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Influence of different pruning months on growth and flowering of *Jasminum auriculatum*

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Abstract
An investigation was carried out during 2017-2019 at the Department of Floriculture & Landscaping, TNAU, Coimbatore to study the effect of pruning on growth and flowering of *Jasminum auriculatum.* The level of pruning height 30cm from ground and pruning months (September-April) every month was done except in peek season (May-August) of flowering. Pruning during last week of October gave the highest plant height, number of shoots and maximum yield (g/plant) in *Jasminum auriculatum* whereas, lowest plant height, number of shoots and yield (g/plant) was observed in December pruning.

Keywords: Pruning months, growth, flowering, *Jasminum auriculatum*

1. Introduction
Jasmine is one of the important fragrant flowers used even from very ancient days in India. It is highly esteemed for its attractive, white coloured and a fragrant flower and has a pride of place in the heart of every south Indian woman. In Fragrance industry, jasmine has unique importance and popularity due to its unique sweet fragrance like that of rose, vetiver and represents a type that cannot be exactly imitated at present by a mixture of any known synthetic aroma chemicals or natural isolates. The extracts of jasmine are used for flavouring or preparation of ‘Jasmine scented Tea' in China and ‘Jasmine rice' in Bangkok, Thailand. The antioxidant properties has the potential to induce weight loss and to reduce serum and hepatic lipid levels through the increase of leptin level which address the burning problems of fattiness and obesity (Li Zhen *et al.* 2011). Jasmine will definitely emerge as an important "Industrial flower crop". The essential oil is being used in cosmetics, perfumery and as a source of aroma chemicals and food flavouring industries. It is grown in ‘Grasse region’ of Southern France, Syria, Algeria, Sicily, Calabria and Morocco apart from India. India exports fresh jasmine flowers to the neighbouring countries like Sri Lanka, Singapore, Malaysia and the Gulf countries. Jasmine flower crop is grown on commercial scale throughout India, but extensively in Tamil Nadu (12590 ha area and 1,30,070 MT production, 2015-16), Karnataka (5760 ha area 3,69,200 MT), Andhra Pradesh (2710 ha area and 1,51,300 MT).
Being industrial flower crop large quantities of flowers need to be produced continuously for a longer period of the year to meet the break-even production of the essential oil industry. Hence, the flower production programme needs to be scheduled so as to further escalate the area under jasmine flower crop. The large quantitative production requirement can be achieved by area expansion and increasing productivity. This study has undertaken to study the Influence of different pruning months and pruning height on growth and flowering of *Jasminum auriculatum.*

2. Materials and methods
A field experiment was conducted in the farmers’ field at Mathampalaiyam village, Coimbatore, during the period of 2017-2019. The experiment was laid out in Randomized Block Design (RBD) with 8 treatments and 3 replications. Five-year-old jasmine plants were selected for investigation. Treatment includes pruning of jasmine plantsat different months *viz.,* during the last week of September, October, November, December, January, February, March and April. Pruning was done by cutting back all past-season’s shoots at 30cm from the ground level by farmer request for their benefit. The main objective of this study is “Influence of different pruning months on growth and flowering of *Jasminum auriculatum”*. The pruned plants were observed for vegetative growth like plant height no of shoots and flower quality parameters *viz.,* a total length of flower bud and length of a flower bud (without corolla tube). Five randomly selected plants were tagged per replication in each treatment and observations were recorded. The statistical analysis was done following the method of Panse and Sukhatme (1978).

3. Results and Discussion

3.1 Influence of pruning on plant vegetative growth characters of *Jasminum auriculatum*

The results from Table 1 reveled that, the effect of month of pruning and pruning height on growth parameters *viz*., plant height, plant spread, number of shoots per plant during the offseason (December to February) are found significant. The plant pruned at 30 cm from ground level in the month of October recorded highest plant height (65.18 cm) and maximum number of shoots per plant (47.33) when compared with plants pruned in November. This may be due to fact that, the maximum temperature during October month is 30.4 °C and day length is about 11.5 hours. According to Leonhardt and Teves, (2002), Rai (1984) and Pal and Krishnamurthi, (1967) jasmine needs maximum temperature of 30 °C and long days and cumulative heat are favorable for growth and flower induction. The lowest height (48.9 cm) and less number of shoots per plant (27.00) were observed in plants pruned during last week of November T_2 because the weather was not in the favour of jasmine which needs a maximum temperature of 30 °C and long days and cumulative heat are favorable for growth and flower induction.

Table 1: Influence of different months of pruning on plant height and number of shoots per plant (30 days after pruning)

Treatments (Pruning months)	Plant height (cm)	Number of shoots per plant
T_1 (October)	65.18	47.33
T_2 (November)	48.9	27.00
T_3 (December)	51	31.67
T_4 (January)	53.41	44.67
T_5 (February)	54.31	42.00
T_6 (July)	51.96	33.67
T_7 (August)	50.02	32.00
T_8 (September)	57.16	46.00
Mean	53.99	38.04
CD (5%)	1.43	3.23
SEd	0.71	1.61

The effect of early pruning during October last week to make the plants being able to receive longer photoperiodic stimulus than the late pruned ones where the day lengths were shorter and there was a drastic reduction in the mean temperatures which resulted in stunted growth is in agreement with the findings of Kalaimani, 2017 [1], Sujatha *et al*. (2009) [3], Jennoah, 2012 [5] in *Jasminum sambac*. Whereas T_2 (pruning during last week of November) produced the shortest plants (48.9) at flowering stage. This might be due to the effect of weather conditions with low heat units which leads to low photosynthesis and restrict the cell enlargement. This finding is in consonance with the result of Kumaresan, 2016 [6], Chaitanya, 2013[7] in *Jasminum sambac*.

Pruning treatments significantly increased the plant spread which might be due to suppression of apical dominance that produced a greater number of main and lateral branches, resulting in increased plant spread in both the directions was observed by Kumaresan, 2016 [6] in *Jasminum sambac*.

3.2 Influence of pruning on flowering and yield parameters of *Jasminum auriculatum*

The effect of pruning on flowering parameters (days taken for the first harvest of flower bud, number of flowers per cymes, the weight of 100 flower buds, flower yield per plant) were found to be significant and is presented in Table 2.

The mean earliest days taken for the first harvest of flower buds (45.00 days) was observed in T_1 (pruning during last week of October). Among the different months of pruning the maximum bud length (3.10 cm), maximum weight of 100 buds (20.10 g) and highest yield (64.24 g/plant) was observed in T_1 (when plants pruned in last week of October) followed by plants pruned during last week of September T_8 and the lowest was observed in plant pruned during last week of November T_2. Because in October the plants are exposed to temperature of 30.4 °C and long days which leads for profuse flowering Pal and Krishnamurthi, (1967).

Maximum number of branches might have ultimately resulted in increased yield of flower buds. Flower yield is dependent on the number of flowering branches. Production of more number of foliage in October and September pruned plants might have resulted in increased photosynthesis and ultimately large reserve food source leading to production of more number of flowers as reported by Kumaresan, (2016) [6], Chaitanya, (2013) [7] Sujatha *et al*. (2009) [2] and Jennoah, (2012) [5] in *Jasminum sambac*.

Table 2: Influence of different levels of pruning and months of pruning on floral characters of *Jasminum auriculatum*

Treatments (Pruning months)	Total bud length (cm)	Weight of 100 flower buds (g)	Yield g/plant
T_1 (October)	3.10	20.10	64.24
T_2 (November)	2.50	13.14	26.73
T_3 (December)	2.40	10.49	24.59
T_4 (January)	2.80	17.64	50.64
T_5 (February)	2.87	19.15	45.28
T_6 (July)	2.70	16.83	32.26
T_7 (August)	2.63	16.09	29.07
T_8 (September)	2.90	18.61	62.93
Mean	2.74	16.51	41.97
CD (5%)	0.50	0.97	1.19
SEd	0.25	0.48	0.59

4. Conclusion

The present study led to the conclusion that pruning last week of October at height of 30 cm above ground level gave ample results. This is due to change in weather conditions like change in temperature and day length prevailed during October month. Hence, according to changes in weather the pruning month should be changed to get an ample production and yield in *Jasminum auriculatum.*

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