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Study of yield parameters of jasmine varieties of *Jasminum sambac*, *Jasminum auriculatum* and *Jasminum grandiflorum*

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Abstract

The study was conducted with two year old plants of seven jasmine varieties by adopting all the recommended cultural practices at the Department of Floriculture and Landscaping, Tamil Nadu Agricultural University, Coimbatore. The seven commercial varieties of jasmine are, viz., Ramanathapuram Gundumalli, Madanban, Single Mohra and Ramabanam of the species *Jasminum sambac*, CO.1 Mullai and Parimullai of *Jasminum auriculatum* and CO.1 Pitchi of *Jasminum grandiflorum*. The statistical design adopted was RBD. Observations were taken during the critical stages of growth and development namely, pre flowering, flowering, peak flowering and lean flowering stages for all the parameters. Significant variations were observed among the varieties for yield parameters during the critical stages of growth and also in observations at monthly intervals. The highest monthly flower bud yield per plant, flower bud yield per plant during different growth stages and annual flower bud yield per plant was recorded in CO.1 Pitchi.

Keywords: Jasmine, yield parameters, jasmine varieties

Introduction

Southeast and South Asia are the origins of Jasmine (family: Oleaceae). Jasmines can be found in tropical and subtropical climates all over the world, however many of the species are concentrated in India, China, and Malaysia (Anon., 1959) [1]. one of the earliest flowering crops that is still regularly farmed. In many tropical and subtropical countries, including Central Asia, Afghanistan, Iran, Nepal, and others, jasmine has long been used to adorn gardens. The distribution of the genus *Jasminum*, which has more than 200 unique species, is largely tropical (Dickey, 1970) [3]. Even though there are numerous species and varieties of jasmine, only a small number of them are grown for commercial purposes. These include the widely grown *Jasminum sambac*, *Jasminum auriculatum*, and *Jasminum grandiflorum*, as well as the less frequently grown *J. multiflorum* (also known as *J. pubescence*). The Ramanathapuram Gundumalli, Madanban, Ramabanam, Single Mohra, CO.1 Mullai, Parimullai, CO.1 Pitchi, and CO.2 Pitchi types are only a few of the commercially farmed *Jasminum* species that may be found in Tamil Nadu.

Due to its attractive foliage and gorgeous white blossoms with a strong perfume, it is a highly desired ornamental plant for both commercial and home cultivation. In addition to being used to produce oils and cosmetics, its flowers are also utilised to make garlands worn during worship, to adorn women's hair, and to make garlands. So, study of the yield parameters of these three species is important.

Materials and Methods

Field studies were conducted at the Department of Floriculture and Landscaping, Tamil Nadu Agricultural University, Coimbatore. The plant material consisted of two-year-old bushes of seven commercially grown varieties of the three *Jasminum* species (Ramanathapuram Gundumalli, Madanban, Ramabanam, and Single Mohra of *J. sambac*, CO.1 Mullai and Parimullai of *J. auriculatum*, and CO.1 Pitchi of *J. grandiflorum*). The experimental field's soil type is sandy loam. The maximum temperature in an open field varied between 250 °C and 350 °C, with a mean of 300 °C. With a mean of 200 C, the minimum temperature varied between 170 C and 23.50 C. The average relative humidity was 75%. The next four crucial growth and development stages were marked by the recording of physiological and qualitative characteristics.

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Plants of the varieties belonging to *J. sambac* were pruned during the last week of November, *J. auriculatum* during the last week of January and *J. grandiflorum* during the last week of December. Depending on the soil moisture level, the crop was irrigated every 7 to 10 days. Weeding by hand was done as and when needed. To reduce the occurrence of pests and diseases, chemicals were periodically sprayed on the plants. Yield parameters were observed in monthly intervals and also in critical growth stages of jasmine. Critical growth stages of jasmine is as follows:

Critical growth stages of jasmine is as follows

Stage	Description of stages
Stage I	Pre flowering
Stage II	Flowering
Stage III	Peak flowering / Peak season
Stage IV	Lean flowering / Lean season

Monthly flower bud yield per plant: The number and weight of flower buds were recorded daily based on which the monthly yields were computed and expressed in grams per

plant.

Flower yield per plant during the critical growth stages:

Flower yield during the different stages was calculated based on the monthly yields of plant and expressed in grams per plant.

Annual flower yield per plant: This was calculated by taking sum of the monthly yields per plant for a year and expressed in kilograms.

Results

Monthly flower bud yield per plant

Significant differences were observed for yield per plant per month. In Ramanathapuram Gundumalli, monthly yield ranged from 14.11 g to 119.53 g where as for Madanban, Single Mohra and Ramabanam the monthly yield/plant ranged from 5.40 g to 98.63 g, 3.20 g to 91.89 g and 6.98 g to 103.28 g respectively. In CO.1 Mullai, Parimullai and CO.1 Pitchi the values ranged from 7.20 g to 92.30 g, 4.61 g to 95.61 g and 11.50 g to 132.40 g respectively (Figure.1).

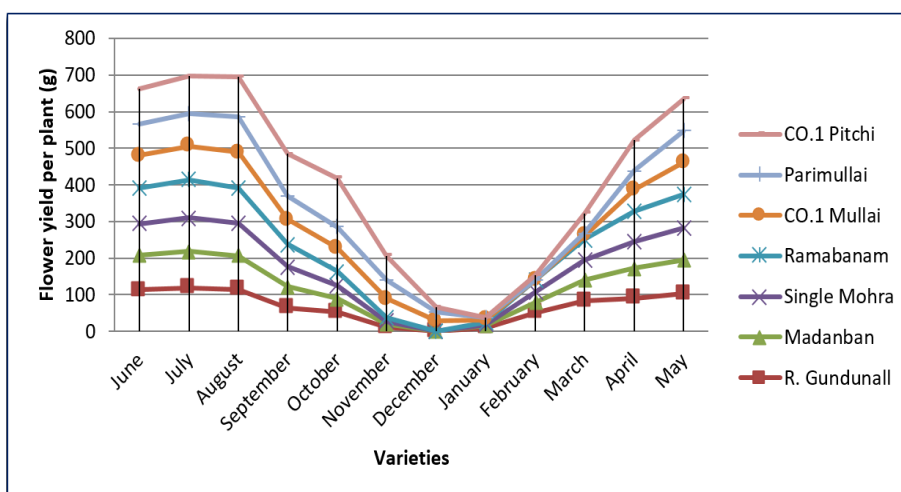


Fig 1: Monthly flower bud yield per plant (g) of jasmine varieties

Flower bud yield per plant during the critical growth stages

Significant differences were noticed in flower bud yield per plant during the four critical growth stages. The values ranged from 21.43 g to 449.31 g, 13.10 g to 378.39 g, 13.00 g to

354.16 g, 16.28 g to 379.95 g, 7.20 g to 368.52 g, 4.61 g to 354.70 g and 24.73 g to 459.70 g in Ramanathapuram Gundumalli, Madanban, Single Mohra, Ramabanam, CO.1 Mullai, Parimullai and CO.1 Pitchi respectively (Table.1).

Table 1: Flower bud yield per plant (g) of jasmine varieties during the critical growth stages

S. No.	Varieties	Flower bud yield per plant (g)			
		Stage I	Stage II	Stage III	Stage IV
1.	Ramanathapuram Gundumalli (<i>Jasminum sambac</i>)	21.43	225.09	449.31	116.99
2.	Madanban (<i>Jasminum sambac</i>)	13.10	167.80	378.39	104.27
3.	Single Mohra (<i>Jasminum sambac</i>)	13.00	155.40	354.16	95.60
4.	Ramabanam (<i>Jasminum sambac</i>)	16.28	172.20	379.95	109.40
5.	CO.1 Mullai (<i>Jasminum auriculatum</i>)	7.20	69.90	368.52	213.81
6.	Parimullai (<i>Jasminum auriculatum</i>)	4.61	60.46	354.70	195.75
7.	CO.1 Pitchi (<i>Jasminum grandiflorum</i>)	24.73	318.70	459.70	80.06
	SEd CD (P=0.05)	0.155	0.258	0.159	0.140
		0.337	0.716	0.347	0.305

Annual flower bud yield per plant

There were significant differences among all the varieties for this parameter. The annual flower bud yield per plant was 812.82 g, 663.56 g, 618.16 g, 677.83 g, 659.43 g, 615.52 g

and 883.19 g in Ramanathapuram Gundumalli, Madanban, Single Mohra, Ramabanam, CO.1 Mullai, Parimullai and CO.1 Pitchi respectively (Table.2).

Table 2: Annual flower bud yield per plant (g) of jasmine varieties

S. No.	Varieties	Annual flower bud yield per plant (g)
1.	Ramanathapuram Gundumalli (<i>Jasminum sambac</i>)	812.82
2.	Madanban (<i>Jasminum sambac</i>)	663.56
3.	Single Mohra (<i>Jasminum sambac</i>)	618.16
4.	Ramabanam (<i>Jasminum sambac</i>)	677.83
5.	CO.1 Mullai (<i>Jasminum auriculatum</i>)	667.71
6.	Parimullai (<i>Jasminum auriculatum</i>)	620.32
7.	CO.1 Pitchi (<i>Jasminum grandiflorum</i>)	883.19
	SEd	0.176
	CD (P=0.05)	0.384

Discussion

In jasmine, monthly flower bud yield, flower bud yield at critical stages and annual flower bud yield are the important parameters.

In the present study, significant variations were observed for yield of flowers per plant under field condition. Among the varieties, the highest monthly flower yield per plant was recorded in CO.1 Pitchi and the second highest was in Ramanathapuram Gundumalli, while the lowest was observed in Single Mohra (Fig.1). The highest flower bud yield per plant during different growth stages (Table.1) and annual flower bud yield per plant (Table.2) had same result as monthly flower bud yield per plant.

These variations in the yield characteristics may be attributed to the genetic nature of the varieties and also the effect of agroclimatic conditions. Similar observations have also been made earlier by Raman *et al.* (1969)^[7] in varieties of the four commercial species [(*J. sambac*, *J. auriculatum*, *J. grandiflorum* and *J. pubescense* (Syn: *J. multiflorum*)] as well as in other *Jasminum spp.* namely, *J. calophyllum*, *J. rigidum* and *J. flexile*. Further corroboration for this observation comes from the reports of Seetharamu *et al.* (2002)^[9] who observed a similar trend in the four commercial species of jasmine. The varietal differences for yield potential may also be attributed to additive gene effect (Hemalata *et al.*, 1992)^[5]. Similar observations have also been recorded in other flower crops namely, marigold (Deepti Singh and Singh, 2006)^[2], and chrysanthemum (Manohar Rao and Pratap, 2006)^[6].

In the present study, flower yield varied among the 12 months of the year. From May to August, the flower output increased for all the kinds. Higher yields were attained in CO.1 Pitchi from May to October. According to Guenther (1960)^[4], who first reported on this type of seasonal variation in flower yield, weather conditions have a significant impact on the flower production of jasmine. Warm weather and plenty of sunshine result in a much larger flower crop and flowers with more perfume than cool and rainy weather.

Conclusion

Study of yield parameters is important as jasmine secures top place in loose flower production in Tamil Nadu. Yield parameter does not only reflect the genetic constitution, but also the interaction of the genotype with the environment within which it is expressed. So, the initial studies are

required before proceeding towards the breeding programme, varietal identification and commercial production of many value added products.

References

1. Anonymous. Encyclopaedia Britannica, Encyclopaedia Britannica Ltd., Chicago; c1959.
2. Deepti Singh, Singh AK. Characterisation of African Marigold (*Tagetes erecta* Linn.) genotypes using morphological characters. J Ornamental Hort. 2006;9(1):40-42.
3. Dickey RD. In: Flowering Vines of the World (Ed. E. A. Meninger), Heartside Press Inc., New York; c1970.
4. Guenther N. Effect of temperature on flowering plants. South Indian Hort. 1960;8(1):57-66
5. Hemalata B, Patil AA, Nalwadi UG. Variability studies in chrysanthemum. Prog. Hort. 1992;24(1-2):55-59.
6. Manohar Rao A, Pratap M. Evaluation of varieties and variability studies in chrysanthemum (*Dendranthema grandiflora* Tzvelev.). J Ornamental Hort. 2006;9(2):221-223.
7. Raman KR, Shanmugham A, Ahmad Shah H. Studies on the flowering habits and flower yields of some *Jasminum* species. South Indian Hort. 1969;17:18-27.
8. Rangaswami P, Khader MD A. Growth analysis of *Jasminum spp.* South Indian Hort. 1989;37(6):367.
9. Seetharamu GK, Kumar DP, Mohan E, Sridhara Heriae P. Evaluation of different species and varieties of jasmine under hill zone. South Indian Hort. 2002;49:35-38.