

Original Research Article

<https://doi.org/10.20546/ijcmas.2017.609.229>

## Evaluation of Strawberry (*Fragaria x ananassa* Duch.) Genotypes for Morphological Characters under Shade House

Venkata Rao\* and G.S.K. Swamy

Department of Fruit Science, College of Horticulture, Mysore-571 130 University of Horticultural Sciences, Bagalkot, Karnataka, India

\*Corresponding author

### ABSTRACT

#### Keywords

*Fragaria* ×  
*ananassa*,  
Germplasm,  
Morphological and  
Evaluation.

#### Article Info

Accepted:  
21 July 2017  
Available Online:  
10 September 2017

The present experiment was carried out during the year 2017-18 for evaluation of different genotypes of strawberry (*Fragaria X ananassa* Duch.) for morphological characters in the shade house, Department of Fruit Science, College of Horticulture, Mysore. The experiment was laid out in Randomized Complete Block Design with five genotypes as treatments replicated four times. The result revealed that, the plant height was maximum (12.30 cm) in variety Barak followed by Crystal (12.00 cm). The genotype Crystal reported highest N-S and E-W plant spread (25.45 cm and 25.55 cm respectively). The highest number of branches was reported in genotype Sweet Charlie (4.11) followed by Winter Dawn (3.70). The number of trifoliolate leaves was reported maximum in genotype Winter Dawn (12.30) followed by the genotype Crystal (11.90). The genotype Barak recorded the lowest number of days (31.15) for flower bud initiation whereas the genotype Gili took maximum days (33.06). The number of flowers was found maximum in genotype Winter Dawn and Gili (19.00). Among different genotypes evaluated the Crystal and Winter Dawn accounted maximum morphological parameters of strawberry.

### Introduction

Strawberry (*Fragaria x ananassa* Duchesne) is one of the most delicious, refreshing and nutritious soft fruits of the world. It belongs to family Rosaceae and is native to America (Galletta *et al.*, 1990). Strawberry is an herbaceous perennial short day plant. It was first introduced by the NBPGR Regional Research Station, Shimla (Himachal Pradesh) in the early sixties. Strawberry is highly nutritious fruit. The fruit contain fair amounts of iron, anticancer compound called ellagic acid, vitamin C and vitamin A (60 IU/100 g of edible portion). Higher pectin contains (0.55%) in the form of calcium pectate serves as an excellent ingredient for making jelly.

In addition to fresh consumption, the strawberry is in special demand by the fruit processing units for preparing jam, ice-cream, syrup, quick freezing and canning.

Being a rich source of vitamins and minerals coupled with delicate flavour, Strawberry has now become an important table fruit of millions of people around the world (Sharma and Singh, 1990).

Basically the crop is suited to cool weather conditions. The study is conducted with an objective of finding the performance of different genotypes for southern dry region of

Karnataka under shade house conditions at College of Horticulture, Mysore.

### Materials and Methods

Five genotypes of strawberry were evaluated for their feasibility under southern dry zone situations by adopting randomized block design with four replications during 2016-17. The genotypes include Winter Dawn, Sweet Charlie, Gili, Barak, and Crystal. The plot size for each treatment was 4.5 m x 0.6m, recommended package of practices were followed uniformly in all the treatments. Healthy tissue culture plants were transplanted on raised bed with two rows apart 50cm. Planting distance was 30cm. Mulching was done by black polythene mulch sheet and irrigation was provided by drip method. Observations on morphological characters were recorded on 10 randomly selected plants in each treatments. The data were subjected to statistical analysis following standard procedures (Panse and Sukhatme, 1989).

### Results and Discussion

The findings of the experiment on morphological parameters are presented under the following heads:

#### Plant height

The data in table 1 showed that plant height varied significantly in different genotypes,

Barak was found to have the maximum plant height (12.30 cm) being at par with Crystal (12.00 cm) while Sweet Charlie had the minimum 8.93 cm. The most profuse growth witnessed by Barak might be the cause of its maximum plant height which is in agreement with the views expressed by Rani and Ahmad (2012).

#### Plant spread (N-S, E-W)

The genotype Crystal reported (Table 1) the highest N-S and E-W plant spread (25.45 cm and 25.55 cm respectively) followed by the genotypes Gili and Barak (24.35 cm and 25.00 cm, N-S and E-W respectively). Varietal differences in plant spread and height was also noted by Singh *et al.*, (2008) in Meghalaya which supports the present observation.

#### Number of branches

There was a significant difference (Table 1 and Fig. 1) with respect to number of branches among the genotypes. Sweet Charlie reported maximum number of branches (4.11) followed by Winter Dawn (3.70). The lowest was found in the genotype Crystal (2.18). This finding is in agreement with the observation made by Coombey (1976). Varietal differences in yields depend on a number of factors *viz.*, fruit bearing potential of the cultivar, number of branches, growth of plants; weather conditions (Kiprijanovski and Arsov, 2004).

**Table.1** Performance of strawberry genotypes for morphological characters

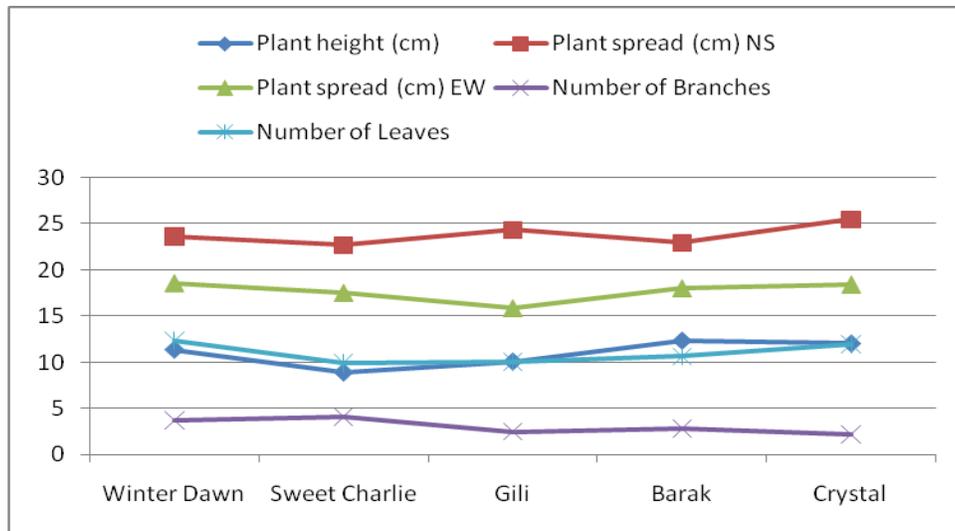
Genotypes	Plant Height (cm)	Plant spread (cm)		Number of branches	Number of leaves
		N-S	E-W		
Winter Dawn	11.35	23.60	18.55	3.70	12.30
Sweet Charlie	8.93	22.70	17.50	4.11	9.90
Gili	10.10	24.35	15.85	2.50	10.00
Barak	12.30	22.90	18.00	2.80	10.60
Crystal	12.00	25.45	18.40	2.18	11.90
CV (%)	7.82	7.67	6.54	19.75	9.15
C.D (0.05)	1.31	1.93	1.77	0.93	1.54

**Table.2** Performance of strawberry genotypes for number of flowers and Days taken for flower bud initiation

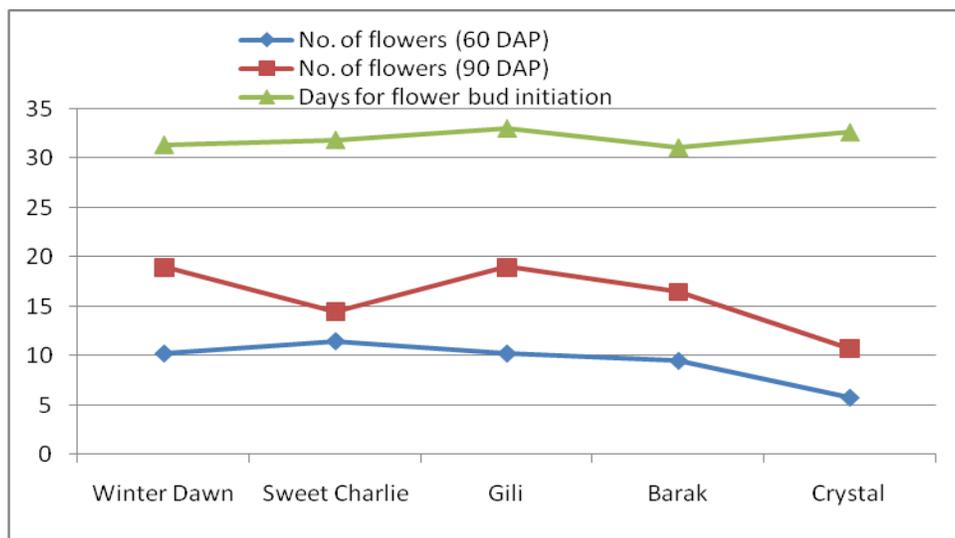
Genotypes	Number of flowers		Days for flower bud initiation
	60 DAP*	90 DAP	
Winter Dawn	10.25	19.00	31.43
Sweet Charlie	11.50	14.50	31.92
Gili	10.25	19.00	33.06
Barak	9.50	16.50	31.15
Crystal	5.75	10.75	32.66
CV (%)	16.30	17.37	2.95
C.D (0.05)	2.37	4.27	0.23

\*Days after planting

**Fig.1** Variations in morphological parameters among the strawberry genotypes



**Fig.2** Genotypes performance on number of flowers and days for flower bud initiation



### Number of leaves

The data in table 1 indicates the number of leaves produced per plant varied significantly among the genotypes. The highest number of leaves produced by genotype Winter Dawn (12.30) whereas the lowest was in genotype Crystal (11.90).

### Days to first flower bud initiation

As shown in table 2, there is significant variation in respect of days (from days after transplantation of strawberry plantlets) taken for flower bud appearance (visual observation) was reported among the genotypes. Longest period (Fig. 2) was required for flower bud initiation in genotype Gili (33.06 days) whereas shortest period in genotype Barak (31.15 days). This result shows that Barak was early flower bud initiating genotype whereas Gili was late one. This observation finds support from the findings of Dwiwedi *et al.*, (2004).

### Number of flowers

Number of flower was highest in Genotype Gili and Winter Dawn (19.00) whereas lowest in Genotype Crystal (10.75). Hossan *et al.*, (2013) also reported that there is significant difference in number of leaves among then genotypes.

Early flower bud initiation, flowering, fruiting and harvesting is very important for better strawberry production with better quality. As it grows well under temperate climate *i.e.*, low temperature is required for quality production. Production and quality decrease dramatically with the increase of temperature. In Southern dry zone of Karnataka, from month of February temperature increases rapidly and strawberry plants face a major problem on fruit development and ripening. Early flower bud initiation, flowering, fruiting and harvesting can overcome this problem. Among the

genotypes evaluated under the experiment, Barak and winter Dawn shows promising results.

### References

- Coombey, 1976. The development of fruits. *Ann. Rev. Plant Physiol.*, 27: 507-512
- Dwiwedi, S.K., Kareem, A. and Raut, B. 2004. Introduction and evaluation of strawberry cultivars for cold arid conditions of Ladakh. *Prog. Hort.*, 36: 207-210.
- Galletta, G. J., Lawrence, F. J. and Scott, D.H. 1990. Strawberry breeding work of the United States Department t of Agriculture. *Hort. Sci.*, 25: 895-896.
- Growth and Yield Performance of Strawberry Germplasm at Sher-e-Bangla Agricultural Hossan, M.J., Islam, M. S., Ahsan, M. K., Mehraj, H. and Jamal Uddin, A. F. M. 2013.
- Kiprijanovski, M., and Arsov, T. 2004. Influence of planting time on survival, growth and bearing of the strawberries. *Yaerb. Of Faculty of agricultural sciences and food, S kopje*, Republic of Macedonia, pp. 101-109.
- Panse, V.K., and Sukhatme, P.V. 1989. *Statistical methods for agricultural workers*. ICAR, New Delhi (INDIA).
- Rani, Rubi, and Ahmad Fiza 2012. *Strawberry kikheti: New source of income*, Udhyan prasikchak, BAU, Sabour, pp. 104-106.
- Sharma, V.P., and Sing h, R. 1990. Growth and fruiting behavior of Strawberry (*Fragaria sp.*) as affected by clocking and gibberellic acid treatments. *Proceedings of 11th International Congress on the use of plastic in agriculture*, IARI, New Delhi, pp. 36-41.
- Singh, A., Patel, R.K., De, L.C. and Periera, L.S. 2008. Performance of strawberry cultivars under sub-tropics of Meghalaya. *Indian J. Agric. Sci.*, 78 (7): 1-4.
- University. *Journal of Experimental Biosciences*, 4(1):89-92.

### How to cite this article:

Venkata Rao and Swamy, G.S.K. 2017. Evaluation of Strawberry (*Fragaria x ananassa* Duch.) Genotypes for Morphological Characters under Shade House. *Int.J.Curr.Microbiol.App.Sci*. 6(9): 1861-1864. doi: <https://doi.org/10.20546/ijcmas.2017.609.229>