

Performance of Important Pomegranate Cultivars in Arid Region

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Abstract Performance of nine important cultivars of Pomegranate (*Punica granatum*) was evaluated to know their suitability as a commercial fruit crop in arid region. The cultivars showed variability in growth, fruit quality and yield. Cultivars P-23, Jalore seedless, G-137, P-26 and GKVK-1 were more vigorous than other cultivars. Jalore seedless, Ganesh and G-137 cultivars showed their superiority in soft seedness and better quality fruits as compared to other cultivars under study. Cultivar Jodhpuri red was more susceptible to cracking and Jalore seedless showed the least cracking of fruits.

Key words Pomegranate, Varietal performance, Arid zone

Pomegranate (*Punica granatum*) is an important commercial crop of arid and semi-arid region owing to its hardy nature, versatile adaptability, economical high yields, better keeping quality and export potential. The important cultivars grown in India are Ganesh, Muscat, G-137, P-23, GKVK-1, Jalore seedless and Jodhpuri red. Therefore important pomegranate cultivars were introduced in arid region in 1986 and were studied for their growth and fruiting performance in the third year (1989) of planting to know their suitability for arid region. The results are reported in this paper.

Materials and Methods

Nine important cultivars (Table 1) were grown in RBD with four replications. The plants raised by cutting were planted in the field at 5x5 m spacing. The fruiting of Mrig Bahar flowering (from July to September) was retained. Observations on growth, fruiting and fruit quality parameters were recorded. The TSS was measured by hand refractometer and acidity of juice was estimated by titration method (AOAC 1971). The results are examined statistically.

Table 1 Growth and yield of pomegranate cultivars

Cultivars	Stem dia. (cm)	Height of plant (cm)	Spread of plant (cm)		No. of fruits plant ⁻¹	Yield kg plant ⁻¹
			North-South	East-West		
Jalore seedless	2.4	156.8	148.1	148.4	20.7	2.5
Basin Seedless	2.5	123.4	130.3	147.1	23.2	2.8
G-137	2.3	173.1	156.8	155.3	10.7	2.6
P-23	2.9	161.1	148.7	152.1	16.0	1.7
P-26	1.6	124.0	94.3	99.3	17.0	2.1
Jodhpuri red	2.4	129.3	123.1	122.5	18.7	2.3
GKVK-1	2.8	155.3	153.1	155.3	16.0	1.4
Ganesh	2.3	133.2	126.3	133.0	17.5	2.8
Dholka	2.4	146.8	138.4	135.6	20.7	2.2
F. test	*	*	*	*	NS	*
SE m ±	0.1	5.7	9.3	7.6	4.1	0.4
CD at 5%	0.4	16.6	27.2	22.3		1.5

Table 2 Quality of fruits of different cultivars

Cultivars	Diameter (cm)	Length (cm)	Weight (g)	Weight of 100 arils (g)	Weight of 100 seeds (g)	Juice %	Acidity	TSS	Fruit cracking %
Jalore seedless	7.6	7.1	227.8	27.3	5.0	78.9	0.3	17.2	44.6
Basin Seedless	6.9	6.9	151.2	21.6	6.1	68.5	0.8	16.3	77.8
G-137	7.8	7.3	133.3	32.8	6.0	82.5	0.3	16.8	45.7
P-23	7.8	7.2	206.8	35.5	6.1	77.1	0.2	17.0	50.7
P-26	7.7	6.8	224.9	32.8	6.4	76.6	0.2	17.2	70.8
Jodhpuri red	7.2	7.1	160.5	21.6	6.0	67.4	0.2	16.2	98.2
GKVK-1	7.1	6.6	170.1	29.2	5.8	75.4	0.3	16.3	52.7
Ganesh	7.3	6.8	198.1	28.6	5.3	77.3	0.3	16.1	54.0
Dholka	7.8	7.3	204.1	29.1	6.2	73.9	0.3	16.8	45.4
F test	NS	NS	*	*	NS	*	NS	*	—
SE m ±	0.3	0.3	9.7	1.7	0.3	1.3	—	0.9	—
CD at 5%	—	—	28.3	4.9	—	3.7	—	0.6	—

Results and Discussion

Growth characteristics: Data presented in table 1 revealed that diameter of stem, height and spread of plant showed significant variation. The stem diameter was minimum (1.65 cm) in P-26 maximum in P-23 (2.9 cm) and similarly in other varieties, height of plant ranged from 123.4 to 173.1 cm. The spread of cultivars (Table 1) showed that G-137, GKVK-1, P-23, Jalore seedless are more spreading types compared to other cultivars under study. Pareek (1978) reported vigorous, semi vigorous and dwarf types cultivars differ in height, spread and trunk diameter.

Fruiting quality: Weight of fruit, aril weight, juice percent, seed weight, TSS and acidity varied significantly amongst the cultivars (Table 2). The size of fruit was statistically comparable and at par in all cultivar in this study (Table 2). The smallest size of fruit were observed in Basin seedless and largest in Cv. G-137. The weight of fruit significantly varied from 135.3 to 170g in different cultivars. The weight was highest (227.8 g) in cultivar Jalore seedless followed by cvs. P-26, P-23, Dholka and Ganesh. This is possibly due to genetic behaviour to bear fruit with bigger or smaller sizes and varying with weight. Weight of 100 arils was significantly higher in cvs P-23, G-137, GKVK-1 and Dholka as compared to Jodhpuri red and Basin seedless. However the seed weight was not found to be sig-

nificantly different (Table 2). The reason may be that the cvs. under study are soft seeded. The soft seeded cultivars like Jalore seedless, GKVK-1 and Ganesh were having light weight of 100 seeds indicating more soft seeded cultivars compared to others. Juice percentage in arils ranged from 82.57 to 67.42. The juice percentage was significantly higher in cvs Jalore seedless, G-137, Ganesh, P-26, P-23 and Dholka as compared to Basin seedless and Jodhpuri red. The cultivars being of different genetic traits makes them differ in their weight of aril and juice content as well as in soft seededness (Cheema *et al.* 1954). The acidity of different cultivars was not significantly varied. However cv, Basin seedless was having highest acidity (0.84%) and in other cultivars it ranged from 0.27 to 0.32%. The TSS was significantly higher in cv. Jalore seedless and P-26 as compared to other cultivars. The similar trend of TSS was observed in different cultivars of pomegranate (Anonymous 1989). Malhotra *et al.* (1983), also reported that acidity and TSS varied in different pomegranate cultivars. The fruit cracking percent was minimum in cv. Jalore seedless (44.6) and maximum in cv. Jodhpuri red (98.2). The cultivar Jodhpuri red, Basin seedless and P-26 had more than 70% fruits cracked. However, Cvs Jalore seedless, G-137, Dholka had less than 50% cracking of fruits. The cracking of fruit is undesirable character. Singh (1981) also reported more than 50% cracking in pomegranate. The

variation in cracking may be due to varying soil moisture and tolerance of cultivars to cracking.

Numbers of fruit and yield per plant : Data presented in table 1 indicate cvs bears 10-23 fruits/plant. Maximum number of fruit were recorded in Basin seedless (23.2) and minimum in G-137 (10.7). The number of fruits were more in Basin seedless, Jalore seedless, P-26, Jodhpuri red and Ganesh cultivars as compared to others. However, the number of fruits were not significantly varied in cultivars.

Yield per plant was significantly higher in Basin seedless. Jalore seedless and Ganesh as compared to other cultivars. Though higher yield was obtained in Basin seedless but fruits were sour and of inferior quality. The Jalore seedless, G-137 and Ganesh are of high yielding as well as with better quality fruits.

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