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Influence of time and level of pruning on flowering yield in *Jasminum sambac* var. Baramasi under South Gujarat condition

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Abstract

The present investigation was conducted at Floriculture Research Farm, Navsari Agricultural University, Navsari (Gujarat) during the year 2016-17 under a Randomized Block Design with Factorial concept (FRBD) along with nine treatment combinations consisting three pruning time *i.e.* last week of November, second week of December and last week of December and three different levels of pruning *i.e.* 25 cm, 50 cm and 75 cm from the ground level. The treatments were repeated thrice. Different pruning time and pruning level influenced significantly on vegetative and flowering characters in *Jasminum sambac*. Among the various pruning time, 2nd week of December had most striking influence in enhancing the flower yield per plant (1076.14 g), flower yield per plot (4.33 kg) and flower yield per hectare (6.91 t) in Jasmine plants. Among the various pruning levels, pruning done at 50 cm from the ground level (L₂) was most significantly influenced flower yield (1116.28 g/plant, 4.47 kg/plot 6.69 t/ha). In case of interaction effect of different pruning time and pruning level was found significant with respect to yield traits. Plants pruned in second week of December at 50 cm above ground level (T₂L₂) produced significantly maximum flower yield (1216.20 g/plant, 4.91 kg/plot and 8.12 t/ha). Based on the results of the present investigation, pruning of *Jasminum sambac* var. Baramasi at 50 cm above ground level during second week of December is beneficial for better flowering yield of jasmine flowers.

Keywords: Time, level, pruning, flowering yield, *Jasminum sambac* var. Baramasi

Introduction

Jasminum sambac commonly known as the "Tuscan Jasmine" or "Arabian Jasmine" belongs to the family Oleaceae. It is naturally distributed in Karnataka, Andhra Pradesh, Tamil Nadu and West Bengal states of India (Randhawa and Mukhopadhyay, 1986) [8]. Jasmine is one of the important attractive, white colored and fragrant flowers used from very olden days in India. In perfume industry, jasmine has unique importance and popularity due to its unique odour/aroma in the essential oil. George and Watt (1980) [4] reported that its different plant parts like stem, leaf, bark, root, fruit and seed are used for medicinal purpose. It has antioxidant properties such as potential to induce weight loss and to reduce serum and hepatic lipid levels through increase of leptin level, address the burning problems of fattiness and obesity (Li *et al.*, 2011) [5]. The commercially important species grown for loose flowers and perfumery industry are *J. sambac*, *J. grandiflorum* and *J. auriculatum* (Rimando, 2003) [9]. Jasmine will definitely emerge as a significant "industrial flower crop" in India.

In India, Jasmine occupies an area of 12.25 thousands ha with an annual production of 65230 MT / year throughout the country. However, in India large junks of jasmine flowers under production comes from Tamil Nadu and Karnataka (Anon., 2015) [10]. Jasmine covers an area of 739 ha with a production of 4434 MT in Gujarat. The Potential districts in Gujarat for jasmine cultivation are Ahmedabad, Bharuch, Bhavnagar, Kutch and Vadodara (Anon., 2013) [10].

Pruning is an important step because it increases the growth and its aesthetic value (Anderson, 1991) [1]. The pruning time and pruning level influences the quality and quantity of flower production. It is a practical and economical technique that not only for the control of plant growth but also for commercial purpose as fluctuation in timing demand during altered seasons (Hassanein, 2010) [11]. Pruning should do at right period and intensity to provide food for the initiation of flowering by sufficient ventilation leading to least susceptibility of plant to diseases. Being a industrial flower crop, large quantities of flowers need to be produced continuously for longer period of the year to meet the break even production of essential oil industry. Therefore, present investigation was carried out to study the influence of time and level of pruning on flowering yield in Jasmine.

Materials and Methods

The present investigation was carried out at Floriculture Research Farm, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari to study the Canopy Management in *Jasminum sambac* var. Barmasi with nine treatment combinations in a Factorial Randomised Block Design (FRBD) with three replications. The treatments comprised of three different time of pruning *viz.*, last week of November (T_1), 2nd week of December (T_2) and last week of December (T_3) and three levels of pruning *viz.*, heavy pruning at 25 cm above ground level (L_1), medium pruning at 50 cm above ground level (L_2) and light pruning at 75 cm above ground level (T_3) (Figure-1). Immediately after pruning, the FYM and recommended dose of chemical fertilizers were applied 15 cm deep in rings and 20 cm away from the main stem. All the cultural operations *viz.*, irrigation, weeding, pest control etc. were carried out time to time. The flower yield traits such as flowers per plant (g), flowers per plot (kg) were recorded and flowers per hectare (t) extrapolated the data. All the data were analysed statistically as per the method suggested by Panse and Sukhatme (1967) [7].

Results

Effect of pruning time: The data pertaining to flower per plant was significantly affected by various pruning time (Table-1). Significantly highest flower per plant (1076.14 g) was noted in plants pruned in second week of December (T_2) whereas, least flower per plant (960.72 g) was observed in plants pruned in last week of November (T_1). Similarly, significantly highest flower per plot (4.33 kg/plot) was noted with plants pruned in T_2 while least flower per plant (3.82 kg/plot) was obtained by plants pruned in T_1 . The highest flower (6.91 t/ha) was noted in plants pruned in second week of December (P_2) whereas, minimum flower yield (5.46 t/ha) was observed in plants pruned in last week of November (T_1).

Effect of pruning level: The data pertaining to flower per plant was significantly affected by various pruning level (Table-1). The result revealed that flower per plant was observed significantly maximum in plants pruned at 50 cm from the ground level (L_2) with (1116.28 g). While minimum flower per plant (885.94 g) was obtained by the plants pruned at 25 cm from ground level (L_1). The result showed that flower per plot was observed significantly maximum (4.47 kg/plot) in plants pruned at 50 cm from L_2 , whereas, plants pruned at L_1 noted minimum flower (3.54 kg/plot). The result revealed that flower yield was observed significantly maximum in plants pruned at 50 cm from the ground level (L_2) with 6.69 t/ha, while plants pruned at 25 cm ground level (L_1) noted minimum flower yield (5.91 t/ha).

Interaction effect (T x L): The data pertaining to flower per plant was significantly affected by interaction of pruning time and pruning level (Table-1). The second week of December with 50 cm from the ground level (T_2L_2) pruning of jasmine bushes recorded highest flower yield per plant (1216.20 g) than other interactions. However, least flower per plant (784.34 g) was obtained in the plants pruned at 25 cm from the ground level in last week of November (T_1L_1). Pruning of plants at 50 cm from the ground level in second week of December (T_2L_2) recorded maximum flower yield (4.91 kg/plot), while minimum flower yield (2.93 kg/plot) was obtained by the bushes pruned at 25 cm from the ground level in last week of November (T_1L_1). Pruning of jasmine at 50 cm from the ground level during second week of December

(T_2L_2) recorded highest flower yield (8.12 t/ha). Further, lowest flower yield (5.04 t/ha) was obtained in the bushes pruned at 25 cm from the ground level in last week of November (T_1L_1).

Discussion

Effect of pruning time: The factors responsible for flower yield in a plant are depending upon climate, soil cultural manipulations, net photosynthesis and their interactions. Pruning time and pruning level play a prime role in deciding flower yield in the jasmine. An increase in yield due to more vigorous growth of plant and maximum number of productive shoots per plant due to the production and accumulation of more photosynthesis. The results confirm the findings of Porwal *et al.* (2002) [12] in 8 year old damask Rose (*Rosa damascena*), Adnan *et al.* (2013) [13] in *Rosa scentifolia*, lokhande *et al.* (2015) [6] and Chopde *et al.* (2017) [3] in *J. sambac*.

Effect of pruning level: An increase in flower yield might be due to more vigorous growth of plant and maximum number of productive shoots per plant. The results are in agreement with earlier the findings of Porwal *et al.* (2002) [12] in 8 year old damask Rose (*Rosa damascena*), Adnan *et al.* (2013) [13] in *Rosa scentifolia*, lokhande *et al.* (2015) [6] and Chopde *et al.* (2017) [3] in jasmine.

Interaction effect (T x L): An increase in flower yield might be due to the combination effect of proper time and level of pruning in jasmine bushes that resulted more vigorous growth of plant and highest number of productive shoots per plant due to production and accumulation of more photosynthates which would have diverted to the sink resulting into more flower yield. The results confirm the findings of Lokhande *et al.* (2015) [6] and Chopde *et al.* (2017) [3] in jasmine.

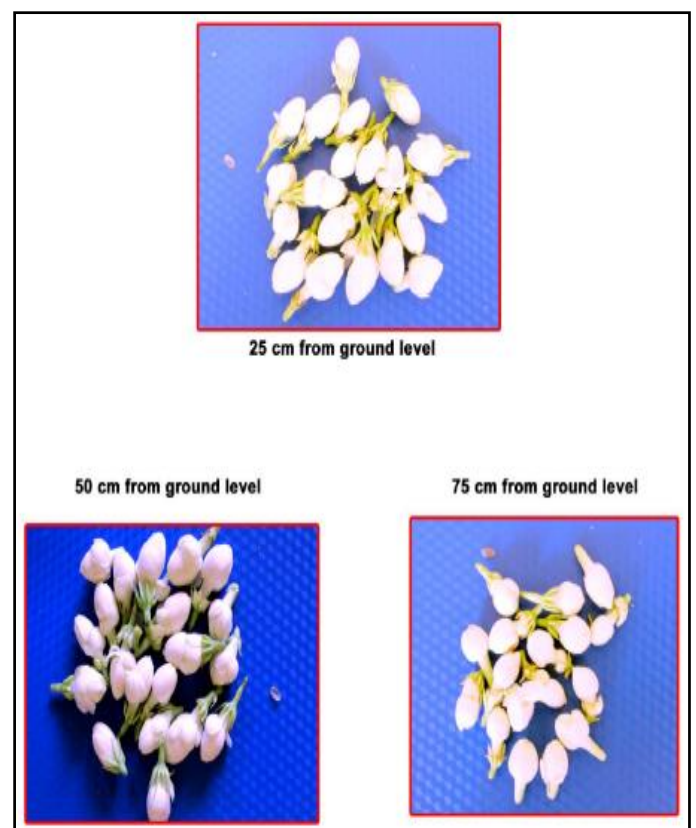


Fig 1: Influence of the interaction between time (T) and levels of pruning (L) on flowering yield of *Jasminum sambac* var. Barmasi

Table 1: Influence of time and level of pruning on flowering yield of *Jasminum sambac* var. Baramasi

Treatments	Flowers per plant (g)	Flowers per plot (kg)	Flowers per hectare (t)
Factor A - Time of pruning			
T ₁ – Last week of November	960.72	3.82	5.46
T ₂ – Second week of November	1076.14	4.33	6.91
T ₃ – Last week of December	982.66	3.92	6.25
SE (m) ±	32.05	0.14	0.19
CD at 5%	96.08	0.42	0.57
Factor B - Level of pruning			
L ₁ – 25 cm from ground level	885.94	3.54	5.91
L ₂ – 50 cm from ground level	1116.28	4.47	6.69
L ₃ – 75 cm from ground level	1017.3	4.07	4.07
SE (m) ±	32.04	0.14	0.19
CD at 5%	96.08	0.42	0.57
Interaction (TxL)			
SE (m) ±	55.51	0.24	0.33
CD at 5%	166.41	0.72	0.99
C.V. %	9.55	10.46	9.24

Conclusion

Based on the results of the present experiment, it can be concluded that pruning of *Jasminum sambac* var. Baramasi at 50 cm above ground level during second week of December is most beneficial for flowering yield with good quality of jasmine flowers.

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References

- Anderson GA. Characteristics of English roses during their first year of establishment. Special Circular - Ohio Agri. Res. Dev. Cent. 1991; 137:28-29.
- Anonymous. National Horticulture Database, 2015. www.nhb.gov.in
- Chopde, Neha, Lokhande, Sushma, Bhande MH, Warkade VP. Impact of time and level of pruning on growth and flowering of *Jasminum sambac* (L.). Res. Crops. 2017; 18(1):123-128
- George, Watt. A Dictionary of the Economic Products of India. 1980; 4:541-545.
- Li, Zhen, Lin, Cong, Tao, Zhao. The effects of Jasmine tea on nutritional physiological functions of growing rats. Modern Preventive Medicine. 2011; 38(3):456- 460.
- Lokhande S, Chopde N, Wasnik P, Nehare N. Response of *Jasminum sambac* L. to time and severity of pruning. Plant Archives. 2015; 15(2):759-762.
- Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers. Publication and Information Division, ICAR, New Delhi, 1967.
- Randhawa GS, Mukhopadhyay A. Floriculture in India, Allied Publishers P Ltd, Mumbai, 1986.
- Rimando TJ. Sampaguita production. In: Ornamental Horticulture. A little giant in the tropics. SEAMEO SEARCA and UPLB, College. Los Banos, Laguna, Philippines, 2003, 333.
- Anonymous. Directorate of Horticulture, Gujarat state, Gandhinagar, 2013.
- Hassanein AMA. Improved quality and quantity of winter flowering in rose (*Rosa* spp.) by controlling the timing and type of pruning applied in autumn. World J Agri. Sci. 2010; 6(3):260 - 267.
- Porwal R, Nagda CL, Pundir JPS. Effect of pruning severity on the vegetative growth, flower yield and oil

content of damask rose. J Applied Hort. 2002; 4(1):37-40.

- Adnan Y, Riaz A, Aslam S, Ahsan M, Tariq U, Javed F *et al.* Effect of different pruning dates on growth and flowering of *Rosa centifolia*. Pak. J Agri. Sci. 2013; 50:605-609.