

CO. 3 A NEW BOLD SEEDED BENGAL GRAM VARIETY FOR TAMIL NADU

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To develop a bold seeded variety of bengal gram, intensive search was made among the germplasm types available at Pulses unit, School of Genetics, Tamil Nadu Agricultural University Coimbatore, which resulted in an isolation of an early maturing bold seeded culture GoG. 2. This culture GoG. 2. matures in 85 days with erect plants having three branches. It has recorded an overall mean grain yield of 1000 Kg per ha under rainfed condition. It has yield potential upto 2400 Kg/ha under rainfed condition. It has bold seeds of 30-32 g per 100 seeds. It is resistant to root rot and moderately resistant to pod borer. It has a good flavour and taste while cooking. This culture was released as Co. 3 bengal gram for cultivation in Tamil Nadu especially in Coimbatore, Salem and Periyar districts.

Bengal gram (*Cicer arietinum* L.), an important winter pulse grown over an area of 10,000 ha in Tamil Nadu with a production of 6,000 tonnes. The earlier strains released in Tamil Nadu viz., Co. 1 (released in 1953) and Co. 2 (released in 1978) are 'desi' types having small and wrinkled seeds and a 100 grain weight of 15-17 g which are highly suited for parching. These varieties were very popular among the ryots and occupied almost 90 per cent of the area under rainfed crop till 1980. Recently due to the consumers' preference for bold seeded varieties, the farmers were attracted towards these varieties having bold seeds for better market value and profit. Hence attempts were made to develop such bold seeded varieties to replace the 'desi' varieties.

MATERIALES AND METHODS

While evaluating 600 genotypes collected from all parts of India and abroad, a few early maturing bold seeded plants were isolated during 1979. Among them GoG. 2 was found high yielding with bold seeds and earliness. This culture was tested against Co. 2 in farmers holdings under ART and MLT-II from 1982 onwards. In All India Coordinated trials, the culture was tested in peninsular zone against Annegiri as national check. The culture was also screened for pests and disease reactions at various stages and subjected to nutritive, cooking and organoleptic tests.

RESULTS AND DISCUSSION

The overall performance of GoG. 2 bengalgram is presented in Table-1. It has recorded an overall mean grain

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Table 1 Overall mean performance of CoG. 2 Bengal gram.

S. No.	Name of the Trial	No. of trials	Yield kg/ha			
			CoG. 2	Co. 2	Annegiri	Shoba
1.	University Campus	12	1017	769	648	781
2.	Adaptive Research Trials	51	889	701	—	—
3.	- do - (with Shoba)	5	960	739	—	963
4.	All India Coordinated Trials	14	1207	1191	1024	—
	Mean	82	1018	850	836	372
	Duration	—	85	90	85	90
	% increase over Co. 2	20.0				
	% increase over Annegiri	21.7				
	% increase over Shoba	16.7				

Table 2 Performance of CoG. 2 in Tamil Nadu Agricultural University Campus, Coimbatore-3.

S. No.	Year and Season	Total	Yield kg/ha			
			CoG. 2	Co. 2	Annegiri	Shoba
1.	1980 Winter	Trial-I	1327	1137	1118	—
		Trial-II	1108	792	—	—
2.	1981 Winter	Trial-I	1015	975	735	—
		Trial-II	985	577	624	—
		Trial-III	1000	930	—	—
3.	1982 Winter	Trial-I	945	640	710	—
		Trial-II	940	740	735	—
		Trial-III	890	840	595	—
4.	1983 Winter	Trial-I	700	705	—	—
		Trial-II	597	497	230	—
5.	1984 Winter	Trial-I	958	625	437	812
		Trial-II	1333	—	—	750
	Duration		85	90	83	90
	Mean		1017	769	648	781
	% increase over Co. 2	32.3				
	% increase over Annegiri	56.94				
	% increase over Shoba	30.20				

Table 3 Overall performance of CoG. 2 in AR/ML Trials (1980 to 1984)

S. No.	District	No. of trails	Yield kg/ha			% Increase over Co. 2
			CoG. 2	Co. 2	Shoba	
1.	Coimbatore	32	889	701	—	26.8
2.	Coimbatore	5	960	739	963	29.9
3.	Dharmapuri	10	532	544	—	2.2
4.	Salem	7	488	438	—	10.0
5.	Periyar	2	513	369	—	39.0
	Mean	56	756	641	963	17.9

yield of 1018 kg/ha as against 850, 836, 872 kg/ha recorded by Co. 2, Annegiri and Shoba (local) respectively. The increase was in the order of 20%, 21.7% and 16.7% over Co.2, Annegiri and shoba (local) respectively. The performance of CoG. 2 bengal gram in Tamil Nadu Agricultural University research stations is presented in Table-2. It has recorded a mean grain yield of 1017 kg/ha whereas the checks Co 2, Annegiri and shoba (local) recorded only 749, 648 and 781 kg/ha respectively. The percentage of increase is 32.3, 56.9 and 30.2% over Co. 2, Annegiri and shoba respectively.

The performance of CoG. 2 bengal-gram in farmer's holdings under adaptive research trial is presented in Table-3. In Coimbatore districts, it has recorded a mean grain yield of 889 kg/ha as against 70/kg/ha by Co. 2. Again when it was tested against the local variety 'shoba' during 1984-85 winter, its performance was found to be on par.

In Salem district, CoG. 2 recorded a mean grain yield of 488 kg/ha as

against 438 kg/ha by Co. 2 with an increase of 100 per cent, while in Periyar district, CoG. 2 recorded 513 kg/ha as against 369 kg/ha by Co. 2. The percentage of increase was 39 over on Co. 2.

When this culture was tested in Dharmapuri district from 1982 winter onwards, it has given a mean grain yield of 532 kg whereas the check Co. 2 recorded 544 kg/ha.

The performance of CoG. 2 under All India Coordinated trial is presented in Table-4. This culture was tested in Central and south East Zone and in south Zone during 1983-84 and 1984-85 Rabi respectively. It has given an overall mean grain yield of 1207 kg/ha as against 1191 and 1024 kg/ha recorded by Annegiri and Co. 2 respectively. The increase was in the order of 17.9 and 13 per cent over Annegiri and Co. 2 respectively.

The culture CoG. 2 along with the checks viz., Co. 2 and Annegiri were tested for their reaction to major pests and diseases under field condition

Table 4 Performance of CoG. 2 Bengalgram under Coordinated trial

S. No.	Year/season	Zone	Centre	Yield kg/ha		
				CoG 2	Co. 2	Annegiri
1.	1983-84	Central	Mouranjpur	334	504	—
2.	Derol	548	632	—
3.	Sehore	857	1047	—
4.	Arhaj	2160	2291	—
5.	Dahod	2475	1899	—
6.	Akola	1704	1609	—
7.	Badnapur	1786	1680	—
8.	..	South East	Bangalore	1722	1969	1876
9.	Coimbatore	453	412	267
10.	ICRTISAT (A.P.)	1440	1166	1383
11.	Lam (A. P)	1846	1791	1267
12.	1984-85	South	Chiplima (Orissa)	600	516	1100
13.	Coimbatore	684	721	706
14.	Lam	295	437	570
Overall mean under All India Coordinated Trials				1207	1191	1024
% increase over Co. 2				1.3		
% increase over Annegiri				17.9		

Table 5 Reaction to pest and diseases

Sl. No.	Culture	Pod borer incidence (%)	Root rot (Grade)
1.	CoG. 2	8.81 (MR)	1 (R)
2.	Co. 2	7.93 (MR)	1 (R)
3.	Annegiri	19.23 (S)	2 (MR)
	R — Resistant		
	MR — Moderately resistant		
	S — Susceptible		

and the results are presented in Table-5. The culture CoG. 2 was found to be resistant to root rot and moderately resistant to pod borer (8.81 per cent).

This culture CoG. 2 matures in 85 days. The plants are erect with 3-branches producing 40-50 pods per plant. The special feature of this

Table-6 Nutritive values and cooking qualities of CoG. 2 Bengalgram

Character	CoG. 2	Co. 2	Annegiri
Protein %	22.11	21.98	18.40
Fat %	4.46	3.43	5.25
Ash %	3.44	3.29	3.24
Cooking time (min)	4.00	5.00	6.50
Water uptake for cooking (ml)	5.00	6.25	5.61
Increase in volume (ml)	5.50	6.00	6.00
<i>Organoleptic evaluation (Scores)</i>			
a) Colour and appearance	2.35	3.00	2.18
b) Flavour	2.29	2.18	2.06
c) Taste	2.65	2.06	2.53
d) Donness	2.76	1.82	2.47
Overall acceptability	10.06	9.06	9.24

culture is the uniform bold seeds with a seed size of 30-32 g per 100 seeds as against 15-17 g in Co. 2 and 25 g for Annegiri. The volume of 1000 seeds of CoG. 2 is also greater (230 cc) than Co. 2 and Annegiri (140 cc and 170 cc for Co. 2 and Annegiri respectively). The culture CoG. 2 is rich in nutrients, contains 22.11 per cent protein 4.46 per cent fat and 3.44 per cent (Table-6).

This culture was also subjected to cooking and organoleptic tests at Department of Food Technology, Tamil Nadu Agricultural University, Coimbatore, and the results of the various cooking and organoleptic tests are presented in Table-6. The cooking time and water uptake for cooking taken by this culture was comparatively low. The common recipe 'Sundal' was prepared out of CoG. 2 Co. 2 and Annegiri and the organoleptic

evaluation was conducted by score. This culture has recorded highest scores for flavour, taste, donness and overall acceptability when compared to the other cultures (Table-6)

With the above feature this culture CoG. 2 has been recommended by the State Variety Release Committee and released as Co. 3 bengalgram in 1986 for cultivation in Tamil Nadu.

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