

## Evaluation of Guava (*Psidium guajava* L.) Varieties under Gird Zone of Madhya Pradesh

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### ABSTRACT

The growth, yield, physio-chemical attributes and quality traits of five varieties of guava (*Psidium guajava* L.) were evaluated during winter season of 2015-16 & 2016-17. Plant height shoot length & shoot diameter were maximum of Allahabad Safeda but stem diameter was maximum of Sardar Guava. The highest yield was recorded in Gwalior 27 followed by Sweta. Flesh colour was pink in Lalit while white in remaining varieties. The fruit weight ranged from 134.5g to 154.5 g in Lalit and Sweta, respectively. Fruit length and breadth were maximum in Gwalior 27. The highest total soluble solids were observed in Sweta whereas, acidity percentage was maximum in Lalit. Total sugar percentage was the highest in Gwalior-27. Average number of seed/100 gram fruit was maximum in Lalit closely followed by Allahabad Safeda and Gwalior-27.

**Key words:** Guava, Growth, Yield, Quality, Variety, Chemical, Evaluation.

### INTRODUCTION

Guava (*Psidium guajava* L.) is one of the most important fruit crops of India. Its belong to family myrtaceae, and is widely cultivated in tropical and subtropical region of India. Because of its wide adoptability in different agro-climatic condition this fruit crop has been gaining popularity as a good return crop in Gird zone of Madhya Pradesh. The fruits of guava are an excellent source of vitamin C and rich source of minerals like Calcium, Phosphorus and Iron. The fruits also contain

vitamin A, riboflavin, thiamin, niacin and pantothenic acid. Guava crop bears twice a year, i.e. during rainy season (Ambe bahar) during winter season (Mrig bahar). Fruits use as a table purpose as well as in preservation industry for making of jam, jelly, nectar. The quality of the guava fruit is observed to be better in winter season<sup>7</sup>. Guava can withstand adverse climatic conditions grow under various soil types<sup>5</sup>. The present study was undertaken to evaluate the five guava varieties in Gird Zone of Madhya Pradesh.

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The soil and climatic condition of Gird zone of Madhya Pradesh quit suitable for successfully cultivation of guava under irrigated, and even rainfed condition as well. In Madhya Pradesh the guava is commercially cultivated in Jabalpur, Katani, Betul, Satana, Ujjain, Sheopur, Balaghat, Rewa, Shivpuri, Gwalior, Bhind, Chhindwara, Morena where the soil and climatic conditions are favourable for the guava crop. The total area under guava cultivation and production of guava in India is about 2.51 lakh hectare and 4083000 MT, respectively. The productivity of guava in India is 16.2 MT/ha. The total area and production of guava in Madhya Pradesh rank first in production with 37.4 MT/ha. Guava shares 4.5 percent of area and 3.3 percent of production among fruits in India.

#### MATERIAL & METHODS

The experiment was carried out at Krishi Vigyan Kendra Baroda District Sheopur during 2015-16 & 2016-17. This area is situated in the North western corner of Madhya Pradesh. The district lies between north longitude  $76^{\circ}30'$  to  $77^{\circ}40'$  and east latitude  $25^{\circ}15'$  to  $26^{\circ}15'$  with average annual rainfall of 822 mm. Vegetatively propagated guava plants of 5 Variety were planted in the KVK orchard at 4x4m distance during 2010. Randomly 5 plants from each variety were selected for the study. Uniform cultural practices were used in all plants. All the plants were irrigated as per need by ring method. Harvested mature fruits of mrig bahar were weighed separately during 2015-16 & 2016-17. Randomly eight mature fruit from each plant were selected for growth, yield, quality traits and physio-chemical analysis. These were studied during two year i.e. 2015-16 & 2016-17.

#### RESULT AND DISCUSSION

Growth and yield attributes of different varieties of guava are presented in table 1. It is cleared from the data that tree height ranged from 2.947 meter in Lalit to 3.177 in Allahabad Safeda whereas stem diameter was recorded maximum in Sardar guava (5.917

cm). Minimum shoot length was recorded in Sweta (78.88 cm) and maximum in Allahabad Safeda (96.50 cm). Shoot diameter ranged from 9.9 mm in Sardar guava to 11.3 mm in Allahabad safeda. The cultivar Gwalior-27 stood the first position in respect of average fruit production as it gave 39.90 kg per tree, closely followed by sweta in winter season. Through the overall productivity of all five varieties are low due to third fruiting season (Mrig Bahar). The results of present findings are in agreement with Singh *et al.*<sup>9</sup>, Jana *et al.*<sup>6</sup>, Babu *et al.*<sup>3</sup>, Gosh *et al.*<sup>5</sup>. Five variety studied revealed significant variation in their fruit length, fruit weight, fruit breadth and chemical characteristics (Table-2). The maximum fruit length was observed in Gwalior-27 (7.36 cm), closely followed by Allahabad safeda (7.30 cm), Sweta (7.10 cm) and Sardar guava (6.80 cm) whereas, the minimum fruit length was obtained in Lalit (6.10 cm). Fruit weight varied from 146.40 g in Allahabad safeda to 154.50 g in Sweta while fruit breadth was found maximum in Gwalior-27 (6.450 cm) closely followed by Allahabad safeda (5.43 cm), Sweta (6.41 cm), and Sardar guava (6.40 cm) whereas, the minimum fruit breadth was observed in Lalit (5.9 cm) There was a significant difference among the five varieties with respect to chemical attributes of guava fruits (Table 2). Total soluble solids (TSS) was found to vary from 17.2 to 19.0 with highest (19.00<sup>o</sup>Brix) in Sweta followed by Lalit (18.6<sup>o</sup>Brix), Gwalior-27 (18.4<sup>o</sup>Brix), Allahabad Safeda (17.8<sup>o</sup>Brix) and Sardar guava (17.2<sup>o</sup>Brix). Higher TSS in these cultivars may be because of favourable temperature mild arid condition and humidity during the fruit growth period which might have influenced the retention of higher TSS in the ripe fruits. Acidity of five variety was found to be in range from 0.49% to 0.66% with the highest Lalit (0.66%) followed by Sweta (0.59 %) and Sardar guava (0.57%). Difference in the total sugar had been recorded with little bit ranged from 8.06 in Sweta to 8.43 in Gwalior-27. The quality traits (Table-3) showed that skin surface of Allahabad Safeda, Gwalior-27 and Sweta were smooth white skin

surface of sardar guava and Lalit were rough. Flesh colour was pink in lalit whereas others were white fleshed cultivars. Number of seed and texture of seed are important characteristics of cultivars which substantiate the quality of guava fruit from consumer's point of view. Number of seed per 100 gram fruit was the lowest in Sweta followed by Sardar guava, Gwalior-27, Allahabad Safeda and Lalit. Based on the texture of seed, the five variety of guava were grouped in to hard,

medium and soft textured. Allahabad safeda, Gwalior-27 and Sardar guava were found medium seeds texture. Whereas Lalit and Sweta were found to have soft textured seeds. In the present study, it was observed that physio-chemical attributes of guava varieties differed because of genetic makeup which was also reported by Choudhary *et al.*<sup>4</sup>, Babu *et al.*<sup>3</sup> Pateletal.<sup>7</sup>, Aulakh<sup>2</sup>, Singh<sup>9</sup>.

**Table 1: Growth and yield attributes of guava varieties**

Varieties	Tree height (m)	Stem diameter (cm)	Shoot length (cm)	shoot diameter (mm)	yield (kg/tree)
Allahabad Safeda	3.177	5.773	96.500	11.300	37.500
Gwalior-27	3.070	5.900	93.800	10.700	39.900
Sardar guava	3.090	5.917	89.300	09.900	37.090
Lalit	2.947	5.850	82.900	10.600	37.050
Sweta	3.007	5.443	78.880	10.760	39.800
SE (m)	0.064	0.130	0.415	0.113	0.362
CD (5%)	0.196	0.394	1.258	0.341	1.098
CV	3.651	3.893	0.814	1.830	1.638

**Table 2: Physio-chemical attributes of guava varieties**

Varieties	Length of fruit (cm)	Weight of fruit (g)	Breadth of fruit (cm)	Total sugar (%)	Acidity (%)	TSS ( <sup>o</sup> Brix)
Allahabad Safeda	7.300	146.400	6.430	8.410	0.490	17.800
Gwalior-27	7.360	151.000	6.450	8.430	0.510	18.400
Sardar guava	6.800	148.700	6.400	8.210	0.570	17.200
Lalit	6.100	134.500	5.900	8.340	0.660	18.600
Sweta	7.100	154.500	6.410	8.060	0.590	19.000
SE (m)	0.111	1.390	0.140	0.041	0.014	0.148
CD (5%)	0.337	4.216	0.425	0.125	0.043	0.450
CV	2.779	1.637	3.845	0.861	4.379	1.412

**Table 3: Evaluation of guava varieties for quality traits**

Varieties	Skin surface	Flesh Colour	Seed texture	Average number of seed/100 gram fruit
Allahabad Safeda	Smooth	White	Medium	181
Gwalior-27	Smooth	White	Medium	167
Sardar guava	Rough	White	Medium	161
Lalit	Rough	Pink	Soft	186
Sweta	Smooth	White	Soft	136

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