

Evaluation of Cabbage Varieties for Kodaikanal Hills

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Based on the reported yield performance six varieties of cabbage were selected and planted in two seasons in a replicated trial to identify the best suited variety of cabbage for Kodaikanal hills. For the summer season, September and Copenhagen Market proved to be the best. In the monsoon season, the variety September performed best.

Cabbage (*Brassica oleracea* L. var *capitata*) is an important vegetable largely grown in the winter in the plains and almost throughout on the hills of South India. There are specific varieties recommended for each region and season. However, no specific varieties are recommended for Kodaikanal season-wise. Hence, cabbage varieties were introduced from representative tracts of India and other countries to identify suitable varieties for different seasons of the year.

MATERIAL AND METHODS

During 1975 and 1976, 23 varieties of cabbage were introduced from diverse sources and were grown at Horticultural Research Station, Kodaikanal which is situated at an elevation of 2200 m above MSL at 11° N latitude receiving an annual average rainfall of 1660 mm. in 170 days, during two distinct seasons viz. January to June and July to December. Six varieties viz., September, Pride of India, Copenhagen Market, Early Wonder, Golden Acre and Local, were selected based on head weight and plot yield of cabbage and were forwarded to a varie-

tal trial. The varietal trial with six varieties mentioned earlier were sown on Jan. 1977 and transplanted on March, 77 giving a space of 75 x 45 cm replicated four times in a Randomised Block design. The manurial schedule followed was 15 tonnes of farmyard manure, 100 kg of N, 50 kg of P and 40 kg of K per hectare. Farmyard manure, P and K in full and 60 kg of N were applied as basal and 40 kg of N was applied as top dressing 30 days after planting. This trial was repeated with the same six varieties by sowing on July 77 and transplanted on August end. The cultural operations, manurial schedule and plant protection measures were similar in both the seasons. The trials were conducted in the plots of peat soil. The plot size was 3.75 x 5.40 m with 60 plants/plot. The observations on plant characters and yield were recorded in 10 randomly selected plants. A pooled analysis was carried out combining the data of the two seasons for head weight and plot yield of cabbage. The head shape index was worked out as suggested by Odland and Noll (1954).

RESULTS AND DISCUSSION

The performance of the six varieties of cabbage during the summer season of 1977 indicated that there was no significant differences in duration, number of outer leaves, polar and equatorial diameter of the head, percentage of marketable heads and also the head shape index (Table I). All the six varieties in-

cluded in the study recorded high percentage of marketable heads and did not show premature bolting. The duration differed only by 21 days. The growth judged by the number of non-wraper leaves was almost uniform in all the six varieties. The shape of the head was round as the head shape index was between 0.89 and 1.19. The difference in weight of individual head and the plot

TABLE I. Performance of six varieties of cabbage during summer season (January '77 to July '77)

Variety	Dura- tion (days) sowing to Harvest	Number of non- wrapper leaves	Polar diame- ter of head (cm)	Equato- rial diameter of head (cm)	Head shape index	Per- centage of mar- ketable heads	Weight of head (kg)	Weight of mar- ketable heads/ plot (kg)	Yield/ hectare (Quintals)
September	166	18.2	15.35	14.70	1.04	90.5	0.875	52.50	259.35
Pride of India	150	18.0	13.20	14.11	0.94	89.0	0.609	36.50	180.31
Copenhagen Market	150	18.9	17.17	16.10	1.07	89.8	0.910	54.60	269.72
Early Wonder	145	17.3	15.17	12.75	1.19	84.5	0.568	34.07	168.31
Golden Acre	145	18.2	19.93	14.58	0.89	79.5	0.507	30.43	150.32
Local	160	19.5	13.12	12.23	1.07	82.5	0.557	33.43	165.14
SED	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	0.10	7.133	—
CD (P = 0.05)	—	—	—	—	—	—	0.213	15.20	—

yield was significant. The variety Copenhagen Market recorded the maximum weight of 0.910 kg/head closely followed by September with 0.875 kg/head. The other four varieties did not vary widely. In the plot yield of marketable heads and hectare yield the varieties Copenhagen Market and September were on par and exceeded other varieties. Thus, these two varieties were found to be best suited for the summer season during which the mean temperature ranged from 16.20 to 19.9°C with minimum

amount of rainfall during the harvesting period of June to July '77. Mahalingam and Neunhausa (1976) recommended O.S. cross for commercial cultivation on the Nilgiris. However, seeds of this F₁ hybrid have to be imported from West Germany. Now, the Indo-German Project has recommended September for Commercial cultivation. Bhagchandani *et al.* (1977) recommended Golden Acre and Sel. 8 for cultivation during summer season in the Upper Kulu valley at a height of 1650 m.

During the monsoon season (July to December '77) the polar diameter of head, weight of head and plot yield

differed significantly (Table II). The significance of polar diameter might be due to less compactness of the head.

TABLE II. Performance of six varieties of cabbage during monsoon season (July '77 to December '77)

Variety	Duration (days)	Number of non-wrapper leaves	Polar diameter of head (cm)	Equatorial diameter of head (cm)	Head shape index	Weight of head (kg)	Percentage of marketable heads	Weight of marketable head/plot (kg)	Yield/hectare (Quintals)
September	170	14.08	14.25	12.34	1.16	0.830	89.0	49.76	245.81
Pride of India	155	14.65	12.40	11.60	1.08	0.540	79.5	32.67	16.39
Copenhagen Market	158	12.50	11.42	10.92	1.01	0.550	78.4	33.17	163.86
Early Wonder	152	14.75	12.15	10.70	1.14	0.490	78.0	29.61	146.27
Golden Acre	150	14.00	10.94	10.44	1.00	0.440	73.8	26.13	129.08
Local	165	15.13	11.88	12.88	0.95	0.610	76.5	36.68	131.20
SED	N.S.	N.S.	0.812	N.S.	N.S.	0.10	—	5.119	—
CD (P = 0.05)	—	—	1.73	—	—	0.213	—	10.91	—

TABLE III. Weather conditions prevailed during the year 1977 at Horticultural Research Station, Kodaikanal

Month	Rainfall mm.	Minimum Temp. °C	Maximum Temp. °C	Monthly mean Temp. °C	Range of temperature	
					Minimum °C	Maximum °C
January	—	3.74	23.29	13.52	1.5 to 6.5	18.0 to 31.0
February	63.2	8.18	28.88	18.53	3.5 to 11.0	27.0 to 31.5
March	132.0	11.80	28.00	19.90	8.0 to 17.0	22.0 to 30.0
April	303.0	10.58	26.90	18.74	4.0 to 15.0	20.0 to 31.5
May	318.6	11.50	23.40	17.45	2.5 to 13.0	20.0 to 26.0
June	21.0	10.80	21.60	16.20	6.5 to 13.5	16.0 to 25.0
July	71.0	13.05	21.42	17.24	8.8 to 16.0	18.5 to 24.0
August	199.1	13.29	20.74	17.02	11.0 to 15.0	18.0 to 23.0
September	166.4	12.90	20.83	16.87	11.0 to 14.0	18.0 to 22.0
October	654.8	13.03	18.87	15.95	11.0 to 15.0	16.0 to 22.0
November	463.1	11.32	19.68	15.50	8.0 to 14.0	16.0 to 24.0
December	1.7	7.10	22.00	14.55	3.0 to 12.0	19.0 to 28.0

The other characters did not show significant differences. The head of all the varieties were round. In respect of head weight, the variety September was maximum followed by the local variety. Anchanam Alagia Pillai *et al.* (1977) have studied the performance of cabbage varieties for plains and reported Golden Acre as high yielding variety. In respect of marketable yield/plot the variety September led others accounting for the maximum yield of 49.76 kg/plot followed by the local variety with 36.66 kg/plot. Thus, it is clear that the variety September established its supremacy in the marketable yield over the other varieties during the monsoon season.

When the marketable yield of cabbage was pooled over both the seasons, the variety September recorded the maximum yield followed by Copenhagen Market. Similar trend was observed in head weight. Thus, September was found to be ideally suited for planting in both the seasons of the year. The pooled analysis also showed that the perfor-

mance of these six varieties did not differ significantly between the two seasons and the environmental interaction was minimum on the influence on yield. The perusal of the weather data in Table III showed that the monthly mean temperature differed by about 40°C only between February and November during the year.

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