

Pigmentation (stem) :	Purple	flowering, podding and higher grain and pod
Branching :	3.3	yield, the promising culture CoLT 20 has
Leaves :	Trifoliate	been released as Co 12 lablab by the Tamil
Inflorescence :	Axillary receme	Nadu Agricultural University, Coimbatore
Flower colour :	Purple	during January 1991 for large scale
Pods :	Broad, flat, purple	cultivation in Tamil Nadu.
Pod length :	8.32 cm	
Pod breadth :	2.61 cm	
Seeds per pod :	4.1	
100 seed weight :	38.46 g	
Days to 50% flowering :	40-45 days	
Days to maturity :	100-110 days.	

By virtue of this above superior characters like purple pod colour, early duration, more vigourous, prolonged

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## CO.5 GREENGRAM - A NEW HIGH YIELDING STRAIN FOR TAMIL NADU

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#### ABSTRACT

An improved medium duration photoinensitive high yielding Co.5 greengram has been released for general cultivation in Tamil Nadu. This strain was developed by crossing two greengram genotypes KM.2 X MG.50.10 (G) and has better field tolerance to yellow mosaic virus, leaf crinckle and powdery mildew compared to other released varieties.

Greengram occupies 1.36 lakh hectares with an annual production of 57,000 tonnes in Tamil Nadu State with a productivity of 431 Kg/ha. It is grown in different situations viz. rainfed, irrigated and rice fallows in all the districts of Tamil Nadu. In greengram the DMP, pod number and HI are the major characters that contribute to the final economic yield. Hence, an intensive breeding was initiated at TNAU under Centre for Biological Research on Pulses financed by NARP (ICAR) from 1981-1986. The research has led to the identification of a high yielding promising culture GD-2-83-5 (released as Co.5). The pedigree and the results are reported below.

#### MATERIALS AND METHODS

Cross pollination was effected between two greengram genotypes KM.2 and MG.50.10 (G) and this cross hybrid derivative GD-2-83-5 was isolated in 1983. This derivative entered the PYT stage during 1986 (F6 generation) and productivity testings were conducted during 1987 and 1989 in CYT, MLT and ART stage trials in comparison with KM2 and Co4 strains. In All India Co-ordinated Trials for South Zone also this culture performed better than the national check (PS.16). This culture being a medium duration (70-75 days) and

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Table 1. Performance of GD 2-83-5 in different trials.

Name of the trial	Trials (No.)	Yield of seeds (kg/ha)				Increase in % over		
		GD 2-83-5	Co 4	Paiyur 1	Zonal check (PS 16)	Co 4	Paiyur 1	Zonal check
1. Station trials								
a. Rabi	3	901	539	--	--	167.2	--	--
b. Kharif	4	850	587	--	--	144.8	--	--
2. MLT (Tamil Nadu)	8	1114	945	--	--	117.9	--	--
ART (Tamil Nadu)								
June-July	15	965	600	7390	--	160.8	130.6	--
Sept.-Oct.	16	685	607	608	--	112.9	112.7	--
Overall mean		903	656	673	--	137.7	134.2	--
4. All India trials (AICPIP)								
1988-89 Rabi								
CVT/SEZ	2	1114	--	--	875	--	--	127.3
CVT/SZ	3	745	--	--	504	--	--	147.8

photoinsensitive, can be fitted in rainfed as well as irrigated cropping systems. This culture is 10 days shorter to Co.4. This culture has more biological and economic yield coupled with erect and bushy habit, which is suited to rainfed farming. This culture GD 2-83-5 now named as Co.5 greengram was released during January, 1990.

## RESULTS AND DISCUSSION

The greengram culture GD 2-83-5 was tested for its yield potential under rabi (3 seasons) and kharif (4 seasons) from 1986 to 1989 at Millet Breeding Station, Coimbatore. This culture was tested with Co.4 and has given a mean yield of 901 Kg/ha in rabi (67.2% more than Co.4) and 850 Kg/ha in kharif (44.8% more than Co.4) as against the mean of 539 and 587 Kg/ha respectively recorded by Co.4 for the two seasons.

In multilocation trials conducted during 1986 at other research stations of Tamil Nadu (Vamban, Bhavaisagar, Paiyur, Vellore and Tindivanam) in set I & II this culture recorded an yield of 1014 and 1215 Kg/ha respectively with an increase of 22.2 and 14.8

under rainfed conditions in 15 and 16 locations at farmers holdings during June - July and September - October seasons respectively. It gave higher mean grain yields of 965 Kg and 685 Kg/ha respectively and Co.4 greengram recorded only 600 and 607 Kg/ha respectively during the two seasons.

The results from All India Co-ordinated trials conducted outside Tamil Nadu during 1988-89 rabi have shown its superiority over the national check (PS.16) with 47.8 per cent more in South Zone and 27.3 per cent in South East Zone. The overall performance of this culture given in Table-1 clearly shows its superiority over Co.4 and Paiyur.1

It is tolerant to major pests and diseases. At NPRC, Vamban the pod borer incidence was found to be 'nil' in this culture while it was 12.21 and 15.47 per cent for Co.4 and KM.2 respectively. The powdery mildew incidence was 7.6 and 8.7 per cent respectively for this culture and Co.4. The yellow mosaic virus infection was 62.2 per cent for Co.4 and 30.2 per cent for GD 2-83-5.

This culture is medium tall (55.3 cm) with a mean of 12 clusters and 35 mature pods. The

Pods contain 11 to 12 seeds with a grain yield of 13 g/plant and 3.4 g from 100 seeds. The harvest index and seed recovery (shelling outturn) are 35.8 and 72.0 per cent respectively. As a whole Co.5 greengram recorded an yield of 903 Kg/ha under rainfed system as against 656 Kg/ha by Co.4 and 673 Kg/ha by Paiyur-1 which accounts to 37.7 and 34.2 per cent respectively as increase. This variety is really a break-through in rainfed green gram cultivation for the following special features.

1. It matures in 70-75 days with an average yield of 903 Kg/ha under rainfed condition.
2. Erect, bushy and medium tall habit with green colour stem.
3. Photo-insensitive
4. Best suited to Adi and Purattasi pattams
5. High DMP and HI
6. Pods mature uniformly and can be completely harvested in two pickings
7. This strain has field tolerance to YMV and pod borers.

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## HETEROSIS FOR SEEDLING CHARACTERS IN COTTON (*G. hirsutum* L.)

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### ABSTRACT

The present investigation aims to estimate the extent of heterosis through 'Line X Tester' model in 28 cross combinations for seedling characters such as, germination percentage, shoot length (cm), root length (cm) and vigour index in cotton *G. hirsutum* L. The study indicated the possibility of attaining heterotic hybrids for seedling characters.

In recent past, plant breeders have extensively explored and utilized heterosis in boosting up yield and fibre quality in cotton. The scope for exploitation of hybrid vigour of seedling characters will depend on the direction and magnitude of heterosis, biological feasibility, and nature of gene action. Study of heterosis will have a direct bearing on the breeding methodology to be employed for the improvement of the trait or the crop as a whole.

### MATERIALS AND METHODS

A set of 'Line X Tester' cross was effected with seven lines differing in fuzz grade (Hutchinson and Ramaiah, 1938). Such as, TCH 63/1, TCH 63/4, TCH 104/1, TCH 65/8, TCH 96/6, TCH 70/7 and TCH 89/7 used as

males and four testers such as, MCU 5, MCU 7, MCU 9 and LRA 5166 used as females.

Representative seed samples were drawn from five plants each of the parents and the crossed seeds of all the 28, 'Line X Tester' combinations were utilized for the study.

Germination test was conducted as per the procedures outlined in the international rules for seed testing (Anon., 1985) with ten seeds from each samples of the parents and crossed seeds and the germination and other seedling studies repeated three times. For seedling study, five seedlings were taken from the germination test. The length from the collar region to the tip of the seedling in centimetres as shoot length and the length from the collar region to the tip of the root in

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