https://doi.org/10.29321/MAJ.10.A03213

Madras agric. J. 64 (7) : 451—453, July, 1977

Co. 3 Greengram - A New Short Duration Strain for Drylands

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A short duration and high yielding variety of greengram (*Vigna radiata* (L.) Wilczek) with compact plant type suitable for rainfed culture was evolved and released as Co.3 variety through pure-line selection. It matures in 65 to 75 days as against 90-100 days in Co.1. The strain Co.3 records a mean yield of 6.79 Q/ha under rainfed conditions which is an increase of 15 per cent over Co. 1 and 29 per cent over Co.2. The per day productivity of Co.3 is 9.7 kg/ha as against 8.0 and 6.2 kg/ha recorded by Co.2 and Co.1 respectively.

Greengram is normally grown as a rainfed crop during South-west monsoon period as a companion crop along with groundnut, sorghum, cotton and other crops, but sometimes grown as a pure crop also. Earlier research work done on varietal improvement in this crop resulted in release of the strain CO.1 for rainfed cultivation. It is a pure-line selection from a local variety of Coimbatore having a duration of 90-100 days and is capable of yielding 600 kg/ha. The strain CO.2 greengram was released during 1973 for gardenland culture which matures in 60-70 days (Veeraswamy *et al.*, 1973). But performance of CO.2 was poor under dryland conditions. Hence further work on the development of a high yielding variety with medium duration suitable for dryland culture is reported herein.

MATERIALS AND METHODS

Large collections of greengram comprising both indigenous and exotic origin were built up and studied in detail. Superior lines from the promising entries were selected and studied for their performance at different stages of breeding trials. In these trials, performance of one line i.e., PLS. 367/2 was found to be promising consistently with its superior performance under dryland conditions. For adjudging its adaptability with local strain CO.1, trials were laid out at different University Research Stations and cultivators' holdings.

RESULTS AND DISCUSSION

By systematic screening of the germplasm collections, a type obtained from the International Collection of Ludhiana viz. PLS. 367 with compact plant type suitable for rainfed culture was isolated. Single plant selections were made and finally, one promising line viz. PLS 367/2 was selected for further large scale yield testing. Subsequently at three University Research

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TABLE I. Performance of PLS.367/2 under rainfed conditions (Research Stations)

Year and Season		Location	Seed yield kg per hectare		
			PLS.367/2	CO.2	CO.1
1973	Monsoon	Coimbatore	590	525	510
	Winter	Coimbatore	1569	1461	205
	Winter	Bhavanisagar	433	292	361
	Winter	Aliyarnagar	379	229	417
	Winter	Kaveripattinam	1145	768	—
1974	Monsoon	Coimbatore	450	250	525
	Winter	Bhavanisagar	510	310	475
	Winter	Aliyarnagar	430	325	480
1975	Monsoon	Coimbatore	1143	750	833
	Monsoon (Late)	Coimbatore	637	424	—
Mean yield (kg/ha)			730	533	601
Percentage on CO.2			136.6		
Percentage on CO.1			121.3		

TABLE II. Mean performance of PLS. 367/2 on cultivators' holdings under rainfed conditions (Coimbatore, Salem and Dharmapuri Districts)

Year	No. of trials Conducted	PLS. 367/2	CO. 2	CO. 1	Pusa Baisakhi (Anjugam)	Percentage registered by 367/2 Over Co. 2	Over Co. 1	Over Pusa-Baisakhi
a) Adaptive Research Trials conducted by Department of Agriculture, Tamil Nadu								
1973—74	8	530 (235-900)	502 (238-850)	—	383 (160-825)	105-6		138.4
1974—75	7	555 (125-1275)	553 (150-1050)	483 (225-650	275 (200-700)	100.4	114.9	201.8
b) District Trials conducted by Tamil Nadu Agricultural University								
1974—75	6	695 (5 3-837)	510 (382-688)	612 (550-688)	—	136.3	113.6	—
1975—76	5	735 (620-840)	505 (435-550)	650 (585-780)	—	145.5	113.1	—
Overall Mean		629	518	582	329	121.4	106.1	191.3

Range in yield furnished in parentheses.

Stations regular comparative yield trials in randomised block design were conducted along with CO.1 and CO.2 as standards in ten trials spread over three years. The mean comparative performance of the new strain with other checks is presented in Tables I, II, and III. On an average selection PLS 367/2 gave 730 kg/ha under rainfed conditions in the trials conducted in research stations registering an increase of 36.6 per cent over CO.2 and 21.3 per cent over CO.1 (Table I). The mean performance of PLS 367/2 in research stations and cultivators' holdings indicated that the strain recorded an yield of 679 kg/ha with an increase of 29 per cent over CO.2 and 15.0 per cent over CO.1 (Table III). Thus, the superior performance of PLS 367/2 both at the research stations, as well as in cultivators' holdings has been broughtout not only over the existing strains CO.1 and CO.2 but also over the other variety viz., *Pusa Baisakhi* (Anjugam) now being distributed to cultivators under Pulses Development Programme (Table II). Based on its consistent superior performance under rainfed culture over ruling cultivars, selection PLS. 367/2 was released as CO.3 for commercial cultivation.

TABLE III. Mean performance of PLS 367/2 in research stations and cultivators holdings

Characters	PLS.367/2	CO.2	CO.1
Yield in kg/ha (rainfed)	679	526	592
Yield in % on Co.2	129	100	—
Yield as % on Co.1	115	—	100
Per day productivity in kg/ha	9.7	8.0	6.2
Cost benefit ratio	1:2.22	1:1.62	1:1.83
Duration in days	65-75	60-70	90-100

The authors are thankful to Prof. A. Subramanian, the then Head of the Department of Agricultural Botany, Agricultural College and Research Institute, Coimbatore for his keen interest and encouragement.

REFERENCE

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