

# Enhancing Flower Productivity During Off Season in Jasmine (Jasminum sambac)

# V Krishnamoorthy

Krishi Vigyan Kendra, Tamil Nadu Agricultural University, Vamban Colony, Pudukkottai – 622 303 (Tamil Nadu)

#### **INTRODUCTION**

Jasmine (Jasminum sambac) is one of the important major traditional loose flower in Pudukkottai district of Tamil Nadu. The flowers are used in family functions, social and religious functions, to prepare garland and to adorn hairs by the females. The prices are higher during religious auspicious days, Tuesday and Friday of the week. Its demand is constant throughout the Tamil calendar year except Chitrai and Aadi (April-May, July-Aug). Generally each farmer usually grows 100 to 250 plants depending upon the family members involved in plucking of flowers. The flowering of jasmine continues throughout the year and the farmers prune the plants during December- January and allowed to produce new flowering shoots. The market price during December to March is 10 times higher than the remaining part of the year. The exorbitant peak price is mainly due to non availability of flowers, as nearly 100 per cent of the farmers go for pruning. After pruning the jasmine plants starts bearing and produce large quantity of flowers during June-July which results in reduced market price during this period which sometimes is not even equal to its picking cost. Hence, in order to produce Jasmine flowers during off season i.e. December to March and change the attitude of the farmer, the present study was undertaken to produce Jasmine flowers by making use of two pruning times and application of chemicals.

## **MATERIALS AND METHODS**

The present study was undertaken by Krishi Vigyan Kendra, Tamil Nadu Agricultural University, Vamban, Pudukkottai during 2009-2010 and 2010-2011 at the farmers' field. The treatments were T<sub>1</sub>- Pruning during November last week at 50 cm height and pinching after three months. T<sub>2</sub>-Pruning during July month followed by spraying of 2 per cent humic acid at 15 d intervals, T<sub>3</sub>- Pruning during July month and spraying of Nitrobenzene 20 per cent @ 2.5ml/l along with Tricontanol 0.2 per cent during November-April once in 15 d. The variety under study was Ramanathapuram local and age of plant was five years old. Each treatment was applied on 50 plants. The study was carried out at ten farmers' field of Manjanvidhuthi village for two successive years under irrigated condition. The regular cultural practices were followed during the study period. The soil samples were collected and analyzed for the available major and micronutrients. The soil pH was 6.9, EC 1.1, Nitrogen 123 kg/ha, Phosphorus 14 kg/ha, Potassium 201 kg/ha, Zinc 1.4 ppm, Iron 5.82 ppm, Manganese 3.48 ppm and Copper 0.27 ppm. The various growth and yield parameters were recorded by using standard procedures. The data obtained were statistically analyzed using analysis of variance.

#### **RESULTS AND DISCUSSION**

The data presented in the Table 1 revealed that there was no significant difference among the primary, secondary and tertiary branches per plant in all the three treatments. The flower bearing shoots per plant were higher during off season, main season and throughout the year in treatment of pruning during July month and spraying of

88

<sup>\*</sup>Corresponding Author's Email: krishorttnau@gmail.com

Table 1: Growth and yield parameters of jasmine

	S.N	S.No. Parameters	T1: Nov.	T2: Pruning	T3:	<b>T1:</b>	T2:	T3:	T1:	T2:	T3:	SE	CD
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	<u> </u>	No. of primary	7	7	L	7	7	7	7	7	٢	SZ	SS
	2.	brancnes/plant No. of secondary	ŝ	$\mathfrak{S}$	б	ŝ	б	3	3	б	С	SZ	SZ
No. of tertiary3031333031333031No. of flower-778896718296148brainbex/plant-778896718296148brainbex/plant778896718296148brainbex/plant386417493465467493851brainbex/plant5.15.15.25.55.55.55.35.35.3Leaf breadth (cm)-4.14.184.304.384.404.24No. of flowering3.2411.251111161.25143Leaf area index14.6415.211.61.61.61.601.55No. of flowering3.2411.251.111161.25143daysflowering-1.71.81.81.61.601.75daysflowering-1.71.71.81.81.601.75daysflowering33889032233026265532233364flower1.71.81.81.81.601.751.75No. of33889032233026265532233364flower1.71.71.81.81.61.7772 <t< td=""><td></td><td>branches/plant</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		branches/plant											
No.offlower bearing bearing shoots/plant778896718296148bearing shoots/plant-7386417493465467493851bearing shoots/plant-386417493465467493851No.of leaves/plant-3364114134304.244.24No.of leaves/plant5.15.25.55.55.55.55.3Leaf breadth (cm)-14.6415.2116.8617.2516.361.57No.of flowering days-11.111.61.561.571.43No.of flowering days1.51.51.61.661.57No.of flowering 	÷.	No. of tertiary	30	31	33	30	31	33	30	31	33	1.8	3.8
No. of thower-// $38$ $90$ // $11$ $32$ $90$ $148$ shoots/plant $386$ $417$ $493$ $465$ $467$ $493$ $851$ shoots/plant $386$ $417$ $493$ $465$ $467$ $493$ $851$ leartength(cm) $511$ $5.2$ $5.5$ $5.5$ $5.5$ $5.5$ $5.3$ $5.3$ Leartength(cm) $4.11$ $5.1$ $5.2$ $5.5$ $5.5$ $5.5$ $5.3$ $5.3$ No. of flowering $14.64$ $15.21$ $16.86$ $17.25$ $16.86$ $17.25$ No. of flowering $324$ $1.52$ $1.11$ $1.16$ $1.25$ $143$ days- $1.75$ $1.686$ $1.686$ $1.75$ $1.43$ days- $1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.75$ No. of flowering- $1.7$ $1.8$ $1.8$ $1.6$ $1.60$ $1.75$ days- $1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.75$ days- $1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.75$ days- $1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.75$ days- $1.7$ $1.8$ $1.8$ $1.6$ $1.60$ $1.75$ flower length- $1.7$ $1.8$ $1.8$ $1.8$ $1.60$ $1.75$ flower length- $1.7$ $1.8$ $1.8$ $0.00$ $2.92$	-	branches/plant		ר ר	00		ī	C		110			
	÷	No. of flower	ı		× ×	96	1/1	82	96	148	170	3.92	8.12
No.of leaves/plant-386417493465467493851leaves/plant5.15.15.25.55.55.55.55.35.3Leaflength (cm)5.15.15.25.55.55.55.55.35.3Leaf negth (cm)4.14.14.184.304.384.404.24Leaf area index14.6415.2116.8616.8617.2516.8615.75No. offlowering-1.51.51.111116125143days-1.71.71.81.81.81.601.75diver-1.71.71.81.81.81.601.75diver-1.71.71.81.81.601.75diver-1.71.71.81.81.601.75diver-1.71.71.81.81.601.75diver-3232233026265532233364diver-3032021.020.8520.9021.1020.8520.9No. of70.3187672632.7561672703diver-182486.21747.2164514791747.21827No. of7033003003008080703703Hower yield703<		ocaning shoots/nlant											
		No. of	ı	386	417	493	465	467	493	851	884	5.64	11.42
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		leaves/plant											
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		Leaf length (cm)		5.1	5.2	5.5	5.5	5.5	5.5	5.3	5.35	0.29	0.60
		Leaf breadth (cm)		4.1	4.18	4.30	4.38	4.40	4.30	4.24	4.29	0.15	0.30
No. of flowering $32$ $41$ $125$ $111$ $116$ $125$ $143$ daysdays $1.5$ $1.5$ $1.5$ $1.5$ $1.6$ $1.55$ $1.55$ $(cm)$ $(cm)$ $ 1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.55$ $(cm)$ $ 1.7$ $1.7$ $1.8$ $1.8$ $1.60$ $1.75$ $2$ No. of $ 338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ $2$ No. of $  338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ $3$ No. of $  338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ $3$ $100$ flower $ 20.80$ $21.0$ $20.85$ $20.90$ $21.10$ $20.85$ $20.9$ $3$ $100$ flower $ 70.3$ $187$ $672$ $632.77$ $561$ $672$ $703$ $6$ Flower yield $ 70.3$ $187$ $672$ $632.77$ $561$ $672$ $703$ $6$ Flower yield $ 70.3$ $187$ $672$ $1747.2$ $1645$ $1459$ $1747.2$ $1827$ $6$ Flower yield $ 70.3$ $300$ $80$ $80$ $80$ $80$ $80$ $102$ $6$ Flower yield $  27$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.7$ $2.7$ $7$ Incone (Rs/		Leaf area index		14.64	15.21	16.86	16.86	17.25	16.86	15.75	16.23	0.26	0.52
daysdaysFlower length-1.51.51.61.601.55(cm)(cm)-1.71.71.81.81.601.75(cm)-1.71.71.81.81.601.75Flower-1.71.71.81.81.601.75No. of33889032233026265532233364No. of-33889021.020.8520.9021.1020.8520.9No. of-70.3187672632.7561672703flowers /plant-70.3187632.7561672703Flower yield-70.3187632.7561672703(g/plant)-182486.21747.2164514591747.21827Rower yield-3003003008080808080102Rower yield5460014676013160011672013977618270flower price2.72.92.72.92.72.8flower price2.013776186200flower price2.92.72.92.72.92.72.8		No. of flowering		32	41	125	111	116	125	143	157	3.01	6.12
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		days											
	0.	Flower length	ı	1.5	1.5	1.6	1.6	1.6	1.60	1.55	1.55	0.10	0.20
Flower-1.71.81.81.81.601.75circumference (cm)-338 $890$ $3223$ $3026$ $2655$ $3223$ $3364$ No. of $338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ Iowers /plant100 flower20.80 $21.0$ $20.85$ $20.90$ $21.10$ $20.85$ $20.9$ Flower yield-70.3 $187$ $672$ $632.7$ $561$ $672$ $703$ Weight (g)-70.3 $187$ $672$ $632.7$ $561$ $672$ $703$ Flower yield-70.3 $187$ $672$ $632.7$ $561$ $672$ $703$ (g/plant)Flower yield182 $486.2$ $1747.2$ $1645$ $1479$ $1747.2$ $1827$ (kg/ac)8030030030080808080 $102$ (ks/kg)-54600 $146760$ $139776$ $131600$ $116720$ $139776$ $186200$ hcome (Rs/ac)- $2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$		(cm)											
circumference (cm)No. of $ 338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ No. offlowers /plant100 flower $ 338$ $890$ $3223$ $3026$ $2655$ $3223$ $3364$ 100 flower $ 20.80$ $21.0$ $20.85$ $20.90$ $21.10$ $20.85$ $20.9$ Neight (g) $ 70.3$ $187$ $672$ $632.7$ $561$ $672$ $703$ Flower yield $ 70.3$ $187$ $672$ $632.7$ $561$ $672$ $703$ Flower yield $ 70.3$ $187$ $672$ $632.7$ $561$ $672$ $703$ Flower yield $ 70.3$ $1877$ $1645$ $1459$ $1747.2$ $1827$ Refer $300$ $300$ $300$ $80$ $80$ $80$ $80$ $102$ Refer $ 54600$ $146760$ $139776$ $131600$ $116720$ $139776$ $186200$ BCR $ 2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.9$	Ξ.	Flower	ı	1.7	1.7	1.8	1.8	1.8	1.60	1.75	1.75	0.10	0.21
No. of flowers /plant-33889032233026265532233364flowers /plant100 flower20.8021.020.8520.9021.1020.8520.9lower yield-70.3187672632.7561672703lower yield-70.3187672632.7561672703lower yield-70.3187672632.7561672703Flower yield182486.21747.2164514591747.21827(kg/ac)30030030080808080102(ks/kg)-54600146760139776139776139776186200lncome (Rs/ac)-2.72.92.72.92.72.92.72.9		circumference (cm)											
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	ci.		·	338	890	3223	3026	2655	3223	3364	3545	39.63	80.65
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		flowers /plant											
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	3.	100 flower		20.80	21.0	20.85	20.90	21.10	20.85	20.9	21.0	0.60	1.2
$ \begin{array}{rcccccccccccccccccccccccccccccccccccc$		weight (g)											
	4.		ı	70.3	187	672	632.7	561	672	703	748	10.88	23.14
Flower yield182486.21747.2164514591747.21827 $(kg/ac)$ $(kg/ac)$ $300$ $300$ $300$ $300$ $80$ $80$ $80$ $80$ $102$ $Flower price$ $300$ $300$ $300$ $300$ $80$ $80$ $80$ $102$ $(Rs/kg)$ $ 54600$ $146760$ $139776$ $131600$ $116720$ $139776$ $186200$ $BCR$ $ 2.7$ $2.9$ $2.7$ $2.9$ $2.7$ $2.8$		(g/plant)											
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	5.	~		182	486.2	1747.2	1645	1459	1747.2	1827	1945.2	28.86	42.34
Flower price 300 300 300 300 80 102   (Rs/kg) - 54600 146760 139776 131600 116720 139776 186200   BCR - 2.7 2.9 2.7 2.9 2.7 2.8 2.7 2.8		(kg/ac)											
(Rs/kg) Income (Rs/ac) - 54600 146760 139776 131600 116720 139776 186200 BCR - 2.7 2.9 2.7 2.9 2.7 2.8 2.7 2.8	6.		300	300	300	80	80	80	80	102	135		
Income (Rs/ac) - 54600 146760 139776 131600 116720 139776 186200 BCR - 2.7 2.9 2.7 2.9 2.7 2.9 2.7 2.8 2.7 2.8													
BCR - 2.7 2.9 2.7 2.9 2.8 2.7 2.8	5		ı	54600	146760	139776	131600	116720	139776	186200	263480		•
	<u>∞</u>	BCR	I	2.7	2.9	2.7	2.9	2.8	2.7	2.8	2.85		•

J Krishi Vigyan 2014, 3(1) : 88-90

#### Flower Productivity during Off Season in Jasmine

nitrobenzene 20 per cent @ 2.5ml/l along with Tricontanol 0.2 per cent once in 15 d during November-April and followed by  $T_2$  and  $T_1$ . Similarly number of leaves was higher in  $T_3$  during off season and for one year followed by  $T_2$  and  $T_1$ . During main season the plants were pruned which resulted in less number of leaves per plant. Similar results were reported in Tomato by Mithila *et al* (2012). The data on leaf length, leaf breadth and leaf area index showed no significant difference.

The number of flowering days was higher in  $T_3$  followed by  $T_2$  and  $T_1$ . It was attributed by flower induction due to the spraying of Nitrobenzene 20% @ 2.5ml/l along with Tricontanol 0.2 per cent once in 15 d during November-April and pruning during July month. The treatments  $T_3$  and  $T_2$  did not influenced the flower size where as number of flowers per plant was higher in  $T_3$  followed by  $T_2$  and  $T_1$  Though it recorded less numbers during main season compared to T<sub>1</sub> but it was enhanced during off season due to presence of more number of flower bearing shoots. Kannan et al (2008) reported similar results in Paprika. The highest flower yield per plant (748 g), flower yield per hectare (4863 kg) was recorded in  $T_3$  compared to  $T_2$  and  $T_1$ . It was attributed by highest number of flowers per plant. Though it was less during main season but was compensated by flower yield during off season.

The total income of Rs.2,63,480/- was highest in (T3) spraying of Nitrobenzene 20 per cent @ 2.5ml/l along with Tricontanol 0.2 per cent once in 15 d during November-April and pruning during July month followed by Rs.1,86,200/- total income recorded in  $T_2$ . It was attributed by higher flower yield and higher market price during off season which resulted in higher benefit cost ratio of 2.85:1.

## CONCLUSION

Spraying of Nitrobenzene 20 per cent @ 2.5ml/l along with Tricontanol 0.2 per cent once in 15 d during November-April followed by pruning during July month recorded highest number of flower bearing shoots (170 year/plant), number of leaves (884/plant/year), flowering days (157/year), number of flowers (3545/plant/year), flower yield per plant (748g/year), flower yield per hectare (4863kg/year) and Benefit cost ratio (2.85:1).

#### REFERENCES

- Kannan K, Jawaharlal M, Prabhu M and Senthilkumar T (2008). Effect of growth regulators on yield and quality of paprika cv KtPI-19. *Indian J of Agric Res* 42 (4):293-294.
- Deb Mithila, Roy Sajal and Imamul Hug S M (2012). Effects of nitrobenzene on growth of tomato plants and accumulation of Arsenic. *Bangaladesh J Sci and Res* **25** (1): 43-52.
- Agarwal Kavita and Guhey Arti (2010). Growth and yield attributes of sunflower influenced by foliar application of nitrobenzene. *International J plant Sci* **5** (1): 120-128.

Received on 27/6/2014 Accepted on 20/9/2014