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Performance Evaluation of Some Cauliflower Genotypes in the Eastern Region of Bangladesh

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Abstract: A comparative study of ten cauliflower cultivars was done at the Regional Agricultural Research Station of the Bangladesh Agricultural Research Institute, Hathazari, Chittagong during the period from September, 1995 to January, 1996. It appeared that the time needed for reaching the optimum harvesting stage varied from 95 days in case of cv. Kartika and Tropical 45 days and 110 days in case of cv. Shiroyama-65 from the date of sowing. Maximum and minimum curd yields were obtained from the cv. Shiroyama-65 and cv. Poushali which were 18.38 and 6.4 tons ha⁻¹, respectively.

Key words: Cauliflower, performance, eastern region

INTRODUCTION

Cauliflower (*Brassica oleracea* var. botrytis L.) is a popular cool season vegetable in Bangladesh. The crop is very Sensitive to Soil and climatic requirements (Nath *et al.*, 1987). Varieties also differ in temperature requirement for curd initiation. A good number of Cultivars are found to be grown in the recent years in Bangladesh. Among them there are some local cultivars which can be regarded as Indian cauliflower (Swamp and Chatterjee, 1972). Some exotic cultivars of tropical type (Wiebe, 1975) are also found to produce curd in winter season. But quality and yield performance are not always satisfactory and problems like buttoning and riceyness make it difficult for the farmers to grow cauliflower (Rashid, 1976). Farmers are oftenly misguided in selecting proper cultivar to achieve the expected output due to the lack of information regarding performance under different agro-climatic conditions. Therefore, the present investigation was undertaken to identify varieties / lines suitable for the eastern region (Chittagong) of Bangladesh

MATERIALS AND METHODS

The study was conducted at the Regional Agricultural Research Station, Hathazari, Chittagong during the period from September, 1995 to January, 1996. The cauliflower cultivars both from local and exotic origin were included in this study (Table 1). Seeds were sown on 17 October, 1995 providing 60 x 60 cm spacing. The unit plot size was 3.60 x 3.60 m and the experiment was laid out in a randomized complete block design with three replications. The crop was fertilized at the rate of cowdung 15 t ha⁻¹, N, P₂O₅ and K₂O @ 110, 85 and 132 kg ha⁻¹, respectively. The entire quantity of cowdung,

Table 1: Name of the cultivars of 10 cauliflower Genotypes with their origin

Name of cultivars	Origin
Patnai	Bangladesh
Poushali (CVSRC)	Bangladesh
Poushali	Bangladesh
Agrahyani (BADC)	Bangladesh
Kartika	Bangladesh (Tangail)
Boiltoli	Bangladesh (Chittagong)
Rakhushi late	Bangladesh
Japani	Japan
Tropical 45 days	Japan
Shiroama-65	Japan

TSP and half of urea and MP were applied during final land preparation. The remaining half of urea and MP were applied in three equal installments as top dressing. Irrigation along with other intercultural operations were done as and when needed. Days required for curd initiation was recorded by visual observation of each plant every day. Data on different morphological and yield parameters were taken from ten randomly selected plants in each plot. The date were analysed statistically and the means were separated by DMRT for interpretation of results.

RESULTS AND DISCUSSION

The ten different cultivars of cauliflower were varied significantly in respect of all the characters under study (Table 2, 3 and 4). Whole plant weight ranged from 720.00 to 1916.67 g in the case of Tropical - 45 days and shiroyama - 65 respectively. Among the cultivars, Boiltali and Rakhushi late produced the plants with statistically at par whole plant weights. The height of plants varied from 46.13 to 68.00 cm but statistically similar heights of plants were attained by Rakhushi late and Shiroyama-65.

Table 2: Morphological characters of 10 cauliflower cultivars

Name of cultivars	Whole plant Wt. (g)	Plant height (cm)	Number of leaves at harvest	Length of biggest leaf (cm)	Width of biggest leaf (cm)
Patnai	1038.33c	47.27dc	23.27abc	41.60bcd	21.40ab
Poushali(CVSRC)	928.33cd	49.67bcd	21.80bc	45.23b	21.33ab
Poushali	678.33d	46.61d	22.18bc	41.36bcd	18.33cd
Agrahyani(BADC)	986.67cd	46.13cd	24.37ab	41.50bcd	20.97abc
Kartika	926.67cd	52.97bc	23.03bc	45.70b	21.17abc
Boiltoli	1400.00b	54.75b	24.05abc	45.05bc	20.75abc
Rakhushi late	1420.00b	68.00a	25.93a	56.03a	18.97de
Japani	928.33cd	47.03cd	21.50c	40.43cd	19.77bcd
Tropical 45 days	720.00cd	48.70bcd	22.23bc	40.30d	16.40e
Shiroyama-65	1916.67a	61.99a	22.35bc	53.69a	22.17a
CV(%)	11.75	4.58	4.46	3.91	4.33

Table 3: Variation in earliness of 10 cauliflower cultivars

Cultivars	Days required from sowing to 50% curd initiation	Days required from curd initiation to harvesting	Days required from sowing to harvesting
Patnai	79e	18a	97b
Poushali(CBSRC)	84cd	15bcd	99b
Poushali	84cd	13de	97b
Agrahyani (BADC)	86c	11e	97b
Kartika	81de	14cd	95b
Boiltoli	91b	17ab	108a
Rakhyshi late	92ab	16abc	108a
Japani	93ab	14cd	107a
Tropical 45 days	80e	15bcd	95b
Shiroyama-65	95a	15bcd	110a
CV%	1.62	2.56	2.98

Table 4: Yield and yield components of 10 cauliflower cultivars

Cultivars	Curd weight (g)	Length of curd (cm)	Diameter of curd (cm)	Yield (t ha ⁻¹)
Patnai	396.33bc	7.73bc	16.83	11.01bc
Poushali(CVSRC)	326.00bcd	7.90abc	16.03	9.06bcd
Poushali	230.33d	7.69bc	14.88	6.40d
Agrahyani (BADC)	384.67bcd	7.23c	16.80	9.67bcd
Kartika	287.00bcd	8.67abc	16.53	7.97bcd
Boiltoli	419.00b	7.80abc	17.47	11.64b
Rakhyshi late	397.00bc	9.10ab	16.73	11.03bc
Japani	318.67bcd	7.70bc	15.80	8.85bcd
Tropical 45 days	265.33cd	9.47a	15.13	7.37cd
Shiroyama-65	661.67a	8.70abc	19.22	18.38a
CV%	15.24	7.27	8.95	15.37

In a column, means followed by common letters do not differ significantly from each other at 1% level of probability

The number of leaves per plant is often an important character that influences the yield. The cultivars included in this study produced an average of 21.50 to 28.93 leaves plant⁻¹. Early maturing cultivars produced lower number of leaves with exception as in case of cv. Japani and cv. Shiroyama 65 which matured late but produced relatively lower number of leaves compared to the other late maturing cultivars such as Boiltoli and Rakhushi late (Table 3). Production of lower number of leaves in some late maturing cultivars was probably due to slow rate in leaf initiation which could be an inherent character of the cultivar. This is in agreement with previous investigations in which some of these cultivars were included (Aditya *et al.*, 1989). In determining the photosynthetic efficiency of the leaves, the surface area of the leaves is an important factor. In this trial, the length and breadth of the leaves in each cultivar were recorded and found significant differences. The ranges of the length and

breadth of the leaves were 40.30 to 56.03 cm and 16.40 to 22.17 cm respectively.

In respect of earliness of curd initiation and harvesting (Table 3), the cultivars under study were found to vary significantly. The average number of days from sowing to curd initiation varied from 79 to 95. The cultivar Patnai was the earliest and Shiroyama- 65, the latest in respect of curd initiation. The average period from curd initiation to the optimum time of harvesting varied from 11 to 18 days among the cultivars. Earliness is a desirable character from the commercial point of view as well as from the consideration of fitting the crop in cropping system in a particular area. It was observed that most of the local cultivars were early maturing type compared to the exotic ones. However, the exotic cultivar, Tropical 45 days and local cultivar kartika were found to be the earliest in curd maturity which took 95 days from sowing.

Cultivar Shiroyama - 65 was the latest in maturity among the cultivars studied which took 110 days. The earliest and the latest cultivars differed by 15 days in maturity.

This showed that the cultivars represent a good range of genetic diversity in respect of earliness. The smallest curd was produced by Poushali (230.33 g). The biggest curd (Shiroyama-65) resulted from the highest curd length and diameter (8.70 and 19.22 cm) and the smallest curd was produced in Poushali where curd length and breadth were 7.69 and 14.88 cm, respectively.

The total yield ($t\ ha^{-1}$) of the cultivars varied from 6.40 to 18.38. The lowest and the highest yields were produced by Poushali and Shiroyama-65, respectively. Considerably good yielding cultivars were Patnai (11.01 $t\ ha^{-1}$), Boiltali (11.64 $t\ ha^{-1}$) and Rakhushi late (11.03 $t\ ha^{-1}$). Bose and Som (1986) reported similar yield potential of cauliflower cultivars under the Indian sub-continent situation.

In review of the experiment, the cultivar Shiroyama-65 appeared to be potentially high yielder under Chittagong situation but it is late whereas, Patnai, though a comparatively poor yielder, produced marketable curd 13 days earlier than Shiroyama-65.

REFERENCES

- Aditya, D.K., M.J. Hossain, M.K. Rahman and M. Ali, 1989. Genetic variability and correlation studies in some cauliflower Varieties. *Bangladesh Hort.*, 17: 19-24.
- Bose, T.K. and M.G. Som, 1986. *Vegetable crops in India*. (1st Edn.) Naya Prakash, Calcutta 700, 006 India, pp: 190-207.
- Nath, P.S. Velayudhan and D.P. Singh, 1987. *Vegetable for the tropical region*. (Revised Edn.) Indian Council of Agricultural Research, New Delhi, India.
- Rashid, M., 1976. *Bangladesher Sabjee*, (1st Edn.) Bangla Academy. Dhaka, Bangladesh.
- Swamp, V. and S.S. Chatterjee, 1972. Origin and genetic Improvement of Indian cauliflower. *Econ. Bot.*, 26: 381-393.
- Wiebe, H.J., 1975. The morphological development of cauliflower and broccoli cultivars depending on temperature. *Scientia Hort.*, 3: 95-101.