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# Effect of levels of pruning on growth parameters of guava var. Sardar

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**Abstract**
The present investigation entitled "Effect of different levels of pruning on growth, yield and quality of guava (*Psidium guajava* L.) Var. Sardar was undertaken on eight year old guava plants at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur during 2012-13. The experiment was laid out in Randomised Block Design with seven treatments replicated thrice.

The results of the present study indicated significant differences with respect to growth parameters. The growth parameters like maximum weight of pruned material, the minimum days required for sprouting of shoots, maximum length of shoots, maximum diameter of shoot, maximum decrease in E-W and N-S spread of plant, maximum reduction in height of plant were recorded in the treatment of ($T_1$) retention of main trunk up to 1m along with primary branches 1 m and secondary branches 0.50m. and the treatment ($T_2$) retention of main trunk up to 1 m along with primary branches 1m and secondary branches 1 m. While maximum no. of shoots per plant, minimum days required for flowering, minimum days required from pruning to fruit set were recorded in 50%, 33%, and 25% heading back of tertiary branches. Pruning practice in guava with heading back of tertiary branches at 50%, 33% and 25% are beneficial for obtaining maximum growth.

**Keywords:** guava (*Psidium guajava* L.), pruning on growth, Block Design

## Introduction
Guava (*Psidium guajava* L.) belongs to family Myrtaceae is one of the most important fruit crops in India which is also known as "Apple of the tropics". 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 triploid (2n=33) and anuploid exists (Menzel, 1985) [7]. Triploid generally produce seedless fruits (Jaiswal and Amin, 1992) [6]. However, most of them are shy bearer.

Guava is one of the fourth most important fruit crop in India after Mango, Banana and Citrus. In India, it occupies nearly 2.15 lakh hectares of area with production of 32.24 lakh metric tonnes, with average productivity of 14.93 metric tonnes per hectare. (Anon., 2011) [1]. The most important guava growing states in India are Uttar Pradesh, Bihar, Maharashtra, Gujarat, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Rajasthan, Karnataka, West Bengal, Orissa, Kerala and Punjab. In Maharashtra, it is cultivated in the area of 0.33 lakh hectares with production of 2.58 lakh metric tonnes and with an average productivity of 7.71 metric tonnes per hectare. (Anon., 2011) [1]. In Maharashtra, Ahmednagar, Satara, Beed, Pune, Aurangabad, Amravati, Buldhana and Bhandara are the principle guava areas.

In guava as the flowers and fruits are born on current season's growth, a light annual pruning is considered necessary to encourage new shoots after harvest. Pruning also reduces tree crown area and improves fruit quality. Though guava being an evergreen fruit plant practically no attention has been paid towards its pruning. Normally winter season crop preferred in India because of superior fruit quality. The fruit harvested from rainy season crop are small in size, inferior in quality and highly susceptible to disease and pests causing poor income to growers.

## Methods and Material
The experiment was conducted at Instructional-cum-Research Farm, Department of Horticulture, College of Agriculture, Latur on well-established eight years old orchard of guava planted at 6.0 X 6.0 m. Total fourty two plants were selected for study.

**Treatment details -**

- $T_1$: Retention of main trunk up to 1 m along with primary branches 1 m and secondary branches 0.50 m.
- $T_2$: Retention of main trunk up to 1 m along with primary branches 1 m and secondary branches 1 m.
- $T_3$: Heading back of tertiary branches at (25%) portion.
- $T_4$: Heading back of tertiary branches at (33%) portion.
- $T_5$: Heading back of tertiary branches at (50%) portion.
- $T_6$: Heading back of tertiary branches at (75%) portion.
- $T_7$: Control.

The observations like period required for initiation of new shoots, number of shoots sprouted per tree, length of sprouted shoot, diameter of shoot, height of plant, spread of plant, number of days to flowering, days to fruit set, days to maturity were recorded on randomly selected plant.

**Results and Discussion**

**Table 1:** Effect of levels of pruning on growth parameters of guava var. Sardar

| Treatments | Weight of pruned material (kg) | Days required for sprouting | Number of shoots sprouted/tree | Initiation of flowering | Days from pruning to fruit set | Days from fruit set to harvesting |
|---|---|---|---|---|---|---|
| $T_1$ | 21.17 | 12.50 | 143.33 | 72.50 | 89.50 | 154.33 |
| $T_2$ | 20.28 | 12.67 | 155.83 | 70.50 | 86.83 | 151.67 |
| $T_3$ | 3.07 | 21.33 | 274.17 | 51.67 | 59.00 | 142.00 |
| $T_4$ | 6.43 | 20.33 | 269.17 | 53.00 | 64.67 | 144.00 |
| $T_5$ | 7.31 | 16.33 | 225.83 | 54.50 | 74.00 | 146.50 |
| $T_6$ | 12.75 | 14.00 | 204.00 | 63.00 | 80.00 | 149.00 |
| $T_7$ | 0.00 | 23.83 | 250.33 | 67.00 | 78.33 | 140.17 |
| S.E ± | 0.90 | 0.70 | 13.03 | 2.02 | 2.21 | 2.02 |
| C.D at 5% | 2.77 | 2.16 | 40.15 | 6.23 | 6.82 | 6.22 |

The data shown in Table 1 that the maximum weight of pruned material (21.17 kg), the minimum days (12.50) for sprouting of new shoots after pruning was recorded in the treatment of ($T_1$) retention of main trunk upto 1 m along with primary branches 1 m and secondary branches 0.50 m and it were statistically at par with $T_2$ (20.28 kg). Whereas, the minimum weight was observed in $T_3$ (3.07 kg) while nil in unpruned control ($T_7$). The maximum number of sprouted shoots (274.17) per tree was recorded in the treatment ($T_3$) heading back of tertiary branches at 25 per cent and it was statistically at par with $T_4$ (269.70) and $T_7$ (250.33). While, the minimum number of shoots (143.33) per tree were observed in treatment ($T_1$) retention of main trunk up to 1 m along with primary branches 1 m and secondary branches 0.50 m and also at par with $T_2$ (155.83). This might be due to the less number of shoots on the pruned trees and therefore, more nutrients available to each bud to sprout; and growth rate picked up earlier in the pruned trees than in the unpruned trees. The results were conformity with Bajpai *et al.* (1973) [2] and Bajwa *et al*. (1988) [3].

The perusal data showed that the minimum days (51.67) required for initiation of flowering and the minimum days (59.00) for fruit set was observed in treatment ($T_3$) heading back of tertiary branches at 25% and which was statistically at par with the treatment $T_4$ and $T_5$ and significantly different over rest of other treatments. The data revealed that the minimum days (140.17) for fruit set to harvesting were recorded in the treatment control ($T_7$) and it was statistically at par with $T_3$ (142.00) and $T_4$ (144.00) and significantly different over other treatments. Whereas, the maximum days (154.33) for fruit set to harvesting were recorded in the treatment ($T_1$) retention of main trunk up to 1 m along with primary branches 1 m and secondary branches 0.50 m and was statistically at par with the treatment $T_2$ (151.67) and $T_6$ (149.00) and significantly different over other treatments.

**Table 2:** Effect of levels of pruning on length, diameter and height of shoot in guava var. Sardar

| Treatments | Length of shoot (cm) at | | | Diameter of shoot (cm) at | | | Height (m) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 30 days | 60 days | 90 days | 30 days | 60 days | 90 days | Before pruning | After pruning | Decrease |
| $T_1$ | 14.50 | 34.50 | 92.17 | 0.32 | 0.63 | 0.94 | 5.28 | 2.20 | 3.08 |
| $T_2$ | 13.20 | 33.07 | 81.73 | 0.31 | 0.62 | 0.93 | 4.53 | 1.95 | 2.58 |
| $T_3$ | 10.13 | 19.30 | 41.13 | 0.20 | 0.41 | 0.71 | 4.63 | 3.27 | 1.36 |
| $T_4$ | 10.43 | 20.93 | 51.33 | 0.24 | 0.47 | 0.73 | 4.82 | 3.24 | 1.59 |
| $T_5$ | 12.10 | 22.87 | 62.20 | 0.25 | 0.50 | 0.80 | 5.10 | 3.26 | 1.84 |
| $T_6$ | 12.77 | 26.53 | 70.93 | 0.29 | 0.59 | 0.89 | 5.00 | 3.07 | 1.93 |
| $T_7$ | 6.50 | 17.10 | 35.03 | 0.17 | 0.31 | 0.51 | 4.73 | 4.73 | 0.00 |
| S.E ± | 0.28 | 1.67 | 1.82 | 0.01 | 0.008 | 0.008 | 0.13 | 0.08 | 0.11 |
| C.D at 5% | 0.88 | 5.14 | 5.62 | 0.03 | 0.025 | 0.028 | 0.42 | 0.26 | 0.36 |

Table 2 reported that significantly maximum length of shoot (14.50 cm, 34.50 cm and 92.17 cm respectively), Maximum diameter of shoot (0.32 cm, 0.63 cm and 0.94 cm) and observed in ($T_1$) treatment retention of main trunk upto 1 m along with primary branches 1 m and secondary branches 0.50 m over rest of the treatments at 30, 60 and 90 days after pruning. While the minimum length of shoot (6.50 cm) and the minimum diameter of shoot (0.17 cm) was noticed in treatment control ($T_7$). The significantly maximum decrease in height of tree (3.08 m) was recorded in the treatment ($T_1$) retention of main trunk up to 1 m along with primary branches 1 m and secondary branches 0.50 m than the rest of treatments. These increased length of shoots at different period might be due to the less number of shoots and therefore, more nutrients available to each shoot on these trees. The maximum diameter of shoot could be attributed to vigorous growth of shoot, it might have resulted to increased biosynthesis of gibberellic acid with increase in pruning

intensity and the height is reduced with increase in pruning severity while in unpruned trees height remains same. The results are in accordance with the findings of Bajpai *et al.* (1988) and Das and Jana (2012) [5].

## Conclusion

The treatment ($T_1$) retention of main trunk upto 1 m along with primary branches 1m and secondary branches 0.50 m and treatment ($T_2$) retention of main trunk upto 1 m along with primary branches 1 m and secondary branches 1 m. was found to be beneficial for better growth parameters of guava cv. Sardar.

## References


1. Anonymous. Indian Horticulture Database, National Horticulture Board, Govt. of India, 2011.
2. Bajpai PN, Shukla HS, Chaturvedi AM. Effect of pruning on growth, yield and quality of guava (*Psidium guajava* L.) var. Allahabad Safeda. Progressive Horticulture. 1973; 2:1-4.
3. Bajwa GS, Sandhu HS, Bal GS. Effect of different pruning intensities on growth, yield and quality of ber (*zizyphus mauritiana* L.). Haryana J of Hort. Sci. 1988; 16(3-4):209-213.
4. Bajwa GS, Sandhu HS, Bal JS. Effect of pruning severity on growth and bearing of ber. Indian J of Hort. 1983, 203-206.
5. Das B, Jana BR. Effect of canopy management on growth and yield of mango cv. Amrapali planted at closed spacing. J of Food, Agric. and Environ. 2012; 10(3-4):328-331.
6. Jaiswal VS, Amin MN. Guava and Jackfruit. In Biotechnology of perennial fruit crops, Biotechnology in agriculture, edited by Hammer Schlag F.A. and Litz R.E., *C.A.B. Int*., Wallingford, UK, 1992, 421-431.
7. Menzel CM. Guava: An exotic fruit with potential in Queensland. Queensland Agri. J. 1985; 111(2):93-98.