



Evaluation of Sapota Cultivars for Growth and Yield Under Pune Conditions

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ABSTRACT

A study on evaluation of eight year old eight sapota cultivars viz. Kalipatti, PKM 1, PKM 2, PKM Hy 7/1, Cricket Ball, CO 1, CO 2 and Kirti Bharti was carried out under National Agriculture Research Project, Ganeshkhind, Pune. The study revealed that the cv. PKM 1 was found vigorous in growth by showing maximum East-West spread (3.77 m), North- South spread (3.96 m). The average number of fruits/tree/yr (523.5) and fruit yield (46.2 kg) was recorded in cv. PKM 1 whereas the average fruit yield of other cultivars ranged between 2.16 kg/tree/yr for Cricket Ball to 24.0 kg/tree/yr for (PKM 2). It was noticed that maximum fruit weight (99.3 g) was found in cv. PKM 2, however, the varietal differences for fruit diameter and number of seeds/fruit were non-significant.

Key Words : Sapota, Varieties, Yield, Quality.

INTRODUCTION

Sapota (*Manilkara acharas* Mill.) is also called as *Chikoo* is an evergreen tree known for producing delicate flavour, melting pulp with sweet taste. It is hardy, highly productive and generally free from major pests, diseases and physiological disorders. Hence, it is most popular and widely cultivated in the country. In India it is cultivated on area of 1.77 lakh ha. with production of 17.44 lakh MT and productivity of 9.90 MT per hectare. Maharashtra is leading state in which sapota is grown on 73,000 ha. with production of 4.74 lakh MT and Productivity of 6.50 MT per hectare (Anonymous, 2014). Most of the present day cultivars are seedling selections and its cultivation is based on narrow genetic base. Therefore, an attempt was made to evaluate eight year old eight sapota cultivars viz. Kalipatti, PKM 1, PKM 2, PKM Hy 7/1, Cricket Ball, CO 1, CO 2 and Kirti Bharti under National Agriculture Research Project, Ganeshkhind, Pune.

MATERIALS AND METHODS

The present investigation was carried out under National Agriculture Research Project,

Ganeshkhind, Pune for two years. Eight leading sapota cultivars grafted on Khirni (*Manilkara hexandra* L) planted in June 2002 with spacing of 10 X 10 m in deep black alluvial soil. The experiment was laid out in randomized block design with three replications. The observations were recorded on two plants of each cultivar in each replication considered as a plant unit. The various observations recorded were plant height, east west spread, north south spread, trunk girth at 30 cm above the ground level, number of fruits/tree/yr, fruit dimensions, total soluble sugars (TSS), number of seeds/fruit and shape of fruit. The data were analyzed as per method suggested by Panse and Sukhatme (1985).

RESULTS AND DISCUSSION

Growth characters

The cv. PKM Hy 7/1 recorded maximum plant height (4.4 m) and trunk girth (38.7 cm), whereas the minimum plant height (3.3 m) and trunk girth (28.0 cm) were observed in cv. cricket ball. The maximum east west (EW) and north south (NS) spread was observed in PKM 1 and Kalipatti cultivars. The plant height varied between 3.3 m

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to 4.0 m., trunk height at 30 cm between 28.0 cm to 38.7 cm. (Table 1). These wide variations for growth characters among the cultivars may be due to their genotypic differences and adaptability to the local conditions. Similar results have been reported by Shirol *et al* (2009) and Saraswathy *et al* (2010).

Fruit yield

Significantly maximum fruit length (6.4 cm) was observed in PKM 2 whereas the varietal differences for fruit diameter were found to be non significant. PKM Hy 7/1 recorded 5.8 cm fruit length and minimum fruit diameter (3.8 cm), which was mainly due to its characteristic long oval fruit

shape. However, PKM 2 recorded significantly maximum fruit weight (99.3 g.) which was 66.5 g. in PKM Hy 7/1. The major yield influencing character is number of fruits/tree. In this context PKM 1 recorded profuse bearing (523.5 fruits/tree/yr) that resulted in significantly maximum fruit yield (46.2 kg/tree/ yr). The maximum fruit yield in PKM1 might be due to more canopy spread and adaptability to the local climatic conditions. These findings were in agreement with Saraswathy *et al* (2010) for PKM 1. Kadam *et al* (2005) have reported that fruit yield from a tree is influenced by its age. It has also been revealed that in sapota,

Table 1. Growth and yield performance of different Sapota cultivars under Pune conditions.

Sr. No.	Cultivar	Plant height (m)	Trunk girth at 30 cm (cm)	Plant spread (EW) (m)	Plant spread (NS) (m)	Fruit Length (cm)	Fruit dia. (cm)	Av. fruit weight. (g)	No. of fruits tree ⁻¹	Yield (kg tree ⁻¹)	TSS (°Brix)	No. of Seeds fruit ⁻¹	Shape of fruit
1	Kallipatti	3.6	34.3	3.8	3.7	5.8	4.8	83.2	140.2	12.1	19.7	1.7	Oval
2	PKM 1	4.0	34.7	3.8	3.9	5.3	5.5	88.3	523.5	46.2	14.5	2.7	Oval
3	PKM 2	3.5	32.1	3.5	3.5	6.4	4.5	99.3	261.2	24.0	16.1	2.3	Oblong to oval
4	PKM HY 7/1	4.4	38.7	3.3	3.3	5.8	3.9	66.5	217.7	14.7	16.8	1.0	Long oval
5	Cricket Ball	3.3	28.0	2.3	1.9	5.2	4.8	74.3	28.7	2.2	18.5	1.7	Round
6	CO 1	3.3	32.5	3.1	2.8	4.7	4.8	82.1	41.0	3.3	18.2	1.7	Long oval
7	CO 2	3.8	32.8	3.6	3.4	4.9	4.9	85.1	40.3	3.4	15.4	2.7	Ovate round
8	Kirti Bharti	3.4	29.0	3.0	3.4	5.0	7.5	83.9	39.5	3.2	18.6	2.7	Egg shape
	S.E.±	0.16	1.80	0.16	0.19	0.15	0.81	3.64	7.05	0.89	0.22	0.44	
	C.D. at 5%	0.47	5.18	0.47	0.54	0.44	N.S.	10.49	20.34	2.58	0.69	N.S.	

fruit yield go on increasing up to 30 years of age of the tree. Chundawat and Bhuva (1982) indicated great variation in fruit size, production and quality of fruits in sapota.

Quality characters

The variety Kalipatti recorded highest TSS (19.67 ° Brix) which was superior over rest of cultivars however, minimum TSS (14.50 ° Brix) was recorded in cv. PKM 1. The varietal differences with respect to number of seeds/fruit were non-significant. Regarding the fruit shapes, it was observed that, cv. Kalipatti and PKM 1 have oval shape fruits, PKM 2 have oblong to oval fruits, PKM Hy7/1 and CO 1 have long oval shape fruits and CO 2 have ovate to round. The variety Kirti Bharti produced egg shaped fruits with ridges on the rind. These results were in agreement with Shirol *et al* (2009). The cv. PKM 1 recorded maximum fruit yield but the TSS of the fruit was less and which was not desirable for commercial sapota cultivation. In sapota the negative co-relation between yield and TSS has been reported by Saraswathy *et al* (2010).

CONCLUSION

The findings revealed that spota cultivar PkM 1 was vigorous and recorded highest fruit yield (46.2 kg/tree/year) whereas TSS was highest (18.75° Brix) in Cricket Ball. Further, a negative correlation existed between fruit yield and the quality.

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