Annals of Plant and Soil Research 19(1): 29 - 31 (2017)

Suitability and performance of various cultivars of guava (*Psidium guajava*) in Bundelkhand region of Madhya Pradesh

V.K. SINGH[1], P.K. TYAGI[2] AND R.S. RAIKWAR[3]

Jawaharlal Nehru Krishi Vishwa Vidyalaya, College of Agriculture Tikamgarh – 472 001 (MP)

Received: November, 2016; Revised accepted: February, 2017

ABSTRACT

An experiment was carried out at, College of Agriculture, Tikamgarh, (Madhya Pradesh) during 2012-13 to study the survival and performance of different guava (Psidium guajava L) cultivars viz., Allahabad Safeda, L – 49, G – 27 and Surkha. Majority of growth and yield characters were differed significantly among guava cultivars. Cultivar Allahabad Safeda resulted in significantly higher survival percentage (93.3%) followed by L-49 (86.6%), plant height was higher in L-49 (2.63m) followed by cv. Allahabad Safeda(2.50m), number of branches/plant (4.33) followed by L-49 (2.33), number of branchlets/branch (12.3) followed by L-49 (8.33) and plant canopy spread (8.87m) followed by L-49 (5.77m) as compared to other cultivars. Similarly, cv. Allahabad Safeda also resulted into significantly higher fruit weight (306.0g) followed by L-49 (276g) , pulp weight (301.0g) followed by L-49 (271.4g), number of seeds (496) followed by L-49 (515), seed weight was higher in L-49 (5.0g) followed by Allahabad Safeda (4.61g), pulp to seed ratio was also higher in L-49 (60.20) followed by cv. Allahabad Safeda (58.9) and yield (105.7fruit/plant) were recorded in cv. Allahabad Safeda followed by L-49 (67.7 fruit/plant).

Key word: Suitability, performance, guava cultivars, Bundelkhand.

INTRODUCTION

Guava (*Psidium guajava* L.) occupies a premier position among the tropical fruit trees. It belongs to family Myrtaceae. Guava fruit is rich in 'Vitamin C' minerals like calcium, iron and phosphorous with pleasant aroma and flavor (Dhaliwal and Dhillon 2003). It having C (75-260 mg / 100 g pulp), pectin (0.5-1.8 %), good source of thiamine (0.03-0.07 mg / 100 g pulps) and riboflavin (0.02-0.04 mg / 100 g pulp). Besides, guava fruit is also a good source of minerals, like phosphorus (22.5-40.0 mg / 100 g), calcium (10.0-30.0 mg / 100 g) and iron (0.60-1.39 mg / 100 g). At present, it is scattered throughout India and cultivated in an area of about 265.93 thousand hectares with production of 4178.152,000 tons (NHB 2014-15). In India, it ranks fourth in area and production after mango, banana and citrus. Guava is also one of the most important and popular fruit tree in Tikamgarh district with an average acreage, production and productivity of guava is 210 ha, 9400 tones and 45 tones/ ha, respectively. In general, guava is cultivated largely through a traditional system, under which it is difficult to achieve desired level of production because large trees provide low production per unit area and need high labour inputs. Large trees take several years before they come into full bearing and increased over all cost of production per unit area. Documentation has been done by different workers on various aspects like genetic variability, varietals wealth, nutritional value, agro-techniques including top working and water management and post- harvest changes etc. On the other hand, limited information is available about area specific varietals suitability and performance of guava. Keeping this in view the present investigation was carried out to study the survival and performance of different cultivars at Tikamgarh under Bundelkhand Region of Madhya Pradesh.

MATERIALS AND METHODS

On the budded plants of four guava cultivars *viz.,* Allahabad Safeda, L – 49, G – 27 and Surkha, an experiment was carried out at College of Agriculture, Tikamgarh (Madhya Pradesh) during the year 2012-13. The climate of Tikamgarh district of Bundelkhand Region is moderate, generally dry except rainy season. About 60 % of soil of the district falls under black and rest 40 % is sandy loam to red soil in the district. Average temperature in summer varies from 23°C to 44°C while average temperature in winter varies from 4.5° to 25.4°C. The district

Corresponding author: Email. Vksingh_singh@rediffmail
[1] Associate Professor (Horticulture), [2] Assistant Professor (Agronomy), [3] Assistant Professor (GPB), College of Agriculture, Tikamgarh (M.P.)

Tikamgarh receives an average annual rainfall of 1001 mm in 32 rainy days. On the budded plants of four guava cultivars *viz.,* Allahabad Safeda, L–49, G – 27 and Surkha. Which were planted on 16 August, 2008 in the field at 5 m apart under square system of planting. Fifteen plants of each variety were taken under field repository of Guava to assess their performance. The uniform management practices with respect to nutrient and irrigation were adopted for all the cultivars. The vigour of different cultivars in terms of growth parameters *viz.,* plant height, plant spread, number of branches/plant, number of branchlets/branch, fruit size (length and breadth), fruit weight, pulp weight, number of seed and their weight, pulp to seed ratio and fruit yield/plant were recorded when plants came into fruiting in the year 2010. The soil was black clay with low fertility status and good water holding capacity having about 3m soil depth. The data on various parameters were analysed by INDOSTAT statistical package in randomized block design.

RESULTS AND DISCUSSION

Growth parameters

Majority of growth characters under study differed significantly among guava cultivars except fruit size (Table 1). The mortality percentage minimum in *cv.* Allahabad Safeda (6.66 %) and maximum in Surkha (26.7 %). Survival percentage varied from 73.3 to 93.3% and maximum 93.3 % was in *cv.* Allahabadi Safeda and minimum in *cv.* Surkha (73.3 %). The plant height was significantly higher in *cv.* L-49 (2.63 m) followed by *cv.* Allahabad Safeda (2.50 m). Cultivar Allahabad Safeda recorded significantly maximum canopy spread (8.87 m) in East–West and North-South direction followed by cv. L-49 (5.77 m), G-27 (3.56 m) and minimum in Surkha (3.31 m). Likewise, branches per plant were maximum in *cv.* Allahabad Safeda (4.33) and the minimum in *cv.* Surkha (2.33).

Table 1: Mortality percentage, survival percentage and growth characters of guava cultivars

Cultivars	Mortality (%)	Survival (%)	Plant height (m)	Plant spread (m)	Branches/plant plant	Branchle branch
Allahabad	6.66	93.33	2.50	8.87	4.33	12.3
L-49	13.33	86.60	2.63	5.77	2.33	8.33
G-27	20	80.00	1.63	3.56	2.33	7.00
Surkha	26.66	73.33	1.54	3.31	2.33	7.00
S.Em ±	1.61	2.72	0.09	0.21	0.40	0.96
CD at 5%	5.02	8.42	0.28	0.67	1.28	2.96

Similar trend was also observed for the number of branchlets per branch among different guava cultivars. The number of branchlets per plant was recorded significantly higher in *cv*. Allahabad Safeda (12.3) followed by *cv*. L-49 (8.33) and lowest in cv. G-27 and Surkha (7.0). Plant growth attributes are important parameters to study the variability among the different fruit crops. Similar results were reported by Aulakh 92005) and Dhandar and Shukla (2004) in guava and aonla, respectively.

Yield parameters and fruit yield

Data pertaining to yield attributes and yield are presented in Table 2. The fruit size (length and breadth) among different guava cultivars did not differ significantly. However, fruit length was numerically greater in cv. L-49 (9.3 cm) and the lowest in cv. Surkha (6.6 cm), while fruit breadth was recorded maximum in *cv*. Allahabad Safeda (8.3 cm) which was closely followed by *cv*. L-49 (8.0 cm) and minimum in *cv*. Surkha (5.5 cm). Fruit weight as well as pulp weight among different cultivars varied significantly. Fruit weight was recorded significantly higher in cv. Allahabad Safeda (306 g) and the lowest in cv. Surkha (110 g). Similar trend was also observed for the pulp weight. Cultivar Allahabad Safeda produced significantly more pulp weight (301 g), which was at par with cv. L-49 (271.4 g) and the lowest pulp weight was recorded in cv. Surkha (107 g). Seeds/fruit and seed weight were also varied significantly among different guava cultivars.

Table 2: Yield parameters and fruit yield / plants of different guava cultivars

Cultivars	Fruit size (cm)		Fruit	Pulp	Number of	Seed	Pulp: seed	Yield (Number of
	Length	Breadth	weight (g)	weight (g)	seeds/ fruit	weight (g)	weight	fruits/plant)
Allahabad	8.5	8.3	306	301	496	4.61	58.9	105.7
L-49	9.3	8.0	276	271.4	515	5.0	60.20	67.7
G-27	7.6	7.3	175	170.7	437	4.30	39.7	17.3
Surkha	6.6	5.5	110	107.5	260	2.50	43.0	25.0
S.Em ±	0.94	0.98	8.52	15.8	19.3	0.48	3.78	6.10
CD at 5%	NS	NS	25.9	49.0	58.2	1.5	11.6	19.0

The seeds/ fruit were recorded significantly more in cv. L-49 (515) followed by cv. Allahabad Safeda (496), G-27 (437) and the lowest in Surkha (260). However, number of seeds/ fruit did not differ significantly between *cv*. Allahabad Safeda and L-49. Seed weight was also significantly higher in L-49 (5.0 g) followed by *cv*. Allahabad Safeda (4.61 g), G-27 (4.30 g) and the minimum in *cv*. Surkha (2.50 g). Pulp to seed ratio is one of the most precious attributes of quality of guava fruit. The pulp to seed ratio was recorded significantly maximum in cv. L-49 (60.2) closely followed by cv. Allahabad Safeda (58.9), Surkha (43.0) and it was minimum in *cv*. G-27 (39.7). However, pulp to seed ratio between cv. L-49 and Allahabad Safeda did no differ significantly. Differences in these parameters in guava might be due to the genetic constitution of the cultivars. Similar findings have also been reported by Mishra *et al.,* (2007) in different cultivars of Aonla fruit tree. Allahabad Safeda recorded significantly higher yield in terms of fruits/plants (105.7), while it was minimum in G-27 (17.3).Significantly higher fruits per plant in cv. Allahabad Safeda was possibly due to more number of productive branchlets (Shukla *et al.,* 2004).

On the basis of results, it may be concluded that the survival as well as performance of guava cultivar Allahabad Safeda was found significantly superior over rest of the cultivar in the Bundelkhand Region of Madhya Pradesh. Therefore, Allahabad Safeda cultivar of guava may be recommended for commercial cultivation under Bundelkhand region of Madhya Preesh.

REFERENCES

Aulakh P.S. (2005) Performance of different guava cultivars under the arid conditions of Progressive Horticulture **37**: 328-330.

Dhaliwal G.S, Dhillon SK (2003) Effect of Tree size on Physico-chemical characteristics of Guava cv. Sardar. Indian Journal of Horticulture **60:** 312-317.

Dhandar, D.G. and Shukla, A.K. (2004) Varietal improvement in aonla in India. Mehta and Singh (Eds.) Aonla Growers Association of India, pp. 44-49.

Mishra Dushyant, Pandey D, Mishra Rajneesh, Pathak R K (2007) Performance of improved cultivers during top-working on senile trees. Indian Journal of Horticulture **64** (4): 396-8.

NHB (2014) Annual report of National Horticulture Board, Gurgaon, Haryana.

Shukla, Anil Kumar, Shukla, Arun Kumar and Vashishtha, B.B. (2004) Improvement in aonla. in Fruit Breeding- Approaches and achievements . pp233-43. International Book Distributing Co. Lucknow.