



Assessment of genetic diversity in guava

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ABSTRACT

An extensive survey was made to the diversity rich areas of Gujarat during the year 2016 and 2017 to earmark the elite guava genotypes having desirable traits in terms of shape, size, pulp colour, seed content, morphological and qualitative attributes of fruits. Twenty five genotypes of seedling origin were studied for their quantitative and qualitative characters. Fruit weight ranged between 53.50-318.50 g; length 4.09-9.53 cm; width 4.30-7.90 cm; length:width ratio 0.86-1.40; seed core length 2.70-5.25 cm, pulp thickness 1.00-2.25 cm; number of seeds fruit⁻¹ 55.30-600.00; seed weight fruit⁻¹ 0.94-9.12 g; 100 seed weight 0.66-2.95 g and seed texture was found medium soft in most of the genotypes. Similarly, the chemical quality attributes also varied significantly among all the different genotypes. Among the genotypes, the total soluble solids content varied between 10.80-16.33°B; acidity 0.28 to 0.70%; TSS:acidity ratio 20.37-39.82; pectin 0.88-1.42%; ascorbic acid 136.50-280.50 mg/100 g; reducing sugar 4.11-7.45%, non-reducing sugar 1.11-2.83% and total sugars 5.70-9.78% and high variability was also recorded in mineral contents of fruits which ranged from 11.48-17.48 P, 268.37-370.17 K, 16.31-23.18 Ca and 12.62-24.66 mg 100 g⁻¹ FW. Lycopene content in pink fleshed guava genotypes ranged from 0.67-2.43 mg 100 g⁻¹. Results of the study revealed that different genotypes exhibited wide range of diversity with respect to quality attributes under rain-fed semiarid conditions of Gujarat.

Key words: *Psidium guajava*, genotype, physico-chemical attributes

INTRODUCTION

Guava is one the most delicious and popular fruits, widely grown in tropical and subtropical regions of India. It is rich source of vitamin C and minerals and is common raw material in fruit processing industry. Among most of the tropical and subtropical fruit trees guava plants exceed in adaptability, productivity, tolerance to adverse weather conditions and possibility of value addition makes guava an important fruit crop (Tiwari *et al.*, 13). A large number of named cultivars are available in India, only a few like Allahabad Safeda and L-49, occupy the major area under its cultivation. Efforts have been made over past few decades to widen the genetic base through creating new variability or by utilizing natural variability for selection of elite variety (Tiwari *et al.*, 13). In India, it is the fourth and fifth most important fruit crop by area and production, respectively. It occupies an area of 0.27 m ha with a total production of 3.67 mt. In Gujarat, it is mainly grown in Ahmadabad, Bhavnagar, Rajkot and Bharuch districts with a total production 140.80 thousand tonnes from an area of 10.80 thousand ha; the average productivity is 13.0 t ha⁻¹ (Anonymous, 1). Guava exhibits high levels of genetic diversity which is due to prevalence of seed propagation in these areas. Therefore, survey was undertaken to find out

the diversity in fruit characteristics, and also to select elite seedlings from existing heterozygous seedling population having desirable horticultural traits. The physico-chemical attribute of the fruit are important as high TSS and titrable acidity in fruits along with red pulp are desirable for processing industry and low acidity and high TSS are desirable for fresh consumption (Corrêa *et al.*, 4). For development of improved guava cultivars, a diverse gene pool is essential. Knowledge of the genetic diversity available and the origin of the cultivars would assist in the selection of parents for effective improvement programmes (Singh *et al.*, 12; Hazarika *et al.*, 6). In this regard, Yadav and Shankar (14) identified several elite seedling guava types based on bearing and fruit quality while surveying in Allahabad region. Development of nutrient rich cultivars has been a focus of fruit breeding studies (Corrêa *et al.*, 4). Similar approach has been followed by Singh *et al.* (11) for identification of elite genotypes of wood apple seedling from Gujarat. Keeping above facts in view, an attempt was made to identify elite genotypes and their *ex-situ* establishment in field gene bank for further evaluation and crop improvement.

MATERIALS AND METHODS

The diversity rich areas of semi-arid areas of Gujarat viz., Panchmahals, Mahisagar, Vadodara Bharuch, and Bhavnagar were surveyed extensively

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