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Performance of guava cultivars (*Psidium guajava* L.) under hill zone Mudigere, Chikkamagaluru district of Karnataka

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Abstract
The present investigation entitled, Performance of Guava cultivars (*Psidium guajava* L.) under hill zone of Karnataka at Zonal Agricultural and horticultural Research Station Mudigere, Chikkamagaluru district an altitudes of 970.13 msl. The Sevan guava cultivar where evaluated in five years established orchard plant growth parameters, yield and quality traits *viz* China guava, Punjab guava, K.G guava, Barvipur guava, Laith guava and Allahabad Safeda and local cultivar check variety All cultivars are significantly showed on par except Local cultivar. Allahabad Safeda was found highest values of plant height (311.14 cm) plant girth (36.76 cm) Plant canopy E-W & N-S Direction, (252.20 & 237.29 cm) and Number of branches/plant was recorded in Allahabad Safeda (13.43 nos). Yield parameters are average fruit weight (162 g) fruit length & Diameter, (5.78/5.06 cm) fruit yield/plant, (2.14 kg) fruit yield/plot (9.19 kg) and yield/ha (2551.85 kg) and evaluate biochemical composition at post-harvest laboratory COH, Mudigere, Chikkamagaluru district of Karnataka. During the year 2020-21 mature ripe fruits of six recognise cultivars were selected for investigation the data biochemical composition revealed that TSS (11.61 Brix0) Titratable acidity (0.39%) pH, (5.01) Total sugar (7.94%) and Ascorbic acid (203 mg/100 g) quality of guava fruits were found higher in Allahabad safeda when compare to other cultivars.

Keywords: Allahabad safeda, cultivars, hill zone

Introduction
Guava (*Psidium guajava* L.) is the member of the family Myrtaceace and most important commercial fruits of India is the most important and commercially cultivated fruit crop. Present Scenario The fruit is in demand in domestic as well as international markets and is traded in more than 60 countries. Major guava producing countries are India, Brazil, Mexico, South Africa, Jamaica, Kenya, Cuba, United States of America ~ Egypt, Thailand, Columbia and Pakistan. The international trade of guava is currently limited to processed products which are exported to United States, Japan and Europe. In India, guava is well adapted in almost all the states and principally produced in Maharashtra, Bihar, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Karnataka and Tamil Nadu. Guava contributes 4 per cent of the total fruit production which is around 18.23 million tonnes from 182 thousand hectares. The productivity is around 9.9 MT ha-J. Maharashtra is the leading guava producer both in area and production followed by Bihar and Uttar Pradesh. But its productivity is highest in Karnataka followed by Punjab, Bengal and Gujarat. However, overall. productivity is far from its actual potential. Commercial and Improved Varieties Allahabad Safeda and Sardar (L-49) form the mainstay of Indian guava industry owing to their high yield, quality and wide market acceptability. Even Lalit, a variety suitable for both processing as well as table purpose, is also gaining popularity. The area under this variety has increased significantly in Maharashtra, Andhra Pradesh and Karnataka. Some other improved guava varieties, *viz*. Shweta, Pant Prabhat, Dhareedar, Arka Mridula, Arka Amulya, Safed Jam, Kohir Safeda, Hisar Surkha, Hisar Safeda and Allahabad Sureka have been released by ICAR Institutes/SAUs in different states for commercial The utilization of guava for preparation of beverages and intermediates moisture products has not been explored much. Guava pulp can be used as base for the preparation of these products. In the food industry, knowledge of the biochemical properties of food is fundamental in analysing the unit operations. They influence the treatment received during the processing and good indicators of other properties as well as the qualities of food. Therefore, the prime objective of present investigation was to find out a cultivar of better biochemical attributes which is qualitatively superior to other cultivars growing under eastern southern Karnataka.

Materials and Methods

The climate of the South- East- region of Karnataka including Mudigere is very salubrious for growth of a wide range flora representing the centre of origin of valuable fruit species like citrus, banana, jackfruit The rainfall ranges from 2458.56 mm in the valley to 253 mm in the hills. The temperature ranges from a minimum of sub-zero to 36 °C which is located at 13º13' N' and 75º60'E covering with an area of 1843sq.km comprising of four districts *viz*. Karnataka East, West and (excluding sub-division, East). The average altitudes of the valley is about 785.13 m above MSL and represent a typical subtropical zone with cool, dry winter, a warm summer and a moderate monsoon season. The soil types comprises of grayal soil sand red ferruginous in the hilly tracts to alluvium in the plain and are acidic in nature exhibiting a range of pH from 5.4 to 6.8. Acidic pH with organic matter medium nitrogen and Phosphorus, lower potassium highs sulphur and sufficient quantities of nutrients of modified fertilizer dose of potassium. The total geographical area, the hilly terrain occupies 60 per cent and whereas, the valley represents 65 per cent. The natural vegetation accounts for 50 per cent of the total geographical area the prevailing agro- climatic zones plantation, crops like mandarin pepper areca and cadamum, coffee and spice species scattering in undulated hilly terrain.

The present investigation was carried out at Zonal Agricultural &Horticulture Research station Mudigere Chikkamagaluru, District 577 132 under University Agricultural &Horticulture Sciences Shivamogga Karnataka. during the year 2015-16 seven guava cultivar selected cultivars are were planted at spacing of 5.5 x 5.5 m in randomized block design, replicated thrice with four plants in each replication China guava, Punjab Guava, K G Guava, Baripur Guava, Lalith and Allahabad Safeda, and local cultivar check variety after five years first yield was observed in the month of July 2021. Crop was regulated for Mrig bahar *i.e*. flowering in June-July and fruiting from November till February square planting regular pruning, applying organic and in-organic fertilizers making basins necessarily drip and sprinkler irrigation was applied during summer month and other agronomic practice were attended.

Crop was regulated for Mrig bahar *i.e*. flowering in June-July and fruiting from September till November.

The height, plant girth and canopy spread were measured using standard method. The data on fruit yield, fruit size and fruit weight were recorded at the time of harvesting. The sample was taken in cotton bag allotted a varieties number/treatment and then sending to College of Horticulture post harvest t departmental laboratory collected analysing data Total sugar solids (TSS) was determined with the help of digital refract meter. Acidity was determined by titrating the juice against N/10 NaOH and expressed as per cent citric acid. Total sugars were analyzed as per method given by Lane and Eynon (1943). The data was statistically analysed by method of analysis of variance using RBD as described by Panse and Sukhatme (1985) [19].

Table 1: Performance of Guava cultivars (*Psidium guajava* L.) Growth parameters

Sl No	Treatments	Plant height (Cm)	Plant girth (Cm)	Pant Canopy N&S E&W(cm)		Fruit Diameter (Cm)	Fruit length(Cm)
1	Punjab Guava	308.41	32.28	228.33	224.66	4.32	4.60
2	K G Guava	300.95	28.66	219.00	216.66	4.31	4.18
3	Baruipur guava	292.43	29.66	221.66	215.00	4.33	4.32
4	China guava	3.5.33	27.54	220.00	215.07	4.11	4.17
5	Lalith guava	310.66	34.66	241.33	229.05	4.78	4.74
6	A Safeda	311.14	36.38	246.33	237.28	6.07	6.04
7	Local Check	256.89	26.26	216.86	212.30	3.91	3.86
	SEm+	4.58	2.15	1.89	5.21	0.40	0.37
	Cd	14.14	6.17	5.83	16.16	1.25	1.16
	Cv%	2.16	7.91	1.44	4.70	15.51	14.23

Results and Discussion

Plant height (cm): Data showed that growth, parameters significantly superior with respect to Plant growth was recorded the maximum plant height was recorded in Allahabad safeda (311.14 cm) followed by Lalith guava (310.66 cm) and minimum plant heigh recorded Localcheck cultivar (256.89 cm) Similar results were obtained by Kumrawat *et al.* (2018) [12] and Hammylliiende *et al.* (2017) Effect of integrated nutrient management on quality and yield parameters of guava, and Performance of Guava genotypes under hill zone of Nagaland.

Plant Girth: With respect to plant girth the maximum girth was recorded in in Allahbad safeda (36.38 cm) followed by Lalith guava (34.66 cm) and minimum plant girth were recorded in local Check cultivar were (26.26 cm). Similar results were obtained by Mandeep Kaur *et al.* (2013) [16].

Table 2: Performance of Guava cultivars (*Psidium guajava* L.) Fruit yield and quality attributes parameters

Sl No		Fruit yield			Biochemical properties			
	Treatments	Kg/Plant	Kg/Plot	Quintal (tons /ha)	TSS(Brix)	Ascorbic acid mg/100g	Acidity (%)	Total sugar (%)
1	Punjab Guava	3.93	12.41	40.70	11.15	181.72	0.50	6.63
2	K G Guava	3.48	10.30	34.04	10.45	187.19	0.49	6.87
3	Baruipur guava	3.13	11.43	36.45	10.81	192.18	0.49	6.98
4	China guava	3.21	11.01	37.05	11.09	207.69	0.46	7.15
5	Lalith guava	4.51	12.91	42.69	11.15	208.02	0.41	7.58
6	A Safeda	5.33	14.18	46.87	12.58	208.13	0.42	7.16
7	Local Check	2.46	09.79	32.37	10.25	188.12	0.50	6.32
	SEm+	0.25	0.84	2.67	0.315	5.32	0.012	0.199
	Cd	0.78	2.60	8.23	0.956	16.15	0.038	0.660
	Cv%	11.23	12.47	11.94	5.73	5.37	5.39	5.686

Plant Canopy EW & NS (cm): With respect to their growth, parameters. Plant canopy was recorded maximum plant canopy North &South t direction was recorded in Allahabad safeda (246.33 cm) followed by Lalith guava (241.33 cm) and the plant lowest plant canopy was recorded in Check Local cultivars (216.86 cm). And East & West direction the plant canopy was highest recorded in s Allahabad safeda (237.28) followed by Lalith guava (229.05 cm) and the lowest plant canopy at WE direction was recorded Check Local cultivars Guava (212.30 cm). Similar results were obtained by Kumrawat *et al.* (2018) [12] Hammylliiende *et al.* (2017) Performance of Guava genotypes under hill zone of Nagaland

II. Yield parameters: The Average fruit yield/plant (kg) data shows that the individual fruit weight was observed was recorded in Allahbad safeda (5.33 kg) followed by Laith Guava (4.51kg) and minimum fruit weight were recorded in Check Local cultivars (246.00kg). Similar results were obtained by Mandeep Kaur, *et al.* (2013) [16] & Pratima Gupta *et al*. (2019) [10] Integrated approach for nutrient management in guava cv. L49. Integrated nutrient management on yield and quality of Guava respectively. The average fruit yield kg/plot was observed the highest fruits per plots were recorded in Allahbad safeda cultivar (14.18 kg) followed by Laith Guava cultivar (12.91 kg) and minimum plot yield were recorded in Check Local cultivars (9.79kg).The average yield tons /ha (kg) were recorded in Allahbad safeda cultivar (46.87 tons/ha) followed by Laith Guava (42.69 tons/ha) and minimum yield was recorded in Check Local cultivars (32.37 tons/ha). Similar results were obtained by Hammylliiende *et al.* (2017) and Patel *et al.* (2011) [20] Performance of Guava genotypes under hill zone of Nagaland. And Variability studies in Guava (PSL) Geon type for growth yield & of Other at mid hill of Meghalaya. The quadrangular branchlets fruits oval, oblong, pear shaped measured in flexible tape the length and diameter fruit both were recorded, the Allahabad safeda found (6.04 & 6.07 cm) followed by Lalith guava (4.74 & 5.78 cm) The minimum fruit length and width were recorded in Allahabad safeda (3.86 & .3.91 cm). Similar results were obtained Hammylliiende *et al.* (2017) and Kumrawat *et al.* (2018) [12] Performance of Guava genotypes under hill zone of Nagaland and Effect of integrated nutrient management on quality and yield parameters of guava.

Physico chemical Characters: The chemical analysis of fruit in terms of TSS (Brix 0), Acidity (%) Ascorbic acid (mg/100g) pH and total sugars (%) revealed that, the highest TSS was recorded in Allahabad safeda (12.580 brix) followed by Lalith (11.15 °Brix) and lowest TSS was in Check Local cultivars (9.80 °Brix). Similar results were obtained by Dinesh kumar Kuldeep *et al.* (2019) Biochemical studies in different cultivars of guava under eastern UP.

Total sugar (%) The finding parting to biochemical attributes of the fruit of guava cultivar the highest total sugars of the fruit was found in Allahabad safeda (6.07%) followed by Laith Guava (4.788%) and minimum total sugar were recorded in Check Local cultivars (3.91%). Similar results were obtained by Similar results were obtained by Shefalika *et al.* (2018) Effect of recipes and storage on chemical attributes of guava.

Acidity: The findings pertaining to biochemical attributes shows the significant difference in various cultivars the lowest acidity was recorded in Allahabad safeda (0.38%) followed by Lalith guava (0.47% cm) and highest fruit acidity were found in Check Local cultivars (0.53%) Similar results were obtained by Singh *et al.* (2008) Studies on physicco chemical characters of different Guava verities.

Ascorbic acid: The processed fruit juice showed highest in Allahabad safeda (208.52 mg/100g) followed by Lalith (207.69 mg/100g) whereas the minimum in Ascorbic acid content was found in found in Check Local cultivars (178.59 mg/100g). Similar results were obtained by Anupam Tiwari *et al.* (2016) Evaluation of Guava cultivar for quality pulp production) Similar results were obtained by Dinesh kumar Kuldeep *et al.* (2019) Biochemical studies in different cultivars of guava under eastern UP.

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References

1. Bhalekar SG, Chalak SU. Studies on performance of different guava cultivars under western Maharashtra conditions Electronic Journal of Plant Breeding. 2017;8(2):577-579.
2. Deka BC, Vinika K, Aonu Rymbai H, Raj Khowa. Preference of Guava (*Psidium gujava* L) Indian Hill Farming ISSN, 0970-6429. 2017 Dec;30:198-200.
3. Dhaliwal GS, Dhillon SK. Effect of Tree size on Physico-chemical characteristics of Fruits of Guava cv. Sardar. Indian J Hortic 2003;60:312-317.
4. Menzel CM. Guava is an exotic fruit with potential in Queensland. Queensland Agric J. 1985;111(2):93-98.
5. Dwivedi, Vandana, Santosh Agnihotri. Effect of Integrated Nutrient Management on Growth, Yield and Economics of Guava (*Psidium guajava* L.) cv. Allahabad Safeda. Int. J Curr. Microbiol. App. Sci. 2018;7(6):3449-3453.
6. Dinesh MR, Vasugi C. Guava improvement in India and future needs, J Hortl. Sci. 2010;5(2):94-108.
7. Dubey PS, Huda MN, Singh S. Studies on growth behavior of guava germplasm under Sabour conditions for rainy season fruiting. Indian Journal of Horticulture. 2000;57:326-328.
8. Ghosh SN, Roy S, Bera B. Study on performance of twenty one guava cultivars in red and laterite soil of West Bengal underirrigated condition. Journal of Crop and Weed. 2013;9(2):81-83.
9. Goswami AK, Shukla HS, Prabhat Kumar, Mishra DS. Effect of pre harvest Application of Micro Nutrients on quality of guava (*Psidium guajava* L.) cv. Sardar. Horti flora research spectrum. 2012;1(l):60-63.
10. Prartma Gupta, Devi Singh, Prasad VM, Vidhur Kumar. Integrated on yield and quality of Guava (*Psidium guajava* L.) Cultivar Allahbad safeda under High density planting The Pharma Invention. 2019;51:320-323.
11. Jana BR, Bikash Das, Vishalnath Mmithra, Rai, Kumar S. Evaluation of guava (*Psidium gujava* L) Germplasm under eastern Plateau hill region. 2009;27:3-4.
12. Kumrawa TD, Kanpure RN, Singh OP, Bhandari J, Kachouli B. Effect of integrated nutrient management on quality and yield parameters of guava (*Psidium guajava* L.) cv. l-49. Journal of Pharmacognosy and Phytochemistry. 2018;7(5):1668-1670.

13. Maity PK, Das BC, Kundu S. Effect of different sources of nutrients on yield and quality of guava cv. L-49. Journal of Crop and Weed. 2006;2(2):17-19.
14. Mamnindla S, Prasad VM, Mishra S. Effect of different sources of organic and inorganic plant nutrients on fruit growth, yield and quality of guava (*Psidium guajava* L.) cv. Allahabad safeda. Bioved. 2014;25(2):159-164.
15. Mitra SK, Gurung MR, Pathak PK. Organic nutrient management in high density guava orchard. Acta Horticulturae. 2012;933:233-238.
16. Mandeep Kaur, Binepal, Rajesh Tiwari, Kumawat BR. Integrated approach for nutrient management in guava cv. L49 under Malwa Plateau conditions of Madhya Pradesh International Journal of Agricultural Sciences. 2013;9:467-471.
17. Nelson N. A photometric adoption of the somogui method for the determination of glucose. J Biol. Chem. 1944;153:375-380.
18. Ojha AP, Tiwari JP, Mishra KK. Studies on yield and quality of some guava cultivars. Indian J Hill Farming. 1985;4:15-18.
19. Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers. 4th ed. ICAR, New Delhi, 1985.
20. Patel RK, Maiti CS, Deka BC, Deshmukh NA, Roy D. Variability studies in guava (*Psidium guajava* L.) genotypes for growth, yield and quality attributes at mid-hills of Meghalaya Indian Journal of Hill Farming 2011;24:24-28.
21. Patel RK, Yadav DS, Babu KD, Singh, Akath, Yadav RM. Growth, yield and quality of various guava (*Psidium guajava* L.) hybrids/cultivars under mid hills of Meghalaya. Acta Horticulture. 2007;735:57-59.
22. Patel MJ, Pagi NK, Patel Dhadak HL, Shah NI. Evaluation of Guava (*Psidium gujava* L.) genotypes for growth and yield in middle Gujrat" condition International journal of chemical studies. 2021;9(1):1527-1531.
23. Sakar Tanmoy, Sarkar Topas, Sau Sayan. Growth and Yield attributes of guava (*Psidium guajava* L.) verities under West Bengal condition International Journal of Agricultural sciences. 2016;8:61-201.
24. Surage H, Lekhi R, Jawed Md, Vasure N, Jadav, R. Effect of Inorganic Nutrients and Combine Effect of Inorganic and Organic Sources of Nutrients On Quality of Guava (*Psidium guajava* L.). International Journal of Agricultural Science and Research. 2017;7(2):239-242.
25. Singh Kumar S, Kulloli RN. Performance evaluation of guava (*Psidium gujava* L.) Introduction in arid condition of western Rajastan annals of arid zone. 2016;55(1&2):25-28.
26. Singh J, Prerak Bhatnagar, Meena CB. Evaluation of guava strains for yield and physico-chemical characteristics. 175. J Agric. Res. 2019;57(3):175-180.
27. Singh UR, Pandey IC, Upadhyay NP, Tripathi BM. Description of some guava varieties (*Psidium guajava* L.). Haryana J Hortic Sci. 1976;5:142-149.
28. Talang BC, Deka, Vinika, Aomi K, Rymbai H, Rajkhowa DJ. Performance of Guava (*Psidium guajava* L.) Genotypes at Lower Hills of Nagaland Indian Journal of Hill Farming. 2017;30(2):198-200.
29. Uma Shankar, Pathak RA, Pathak RK, Ojha CM. Effects of NPK on the yield and fruit quality of guava cv. Sardar. Prog. Hort. 2002;34(1):49-55.