

Studies on the Performance of Certain Bittergourd (*Momordica charantia* L.) Varieties

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Studies on the performance of thirteen bittergourd varieties conducted at Horticultural Research Station, Periyakulam have indicated i) the superiority of the variety Coimbatore Long with higher hectare yield of 16.2 tonnes ii) medium length, girth and fruit weight iii) medium height and spread of the plants and iv) The fruits are tender and attractive with green colour.

Bittergourd or Balsam pear (*Momordica charantia* L.) is grown extensively in India for curries. Usually two varieties are grown, one for the hot season with small fruits and the other for the rainy season with long fruits (Swaran Singh Purewal, 1957). There is a good range of variability in shape, size and colour. The genetic materials have been profitably used within the last few decades and some excellent varieties have been developed. The performance of such varieties varies in different agroclimatic regions. Hence with the aim of assessing the performance of different bittergourd varieties, studies were taken up and the results are presented.

MATERIALS AND METHODS

Thirteen varieties of bittergourd viz., Coimbatore Long, Long white, H. 279, white long MC.18, MC.48, MC.76 white I, white II, (Coimbatore) Periyakulam I, Periyakulam II (Periyakulam) and Taliparamba, and Vellayani, (Taliparamba) were utilized for the study. Field trails were laid out for three

seasons viz., 1973 (Monsoon), 1974 (Summer) and 1976 (Summer) at Horticultural Research Station Periyakulam. The varieties were raised in a randomised block design replicated twice. Each replication contains eight pits spaced at two metre eitherway. Three plants were allowed in each pit. The plants have been trained on bush like long stakes. A manurial schedule of 50 tonnes of Farmyard manure, 50 kg of Nitrogen and 60 kg of phosphate per hectare have been applied (Choudhury, 1967). Uniform cultural and plant protection operations were followed for all the varieties.

Observations were recorded on number and weight of fruits per pit and yield of fruits per hectare. Morphological characters like height, spread, leaf length, leaf breadth, length of flower stalk, number of staminate and pistillate flowers, male to female flower ratio, number of days taken for flowering, crop duration, length of fruit stalk, length, girth and weight of individual fruit, number of days taken for fruit development, number of seeds

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per fruit, number of seeds in 100 g and colour of fruit were recorded.

RESULTS AND DISCUSSION

The results of the trial are presented in Tables I to III. The significantly highest mean number of fruits per pit and per plant was recorded in three varieties viz., Periyakulam I, MC.18 and Coimbatore Long. In respect of yield significantly the highest per pit and per plant yield was recorded in the varieties Coimbatore Long, Taliparamba and Vellayani. The variety Coimbatore Long recorded the highest per hectare yield of 16.2 tonnes.

Regarding the morphological characters, the variety MC. 76 was the tallest plant among 13 varieties. The highest north to south spread (160 cm) was recorded in white II, while the spread (95 cm) was in Taliparamba. The highest east to west spread (165 cm) was recorded in the variety white Long, while the lowest spread was in Vellayani, (100 cm). The variety MC. 76, had the highest leaf length (13.8) cm while the highest breadth was found in Long white (13 cm).

The variety MC. 76 had the longer flower stalk (8.5 cm), as against

TABLE I. Performance of bittergourd varieties at Periyakulam

Varieties	Number of fruits per pit				Weight of fruits per pit (kg)				Mean yield No. of fruits	Per plant weight of fruits (kg)	Mean yield (tonnes/ha)
	1973 monsoon	1974 summer	1976 summer	Mean	1973 monsoon	1974 summer	1976 summer	Mean			
Coimbatore Long	66.0	40.5	73.0	61.5	2.70	8.35	8.35	6.46	15.37	1.61	16.20
Taliparamba	29.0	95.0	29.0	51.0	3.35	1.90	4.15	6.15	12.70	1.53	7.90
Long white	35.0	33.0	35.0	34.6	3.45	3.60	3.50	3.50	6.52	0.87	8.75
Vellayani	47.5	45.5	47.0	46.5	4.80	4.85	4.75	4.80	11.60	1.20	12.00
H. 279	31.0	50.5	32.0	38.0	3.30	1.45	2.25	2.35	9.50	0.58	5.90
MC. 18	72.5	72.0	82.0	75.5	3.58	2.70	2.85	3.05	18.80	0.71	7.65
MC. 48	24.5	24.5	23.0	24.0	7.35	1.30	1.25	3.15	6.00	0.31	7.90
MC. 76	49.0	47.5	49.0	48.5	4.50	4.55	4.55	4.55	12.10	1.13	11.40
White I	41.0	39.5	40.5	40.5	2.45	2.55	2.50	2.50	10.10	0.62	6.30
White II	49.5	43.5	43.5	44.0	3.35	3.30	3.35	3.35	11.00	0.83	8.40
White long	29.5	30.5	29.0	29.5	2.25	2.10	2.15	2.15	7.30	0.83	8.40
Periyakulam I	113.5	112.5	17.0	81.0	5.93	1.30	1.16	2.80	20.20	0.70	7.00
Periyakulam II	49.5	31.5	49.0	43.5	1.30	1.45	3.55	2.10	10.80	0.52	5.25
SED	6.25**	2.3**	1.45**	1.3**	0.7**	0.1**	0.26**	0.30**			
CD (P=0.05)	13.62	5.01	3.16	2.82	1.52	0.22	0.67	0.66			

TABLE II. Morphological characters of bittergourd varieties

Varieties	Ht of the plant (cm)	Spread of 3 plants		Leaf length (cm)	Leaf breadth (cm)	Length of flower stalk (cm)	No. of staminate flowers in a plant	No. of pistillate flowers in a plant	Male to female flower ratio	No. of day taken for flowering	Crop duration
		N to S (cm)	E to W (cm)								
Coimbatore											
Long	158	155	108	12.5	12.0	4.84	386	17	23 : 1	61	135
Taliparamba	172	95	110	13.3	12.0	7.96	307	13	23 : 1	59	135
Long white	125	146	110	12.7	13.0	8.74	367	16	23 : 1	58	95
Vellayani	147	128	100	12.5	12.4	6.94	396	15	26 : 1	58	135
H. 279	192	118	139	12.5	12.0	7.78	383	16	24 : 1	56	130
MC. 18	160	110	142	12.4	12.0	8.19	390	19	20 : 1	61	135
MC. 48	115	132	118	12.5	12.5	5.79	370	12	30 : 1	60	135
MC. 76	220	174	124	13.8	12.5	8.50	295	12	24 : 1	70	85
White I	166	139	125	12.0	11.0	7.86	276	12	23 : 1	61	80
White II	184	160	120	12.0	12.0	7.88	297	12	25 : 1	60	80
Whitelong	145	132	165	11.7	11.7	6.28	426	16	26 : 1	58	95
Periyakulam I	205	158	132	12.0	12.0	7.35	396	15	22 : 1	58	135
Periyakulam II	149	134	142	12.5	11.7	7.34	316	14	22 : 1	58	135

the lowest record in Coimbatore Long (4.84 cm). More number of staminate flowers (426) was recorded in white long while the highest number of pistillate flowers (19) were found in white long and MC. 18. The staminate to pistillate flower ratio ranged from 20 : 1 to 30 : 1. The variety H. 279 was found to be earlier in flowering (56 days). The crop duration ranged from 80 - 135 days.

Regarding the fruit characters Periyakulam I, had the lengthier fruit (7.7cm) while the lowest (4.74 cm) was found in MC. 48. The maximum length of fruit (26 cm) was recorded in Taliparamba and Long white, followed by Periyakulam II (22 cm), Coimbatore

Long and Vellayani (21 cm). The variety MC. 18 produced fruits with minimum length (12 cm). The variety Taliparamba produced the maximum girth of fruit (10.5 cm), followed by Vellayani and White I (10.2 cm). The lowest girth (9.1 cm) was in H. 279. The highest individual fruit weight of 103 g was recorded in the variety Taliparamba, followed by Long white (8.5 g), and Vellayani (81 g). The lowest individual fruit weight of 40 g was recorded in MC.18. The varieties white Long and Periyakulam I, took 7-9 days more for fruit development whereas Periyakulam II and MC. 74 were found to be earlier. The highest number of seeds per fruit (41) was recorded in the variety Periva-

TABLE III. Morphological characters of bittergourd varieties

Varieties	Length of fruit stalk (cm)	Length (cm)	Fruit		No. of days for fruit development	No. of seeds in 100 g	No. seeds per fruits	Colour of fruit
			Girth (cm)	Wt (g)				
Coimbatore Long	5.86	21.00	2.60	71.00	8	470	28	Green
Taliparamba	6.83	26.00	10.50	103.00	8	484	33	Light green
Long white	7.22	26.00	9.50	85.00	9	480	26	Whitish green
Vellayani	5.76	21.00	10.20	81.00	8	421	22	Light green
H.279	6.46	15.40	9.10	46.00	8	530	26	Light green
M.C.18	5.52	12.00	9.20	40.00	8	504	13	Light green
MC.48	4.74	16.80	9.70	45.70	8	534	25	Green
MC.76	6.92	11.80	9.60	46.00	7	524	17	Green
White I	7.34	18.00	10.20	61.80	8	414	17	Light green
White II	6.00	12.80	9.20	50.00	8	416	21	Light green
Periyakulam I	7.76	17.00	9.40	52.00	9	551	41	Light green
Periyakulam II	7.52	22.00	9.50	80.00	7	485	30	Green
White Long	6.92	16.70	9.70	61.70	9	531	29	Light green

kulam I, while the lowest (13) was in the variety MC. 18. The number of seeds in 100 g also varied with the varieties, the highest (551) was in Periyakulam I, while the lowest (100) was in white I. The colour of fruits varied from whitish green to green.

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