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Effect of different levels of pruning on growth, flowering and yield of guava (*Psidium guajava* L.) cv. Sardar

MK Shinde, RM Dheware and AR Jadhav

Abstract
The field trial was conducted on a well-established guava orchard of ten years age, spaced at 6 x 6 m^2 at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur during 2016-17, to study the effect of different levels of pruning on growth, flowering and yield of guava (*Psidium guajava* L.) cv. Sardar. The experiment was laid out in a Randomized Block Design with seven treatments *viz.*, T_1 (Without pruning-Control), T_2 (5 cm pruning), T_3 (10 cm pruning), T_4 (15 cm pruning), T_5 (20 cm pruning), T_6 (25 cm pruning) and T_7 (30 cm pruning) with four replications after harvesting of previous season fruits. The pruning was done in 1st week of May, 2017. The investigation indicated 20 cm pruning level (T_5) were found beneficial for enhancing plant growth, flowering and yield of guava cv. Sardar as compared to other treatments under Marathwada region of Maharashtra.

Keywords: Pruning, growth, flowering, yield, guava

Introduction
Guava (*Psidium guajava* L.) is "Poor man's fruit" and "Apple of tropics". It is a popular fruit tree of tropical and subtropical climate and is native to Tropical America stretching from Mexico to Peru. It belongs to family Myrtaceae. The guava is classified under genus *Psidium* that contains 150 species but only *Psidium guajava* is exploited commercially. The common guava is diploid (2n=22), but natural and artificial triploids (2n=33) and anuploid exists (Menzel, 1985) [11]. Triploids generally produce seedless fruit (Jaiswal and Amin, 1992) [10]. However most of them are shy bearer. Guava trees are hardy, prolific bearer, long lived drought tolerant and need comparatively less attention which makes its cultivation more remunerative. Guava fruit is also good source of minerals like phosphorous 22.50-40.00 mg, calcium 10.00-30.00 mg and iron 0.60-1.39 mg. It is also good source of pectin 0.50-1.80% (Adsule and Kadam, 1995) [2]. The total area under cultivation of guava in India is 2, 59, 000 ha and production is 4,11,9000 MT (Anonymous, 2017) [3]. Beneficial effects of pruning on yield and fruit quality of guava have been reported by various workers (Jadhav *et al*., 1998, Mishra and Pathak, 1998, Dhaliwal *et al*., 2000, Singh and Singh, 2001, Jadhav *et al.*, 2002, Dhaliwal and Kaur, 2003, Dhaliwal and Singh, 2004) [8, 12, 6, 5, 16, 4, 9]. Properly pruned guava trees produce maximum fruit yield.

Materials and Methods
An experiment on guava cv. Sardar was conducted at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur during 2016-17. The 10 years old trees grown at 6 x 6 m^2 spacing were used for the experiment. The experiment was laid out in a Randomized Block Design with seven treatments *viz*., T_1 (Without pruning-Control), T_2 (5 cm pruning), T_3 (10 cm pruning), T_4 (15 cm pruning), T_5 (20 cm pruning), T_6 (25 cm pruning) and T_7 (30 cm pruning) with four replications after harvesting of previous season fruits. The pruning was done in 1st week of May, 2017. The statistical analysis of the data in respect of growth, flowering and yield was done according to the standard procedure given by Panse and Sukhatme (1984).

Result and Discussion
Effect of pruning on growth and flowering of guava: It is revealed from the data (Table 1), the highest number of sprouted shoots per tree (143.48) observed in treatment T_5, minimum days required for flowering (39.63) observed in treatment T_1. Minimum days required for new shoot

Sprouting (21.57) and days required for fruit set (55.77) observed in treatment T_7 as compared to other treatments. This might due to pruning accumulates more carbohydrates as availability of nutrients are in sufficient quantities of plant to come out their metabolic and physiological process. These findings are in accordance with result reported by Pawar *et al*., (1994) [15] in pomegranate, Suleman *et al*., (2006) [17] in guava, Ghum, (2011) [7] in custard apple and Patil *et al*., (2018) [14] in acid lime.

Effect of pruning on yield of guava: It is revealed from the data (Table 2), significantly the highest number of fruits per tree (158.69) observed in treatment T_1 and average fruit weight (293.39 g) observed in treatment T_7. The highest yield per tree (40.28 kg) and yield per hectare (11.15 t) observed in treatment T_5. This might be due to pruning is forced tree into investing more of its energy into manufacture of fructose instead of cellulose. Pruning increases ability to take water, carbon dioxide and sunlight to make carbohydrates or sugars which ultimately encourage tree to produce higher yield. These findings are in accordance with the results obtained by, Ghum (2011) [7] in custard apple and Adhikari and Kandel (2015) [1] in guava.

Table 1: Effect of pruning on growth and flowering of guava.

Treatments	Days required for new shoots	Number of sprouted shoots per tree	Days required for flowering	Days required for fruit set
T_1	24.98	79.26	39.63	64.21
T_2	25.01	93.62	42.56	63.36
T_3	24.63	104.61	40.78	62.95
T_4	23.03	124.63	41.78	60.14
T_5	23.59	143.48	40.98	59.70
T_6	22.41	133.17	42.07	57.32
T_7	21.57	120.89	41.59	55.77
S.E.±	0.698	4.695	0.987	1.636
C.D at 5%	NS	13.951	NS	4.860

Table 2: Effect of pruning on yield of guava.

Treatments	Number of fruits per plant	Weight of fruit (g)	Fruit yield per tree (kg)	Fruit yield per hectare (t/ha)
T_1	158.69	201.96	32.02	8.86
T_2	153.38	214.20	32.85	9.09
T_3	151.09	235.53	35.58	9.85
T_4	148.19	260.32	38.57	10.68
T_5	147.15	273.78	40.28	11.15
T_6	140.17	280.30	39.28	10.88
T_7	121.00	293.39	35.50	9.83
S.E.±	5.834	10.369	1.484	0.416
C.D at 5%	17.335	30.809	4.409	1.236

Conclusion

The pruning of guava trees in the first week of May with 20 cm pruning level were found beneficial for enhancing plant growth, flowering and yield of guava cv. Sardar under Marathwada region of Maharashtra.

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