Plant height (cm)	30 - 35
Duration (days)	70 - 75
Days to 50% flowering	35 - 40
Number of branches	3 - 4
Number of pods/plant	20 - 30
Number of seeds/pod	6 - 8
100 seed weight (g)	5.3
Pod length (cm)	5.2 - 6.0
Seed colour	Black
Anthocyanin pigment	Present
Flower colour	YYellow
Pod	Hairy
Grain yield (Average yield in kg/ha)	711

1,2) The culture KGB 512 is suitable for inter-cropping in cotton and it will not affect the yield of main crop. The inter-crop of KGB 512 in cotton is capable of giving 2.25 per cent of increased monetary return when compared with the

inter-crop of Co5 check (Table 2). This culture KGB 512 is moderately resistant to stem fly and tolerant to powdery mildew and yellow mosaic (Table 4) It is preferred by the farmers in rainfed area. The grain is also preferred by the consumers. It has protein content is best suited for the preparation of different food items like *iddli*, *dosai*, *vadai* and for other culinary purposes. The grains have good consumer preference (Table 4) The metric traits of the culture KGB (K 1) are given in table 5.

In view of the short duration, high grain quality and acceptability and suitability of cultivation in southern districts of Tamil Nadu under rainfed vertisol both as pure crop and inter crop in cotton, the culture KGB 512 was released as K 1 for general cultivation in Tamil Nadu

(Received: April 1994 Revised: May 1995)

Madras Agric. J., 82(9, 10): 519-522 September, October 1995

BSR.1 (ICGV.86143): A HIGH YIELDING SPANISH BUNCH GROUNDNUT FOR WESTERN ZONE OF TAMIL NADU

D.SUDHAKAR, K. GANESAN, N.SUNDARAM, W.M.ALIKHAN, A.GOPALAN, V.MURALIDHARAN, A.MOHAMMED ALI and V.S.SHANMUGASUNDARAM

Agricultural Research Station
Tamil Nadu Agricultural University
Bhavanisagar 638 451

ABSTRACT

A bunch variety of groundnut BSR.1 (ICGV. 86143) has been developed from the Agricultural Research Station, Bhavanisagar for the western zone of Tamil Nadu. It recorded a mean pod yield of 2845 kg/ha in 101 days which was higher than VRI.2 (17.6%), VRI.3 (21.6%) and Co.2 (49.6%). At National level, it ranked second among 13 entries in zone II and III by recording a mean yield of 2710 kg/ha (16.4 to 33.6% over checks). The kernel yield was also higher than the checks by 22.4 to 40.1 per cent. In the farmers holding (OFT/FLD/ART), it registered 2053 kg/ha (mean for 25 trials) which was 11.5 to 14.4 percent higher than VRI.2, Co.2 and VRI.3 It has 70.3 per cent shelling, 82.4 per cent sound matured kernel 49.5 per cent oil and 38.5 g hundred kernel weight. It is moderately resistant to late leaf spot and rust diseases. It possesses fresh seed dormancy for 21 days.

KEY WORDS : Groundnut, New Variety, Fresh Seed Dormancy, Spanish Bunch

Groundnut (*Arachis hypogaea* L.) is one of the major oilseed crops grown in the Western zone of Tamil Nadu in 2.1 lakh ha with an annual production of 2.1 lakh tonnes. The three main seasons are June -July (*Kharif*), December - January (*rabi*) and April-July. The currently recommended spanish bunch varieties (Co.2 VRI.2, VRI.3, TMV.2, JL.24) are either non dormant or with a minimum fresh seed dormancy of 7-10 days

only. In order to develop a spanish bunch groundnut variety with normal duration, high yield and fresh seed dormancy, a collaborative research project between the Tamil Nadu Agricultural University (TNAU) and the International Crop Research Institute for Semi-Arid Tropics (ICRISAT) was initiated and breeding materials were exchanged. BSR.1 (ICGV.86143) is the outcome of this collaborative research project.