

MALIKA, AN IMPROVED VARIETY OF VEGETABLE COWPEA

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Abstract: In an investigation to identify a high yielding vegetable cowpea type with good quality green pods, 13 genotypes were collected from different agroclimatic regions of Kerala and 20 single plant selections made. Based on yield and yield attributes, nine promising selections were subjected to comparative yield trial for three seasons. Even though Selection 16 and 7 ranked first and second respectively for yield of vegetable pods in the comparative yield trials, pod length and number of seeds per pod were maximum for Selection 7 which is a single plant selection from Trivandrum Local. The results of the farm trials conducted at 10 locations in Trivandrum district revealed the superiority of Selection 7 over the others with respect to the yield of vegetable pods. Hence, Selection 7 was released as "Malika" having a duration of 100 days. It is suitable for cultivation in the homestead during kharif and in the rice fallow during summer in Trivandrum district of Kerala.

Key words : Malika, vegetable cowpea, improved variety, yield trials.

INTRODUCTION

Vegetable cowpea (*Vigna unguiculata* var. *sesquipedalis*) is an important crop of South India. It is grown in uplands during the rainy season and in the rice fallow during the summer months. The tender green pod of vegetable cowpea is an important source of plant protein in human diet. The aim of a plant breeder will be, to evolve a type with high yield of good quality green pods. Since, most of the economic characters are controlled by polygenic system, the superiority of the types can be unravelled only by various biometric methods. As a first step in the improvement of self pollinated crops, selection is the most appropriate method. Hence the aim of the present investigation was to select a high yielding vegetable cowpea type with good quality green pods from among a number of genotypes collected from different agroclimatic regions of Kerala.

MATERIALS AND METHODS

Seeds of 13 vegetable cowpea types were collected during kharif 1983 and single plant selections were made twenty promising single plant selections were put to progeny row trial for testing homogeneity during rabi 1983. Preliminary yield trial (PYT) with the above 20 single plant selections was conducted

during kharif 1985. In the PYT, Selection 7 was the highest yielder followed by Selection 16. Based on yield and other desirable attributes in the preliminary yield trial, nine promising selections were selected for comparative yield trial. Comparative yield trials (CYT) were conducted with the nine selected lines and four check varieties during summer 1986, kharif 1986 and kharif 1987. Based on the comparative yield trial data the two higher yielding selections were subjected to farm trials during summer 1989 at 10 locations in Trivandrum district and a station trial at the College of Agriculture, Vellayani, Trivandrum.

RESULTS AND DISCUSSION

In all the three CYTs, Selection 16 was the top yielder of vegetable pods and Selection 7 ranked second in the CYTs conducted during summer 1986 and kharif 1986. Selection 7 exhibited a gain in yield due to selection of 251.6 per cent and a significantly high pod yield (11006 kg ha⁻¹). Lal and Singh (1993) reported that Cowpea 263, a selection from Bangalore Local was released after evaluation for eight seasons including farm trials with 74 per cent improvement in pod yield over the check variety. Significant increase in green pod yield was noticed in the genotypes IIHR Sel. 11 and IIHR Sel. 16 while evaluating 19

Table 1. Preliminary yield trial (PYT)

Treatment (Selection No.)	Duration, days	No. of ptxis per plant	Length of pod, cm	No. of seeds per pod	No. of seeds per unit length, 5 cm	Yield, kg ha ¹
1	98	107.5	36.25	17.00	2.25	1262
2	95	216.0	35.95	17.40	2.60	2420
3	98	56.0	26.88	17.50	3.00	1727
4	98	40.0	30.63	16.00	2.65	1022
5	100	311.5	26.71	16.07	3.72	4798
6	90	111.5	24.25	13.67	3.00	1028
7	105	254.0	65.94	18.13	1.44	11006
8	100	58.5	33.75	14.73	2.38	1723
9	90	330.0	22.13	17.25	3.53	2525
10	100	90.0	39.00	17.50	2.38	2881
11	103	125.5	54.00	17.63	1.63	5700
12	102	74.5	40.38	17.38	2.44	2957
13	103	121.5	34.55	16.17	2.43	2943
14	102	337.0	31.72	16.73	3.13	4818
15	92	264.0	23.50	14.59	3.60	3704
16	110	233.5	48.54	18.18	2.75	9372
17	91	363.0	23.59	16.50	3.28	2001
18	95	130.5	24.00	14.75	3.13	1816
19	92	195.0	33.93	15.38	2.44	2317
20	100	30.0	28.30	15.21	2.66	432
CD (0.05)		140.45	7.018	NS	0.644	1950.2

diverse vegetable cowpea types (Aghora *et al.* 1994). Moreover, pod length and number of seeds per pod were maximum for Selection 7, which is a single plant selection from Trivandrum Local.

The length of pod and number of pods per plant are the most important characters that can be considered for selection in improving

the yield in cowpea/vegetable cowpea. Birdar *et al.* (1991), Oseni *et al.* (1992) and Tamilselvam and Vijendradas (1994) reported that selection based on pod length, seeds per pod, pods per plant and 100 seed weight will simultaneously improve the yield in cowpea. Mathur (1995) reported that selection on the basis of pods per plant and grain yield per plant will be more effective in the

Table 2. Yield performance of the genotypes before and after selection

Sl. No.	Original genotypes	Selection, No.	Original yield, kg ha ⁻¹	Grain in yield due to selection, %
1	Manjeri Mack	1	1020	23.73
2	Vellayani Local	2	1644	47.20
	Vellayani Local	3	1644	5.05
3	Kolencheri - 13	4	750	36.27
	Kolencheri - 13	5	750	540.00
4	Calicut 78	6	885	85.23
5	Trivandrum Local	7	3130	251.60
6	Kolencheri Local	8	1250	37.84
	Kolencheri Local	9	1948	2.72
7	Trivandrum Local (pink)	10	2082	38.38
8	Trivandrum Local (green)	11	1515	276.00
9	Sreekaryam Local	12	1770	67.10
	Sreekaryam Local	13	1770	66.27
10	Manjeri Local	14	2140	125.10
	Manjeri Local	15	2140	73.08
11	Poudikonam Local	16	6355	47.50
12	Adoor Local	17	1800	5.32
	Ailoor Local	18	1800	0.89
	Acloor Local	19	1800	28.95
13	Vellanikkara Local	20	350	23.76

development of promising genotypes in cowpea.

The pooled means for yield of vegetable pod during the three seasons revealed Selections 16 and 7 as the first and second top yielders respectively. The increase in yield over the check varieties was substantial. Hence the Selections 7 and 16 were subjected to farm trials along with the recommended variety 'Kurutholapayar' and a local variety as

standard. The farm trials were conducted at 10 locations in the farmer's fields in Trivandrum district and a station trial at the College of Agriculture, Vellayani, Trivandrum during summer 1989. The pod yield of Selection 7 was substantially higher (9807 kg ha⁻¹) than that of Selection 16 (5877 kg ha⁻¹) and the recommended variety Kurutholapayar (5644 kg ha⁻¹). The local varieties used were different at different locations and hence their yields were not taken into consideration for

Table 3. Comparative yield trials (CYT)

Sl. No.	Genotype	Yield of vegetable pods, kg ha ⁻¹				Length of pod, cm (kharif 1987)	No. of seeds/pod (kharif 1987)
		Summer 1986	Kharif 1986	Kharif 1987	Mean		
1	Selection 1	365	5793	4556	3571	35.5	15.6
2	Selection 4	722	6200	2778	3233	28.7	13.1
3	Selection 7	1440	9207	3926	4858	43.5	17.1
4	Selection 8	218	8265	4518	4334	30.3	14.2
5	Selection 10	905	6276	5407	4196	37.0	16.2
6	Selection 11	818	9172	3652	4547	37.9	14.3
7	Selection 12	842	5453	2593	2963	27.7	13.9
8	Selection 14	598	7520	4037	4052	27.0	14.7
9	Selection 16	2933	11601	6333	6956	27.7	15.0
10	Manjeri plain	399	4726	4741	3289	38.1	17.0
11	Manjeri black	473	5309	2185	2657	25.7	16.2
12	Vayalathur Red	631	3582	2259	2158	21.1	14.1
13	Kurutholapayar	512	7800	3111	3808	32.5	13.8
CD (0.05)		208	2581.4	1829.5		5.49	2.12

Table 4. Farm trials during summer 1989

Sl. No.	Location	Yield of vegetable pods (kg ha ⁻¹)		
		Sel. 7	Sel. 16	Kurutholapayar (check)
1	Kaznakuttom	9567	3767	4100
2	Pothencode I	21933	5633	3500
3	Pothencode II	13466	6867	4600
4	Sreekaryam	2706	3333	3286
5	Attipra	3194	3402	14166
6	Konchira	2399	2133	2366
7	Aruvikkara	11099	5222	2644
8	Nemom	18433	5967	8200
9	Kunnathukal	7200	6991	925
10	Perumpazhuthoor	7525	10677	8633
11	College of Agri., Vellayani	10367	8100	12233
Mean		9807	5877	5644

statistical analysis.

Selection 7 has a profusely growing and climbing plant type. The first picking of vegetable pods can be taken from the 8th week

after sowing and thereafter picking can be taken once in every 3 days. About 10 to 15 pickings can be taken from a crop. The vegetable pods are long (average 43.5 cm) and light green. The number of seeds per pods ranges from 17 to 19. The seeds when mature have a brown colour with a white speck on one end.

Due to the above desirable qualities of vegetable pods and the high yielding nature of Selection 7, it was released as an improved variety under the name Malika for cultivation in the Trivandrum district of Kerala.

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