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## Response of pruning techniques on yield in high density planting of guava (*Psidium guajava* L.) cv. Allahabad safeda

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### Abstract

The present investigation entitled "Response of pruning techniques on yield in high density planting of guava cv. Allahabad safeda" was carried at CISH Lucknow, during year 2016-2017. The experiment was conducted on 11 years old healthy, vigorous high density plantation. The treatments comprised of four spacing's viz; 2 x 1 m (M<sub>1</sub>), 2 x 2 m (M<sub>2</sub>), 3 x 3 (M<sub>3</sub>) and 3 x 6 m (M<sub>4</sub>) and three pruning intensity i.e. upto last two season growth (S<sub>1</sub>), upto last three season growth (S<sub>2</sub>) and upto last four season growth (S<sub>3</sub>) with six plants in a treatment replicated three times in split plot design. The higher yields with closer spacing were mainly observed due to increased tree number per unit area.

**Keywords:** guava, planting, pruning intensity and yield

### Introduction

The guava (*Psidium guajava* L.) the apple of tropics is one of the important fruit crops of India. Guava is rich source of vitamin C, vitamin A, vitamin B2 (Riboflavin) and minerals like calcium, phosphate and iron. The ultra high density plantation in 2 x 1 m and 2 x 2 m produced higher yield but crowding of plants was observed in these spacing. After three years of planting due to crowding, the intercultural operations were difficult. Hence, subsequent experiment is planned to standardize the pruning techniques in high density plantation of guava. The success of any enterprise in agriculture can best be judged by assessing the economic benefits earned by the farmer. Its basic function is to confine the exploitation zone of the plant with regard to light, water and nutrients, so the highest total yield potential can be reached in the smallest possible area (Singh, 2005) [7]. With ever increasing land costs and the need for early returns on invested capital, there is a worldwide trend towards high density planting.

### Materials and Methods

The present investigations entitled "Response of pruning techniques on yield in high density planting of guava cv. Allahabad safeda" was carried out at CISH, Lucknow during 2016 and 2017 year. The treatments comprised of four spacing's viz; 2 x 1 m (M<sub>1</sub>), 2 x 2 m (M<sub>2</sub>), 3 x 2 (M<sub>3</sub>) and 3 x 3 m (M<sub>4</sub>) and three pruning intensity i.e. upto last two season growth (S<sub>1</sub>), upto last three season growth (S<sub>2</sub>) and upto last four season growth (S<sub>3</sub>) with six plants in a treatment replicated three times in split plot design. The pruning of guava plants was done in January, 2016 with three pruning intensities i.e. 1- Upto last two seasons growth, 2- Upto last three seasons growth and 3- Upto last four seasons growth. Harvesting of fruits was done at the end of July, 2016. Second trial was started in mid of the August at that time 50 % current season growth was pruned in all treatments and harvesting of fruits was done during Jan-Feb-2017. Due to famine in Uttar Pradesh state, pruning for third trial was done in June-2017. In that pruning, the 50% current season growth was pruned. Harvesting of fruits of third trial was done during Nov-Dec-2017. The yield was recorded plant wise and treatment wise.

### Results and Discussion

In data analyzed and results were presented in Table and discussed under appropriate headings.

### Yield and yield contributing parameters

Yield contributing parameters per tree and yield per hectare were presented as follows. The maximum yield of fruit per tree (7.13 Kg) was recorded in the treatment T<sub>4</sub> (M<sub>2</sub>S<sub>1</sub>) followed by the treatment T<sub>7</sub> (M<sub>3</sub>S<sub>1</sub>) (6.21). The maximum yield per hectare (21.05 t) was recorded in

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the treatment T<sub>1</sub> (M<sub>1</sub>S<sub>1</sub>) presented in Table-1. In present investigations, fruit yield per unit area decreases as intensity of pruning increases from S<sub>1</sub> to S<sub>3</sub>. It is because as intensity of pruning increases the more biomass was pruned out. Hence, in S<sub>2</sub> and S<sub>3</sub> pruning intensity were branches beheaded upto three season and four season growth. Due to in this treatment for development of framework more energy was diverted which resulted in fewer yields than S<sub>1</sub> pruning intensity, where only two season growth was pruned out. The fruit yield per plant increased in wider spacing but, the yield per unit area was increased with increase in plant density. The higher fruit yield with closer spacings was reported by several workers like Yadav and Kale (1992)<sup>[9]</sup>, Lal *et al.* (1996)<sup>[3]</sup>, Kumar and Singh (2000)<sup>[1]</sup>, Singh and Dhaliwal (2007)<sup>[6]</sup>, Kundu (2007)<sup>[2]</sup>, and Ravishankar *et al.* (2008)<sup>[4]</sup>.

### Economics of high density guava production

The economical study of Farm Business Management is always concerns with the efficiency of enterprise. The data regarding the economics of guava production under the high density planting during 2016 and 2017 years.

**Table:** Yield of guava under HDP.

Treatment (Plant density)	Total Yield per Plant (kg)	Total Yield per ha. (t)
T <sub>1</sub> (M <sub>1</sub> S <sub>1</sub> )	4.00	21.05
T <sub>2</sub> (M <sub>1</sub> S <sub>2</sub> )	3.42	17.08
T <sub>3</sub> (M <sub>1</sub> S <sub>3</sub> )	2.98	14.88
T <sub>4</sub> (M <sub>2</sub> S <sub>1</sub> )	7.13	16.82
T <sub>5</sub> (M <sub>2</sub> S <sub>2</sub> )	5.53	13.83
T <sub>6</sub> (M <sub>2</sub> S <sub>3</sub> )	4.42	11.31
T <sub>7</sub> (M <sub>3</sub> S <sub>1</sub> )	6.21	9.35
T <sub>8</sub> (M <sub>3</sub> S <sub>2</sub> )	4.26	6.82
T <sub>9</sub> (M <sub>3</sub> S <sub>3</sub> )	3.52	5.95
T <sub>10</sub> (M <sub>4</sub> S <sub>1</sub> )	4.97	5.52
T <sub>11</sub> (M <sub>4</sub> S <sub>2</sub> )	4.04	4.49
T <sub>12</sub> (M <sub>4</sub> S <sub>3</sub> )	2.90	3.23
SE1 (m)	0.194	0.592
CD1 at 5%	NS	NS
SE2 (m)	0.271	0.763
CD2 at 5%	NS	NS

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