



# Performance of Guava (*Psidium guajava* L.) Genotypes at Lower Hills of Nagaland

Hammylliende Talang<sup>1\*</sup> • B.C. Deka<sup>2</sup> • Vinika K. Aomi<sup>3</sup> • H. Rymbai<sup>1</sup> • D.J. Rajkhowa<sup>3</sup>

<sup>1</sup>ICAR Research Complex for NEH Region, Umiam

<sup>2</sup>Agriculture Technology Application and Research Institute, Umiam

<sup>3</sup>ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani

### ARTICLE INFO

#### Article history:

Received 22 July 2016

Revision Received 12 December 2016

Accepted 17 March 2017

#### Key words:

guava genotypes, fruit quality

### ABSTRACT

Six guava genotypes of four years old *viz.* RCGH-11, RCGH-1, RCGH-4, RCGH-7, L-49 and Allahabad Safeda showed wide range of variation with respect to plant growth, yield and quality traits of fruit at lower altitudes of Nagaland. However, RCGH-1 was found superior in plant height (3.04 m), plant girth (35.17 cm) and canopy spread (3.64 m and 3.85 m in E-W & N-S direction) while RCGH-4 gives better fruit weight (171.28 g), fruit size (6.23/6.97 cm length/diameter) and fruit yield (15.22 kg/tree). The hybrid RCGH-11 was found better in quality attributes like highest TSS (11.53 °Brix), total sugars (8.15%) and lowest acidity (0.40 %). The genotypes *viz.* RCGH-4 and RCG-11 were outscore other cultivars for growth, yield and quality attributes.

## 1. Introduction

Guava (*Psidium guajava* L.) is the most important and commercially cultivated fruit crop belonging to the family Myrtaceae. It was originated in tropical America, stretching from Mexico to Peru and gradually it became a commercially significant crop in several countries. Guava is a hardy plant that grows in most of soil types varying from sandy loam to clay loam with a pH of 4.5 to 8.2. Guava fruit is rich in 'vitamin-C', minerals like calcium, iron and phosphorous with pleasant aroma and flavour (Dhaliwal and Dhillon 2003). To those fruit lovers who familiarized with its penetrating aroma, guava is considered as one of the most detectable and fascinating fruits (Menzel 1985). Besides its exceptionally high nutritive values, guava is also prolific and regular bearer that could produce fruit year round. North Eastern Hill Region of India is bestowed with a heavy downpour with good distribution for about nine months a year, provide immense scope for the commercial cultivation of guava (Singh 1983). The yield and quality of local cultivars grown by the farmers is quite poor and that

it is requisite to trace the guava genotypes with higher yield and good quality. Hence, attempts were made to evaluate the genotypes suitable for low-hill situation of Nagaland.

## 2. Materials and Methods

Six guava genotypes of four years old *viz.*, RCGH-1, RCGH-4, RCGH-7, RCGH-11, L-49 and Allahabad Safeda were evaluated with respect to growth, yield and quality traits of fruit at ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani during 2014-15. Four trees per replication of each genotype were selected from bearing orchard and data were taken from selected plants with respect to growth, yield and quality attributes. Ten fruits were randomly harvested from each replication. The growth parameters such as, plant 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. Total soluble solids (TSS) was determined with the help of digital refractometer. Acidity was determined by

\*Corresponding author: [hammylliende@gmail.com](mailto:hammylliende@gmail.com)

**Table 1.** Plant growth, yield and physico-chemical compositions of guava fruits at 4<sup>th</sup> year of planting

Variety	Plant height (m)	Plant girth (cm)	Canopy spread (m)		Yield (kg/tree)	Weight (gm)	Fruits size (Length/Width)	TSS (°brix)	Titratable acidity (%)	Total sugars (%)
			East-west	North-south						
RCGH-1	3.04	35.17	3.64	3.85	9.50	145.17	4.77/5.47	11.03	0.42	8.15
RCGH-4	2.93	32.67	3.07	2.92	15.22	171.28	6.23/6.97	9.63	0.55	6.09
RCGH-7	2.54	30.00	3.11	3.27	8.26	147.75	5.37/5.20	10.37	0.48	7.80
RCGH-11	2.37	29.00	2.81	2.71	13.43	124.30	4.07/4.27	11.53	0.40	8.52
L-49	2.05	28.62	2.32	2.59	10.80	128.47	5.00/4.77	10.00	0.50	7.27
Allahabad Safeda	2.32	28.63	2.32	2.68	14.16	115.10	4.87/4.47	9.83	0.54	6.79
Cd (P=0.05)	0.28	3.60	0.68	0.42	1.94	13.62	0.14/0.13	0.52	0.10	0.36

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).

### 3. Results and Discussion

Data showed (Table 1) that genotypes differed significantly with respect to their growth, yield and quality attributes. Plant growth was recorded in terms of plant height, girth and canopy spread. The maximum plant height was noticed in RCGH-1 (3.04 m) followed by RCGH-4 (2.93 m) with minimum in L-49 (2.05 m). The maximum plant girth was recorded in RCGH-1 (35.17 cm) followed by RCGH-4 (32.67 cm) while minimum in L-49 (28.62 cm). Similarly, canopy spread was recorded maximum in RCGH-1 (3.64 m and 3.85 m) in East-west and North-south direction while L-49 recorded the minimum (2.32 m and 2.59 m) in East-west and North-south direction respectively. The maximum fruit yield was obtained in RCGH-4 (15.22 kg/tree) followed by Allahabad Safeda (14.16 kg/tree), whereas, minimum in RCGH-7 (8.26 kg/tree) followed by RCGH-1 (9.50 kg/tree).

Table 1 revealed that the highest fruit weight was recorded in cultivar RCGH-4 (171.28 g) whereas; lowest fruit weight was found in Allahabad Safeda (115.10 g). Similar finding was also reported by Patel *et al.* (2011) in guava cv. RCGH-4 under Meghalaya condition. The maximum fruit size (6.23/6.97 cm length/width) was recorded in RCGH-4 followed by RCGH-7 (5.37/5.20 cm length/width) whereas, minimum in RCGH-11 (4.07/4.27 cm length/width). This is also in line with the finding of Patel *et al.* (2011). The chemical analysis of fruit (Table 1) in terms of TSS, acidity and total sugars (%) revealed that the

highest TSS was recorded in RCGH-11 (11.53 °Brix) followed by RCGH-1 (11.03 °Brix) and lowest in RCGH-4 (9.63 °Brix). The minimum acidity was recorded in RCGH-11 (0.40 %) followed by RCGH-1 (0.42 %) while, RCGH-4 (0.55 %) recorded maximum acidity. These results are in tune with Babu *et al.* (2002) who reported highest TSS content in RCGH-11. The maximum total sugars was recorded in RCGH-11 (8.52 %) followed by RCGH-1 (8.15 %) and RCGH-7 (7.80 %), while minimum in RCGH-4 (6.09 %). These findings are in line with Babu *et al.* (2002) who reported that the Selection-11, Selection-7, Lucknow-49 and Allahabad Safeda gave high quality fruits. In the present investigation, it was observed that physico-chemical characteristics of fruits differed due to varied climatic condition of Nagaland as compared to other part of the country which was also reported by Chadha *et al.* (1981), Ojha *et al.* (1985), Singh *et al.* (1976) and Teotia *et al.* (1962).

### Acknowledgements

Authors are thankful to the project on “Comparative evaluation of different farming system models suitable for small and marginal farmers” for providing all the experimental facilities for successful conduct of the experiment.

### References

- Babu KD, Dubey AK, DS Yadav (2002). Evaluation of guava cultivars for their performance under mid hill altitude of Meghalaya. *Indian J Hill Farming* 15: 119-121.
- Chadha KL, Singh HP, BK Tandon (1981). A varietal trial of guava. In: Proceeding of National Symposium on Tropical and Subtropical fruit crop, Bangalore. Pp.17.

- Dhaliwal GS, SK Dhillon (2003). Effect of Tree size on Physico-chemical characteristics of Fruits of Guava cv. Sardar. *Indian J Hortic* 60: 312-317.
- Menzel CM (1985). Guava is an exotic fruit with potential in Queensland. *Queensland Agric J* 111(2): 93-98
- Ojha AP, Tiwari JP, KK Mishra (1985). Studies on yield and quality of some guava cultivars. *Indian J Hill Farming* 4: 15-18.
- Panse VG, PV Sukhatme (1985). Statistical Methods for Agricultural Workers. 4<sup>th</sup> ed. ICAR, New Delhi.
- Patel RK, Maiti CS, Deka BC, Deshmukh NA, D Roy (2011) Variability Studies in Guava (*Psidium guajava* L.) Genotypes for Growth, Yield and Quality Attributes at mid-hills of Meghalaya. *Indian J Hill Farming* 24 (1&2): 24-28.
- Singh S (1983). Guava plantation, *Agricultural Land* 10: 32-35.
- Singh UR, Pandey IC, Upadhyay NP, BM Tripathi (1976). Description of some guava varieties (*Psidium guajava* L.). *Haryana J Hortic Sci* 5: 142-149.
- Teotia SS, Pandey IC, Agnihotri BN, KL Kapoor (1962). Study of some guava varieties of Utter Pradesh. *Indian Agriculturist* 6: 47-53.