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Short Communications

Assessment of Pomegranate Germplasm for Vegetative and Fruit Characters

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Area under pomegranate (*Punica granatum* L.) in Maharashtra is increasing every year and is estimated to be 2500 ha (Choudhari & Wavhal 1986). The commercial cultivars of the state, Ganesh and Muscat, need improvement in one or the other character such as fruit colour (Choudhari & Wavhal 1986). To find successor for the same or source for their improvement, cultivars collected from different parts of India and abroad were planted at University Farm for their assessment.

The experimental location falls in semi-arid zone with annual rainfall varying from 360 to 619 mm, the average being 475 mm. The annual mean maximum temperature is 37.09 and the mean minimum tempreture is 17°C. The mean relative humidity at 8 and 17 h is about 59 and 35%, respectively.

Two and half year old Pomegranate cultivars were evaluated during *ambe bahar*. Tree volume was worked out by multiplying height x north-south spread x east-west spread. The tree nature was observed throughout the year for the presence and abscission of foliage and described as evergreen, deciduous and semi- deciduous. The cultivars were classified as spreading, semi- spreading and erect habit based on spread to height ratio. The cultivars having 0.8 ratio were classed as erect, those having between 0.81 to 1.0 as semi-spreading, while the cultivars having the ratio1.0 were classed as spreading. As regards the fruit characters, the smoothness of rind surface was judged by finger feel. The fruit length, diameter and weight were recorded by adopting standard procedures. The fruit rind colour was described with the help of standard horticultural colour charts.

Growth character : Plant height (Table 1) revealed diversity among the cultivars ranging from 135 (p-16) to 297 cm (Yercud Local). Large variation also existed for East-West and North-South spread (Table 1). The east-west spread ranges between 1.22 to 2.79 m and the north-south 1.22 to 2.81 m. The lowest spread was in Gulsha and the highest in Ganesh. Spread to height ratio varied from 0.65 to 1.20. Eight cultivars had erect, 10 semi-spreading and 11 spreading habit (Table 1). Such differences in growth habit of pomegranate cultivars were also reported by Patil and Sanghavi (1980). Plant volume gives the idea about its size which varied from 2.61 to 19.93 m^3 (Table 1).

The stems per plant varied widely (Table 1) from 2 to 11. All exotic cultivars, except Gulsha Red, produced more stems and it appears to be inherent character of temperate zone cultivars. More stems per plant becomes significant when the locality is proven for attack of stem borer where multi-stemmed ones (4 to 5 stems) are preferred.

Pomegranate being originally a sub-tropical plant, shows variation in tree nature under tropical and temperate conditions. In present study, 21 cultivars were evergreen most of which were of Indian origin, except Bedana Sedana. One cultivar (Gulsha) was of semi-deciduous nature . Seven cultivars were of deciduous nature, which were exotic ones. Nath and Randhawa (1959) under Delhi conditions also observed such behavioural differences in pomegranate cultivars. The cultivars with deciduous nature (Sural Anar, Gulsha Rose Pink, Shirin Anar, Surkh Anar, Achikdana, Kazaki Anar and Gulsha Red) and semi-deciduous nature (Gulsha) in winter may not be suitable for hasta bahar (October flowering) which is some times practiced by the Maharashtra growers and the progeny resulting from such parents when used in hybridiza-

Table 1 *Growth features and fruit characters of some pomegranate cultivars*

Cultivar	No. of Stems	Height (m)	North –South spread (m)	East –West spread (m)	Volume (m^3)	Av.wt. of fruit (g)	Nature of plant growth
Alandi	4.3	2.15	2.23	11.3	11.3	166	Spreading
Ganesh	7.0	2.51	2.81	2.79	19.9	186	Spreading
G–137	5.5	2.27	2.55	2.65	15.9	214	Spreading
Muscat	3.5	1.91	1.99	2.06	8.1	198	Spreading
P–13	2.1	1.48	1.35	1.44	6.0	154	Semi–spreading
P–16	3.6	1.35	1.53	1.67	4.6	183	Spreading
P–23	5.6	2.02	2.17	2.20	10.4	195	Spreading
P–26	2.0	1.99	2.43	2.34	11.5	198	Spreading
Yercaud (Local)	6.6	2.97	2.60	2.52	18.3	149	Semi–spreading
KRS	6.0	2.16	2.43	2.28	12.0	197	Spreading
Kabul	9.3	2.62	2.57	2.59	17.5	143	Semi–spreading
Coimbatore White	8.6	2.41	2.38	2.51	14.6	119	Spreading
Bedana Sedana	8.6	2.31	1.90	1.79	7.9	62	Erect
Kabul IIHR	3.0	1.88	1.75	1.81	6.2	103	Semi–spreading
Bedana Thin Skin	4.8	2.00	1.83	2.06	7.5	112	Semi–spreading
Kandhari	4.5	1.97	2.07	2.03	8.3	153	Spreading
Jalore Seedless	4.5	2.03	1.73	1.87	6.8	118	Semi–spreading
Jyoti GKVK	3.8	1.81	1.71	1.73	6.6	135	semi–spreading
Yercaud HRS	5.0	2.28	2.43	2.19	12.3	106	Spreading
Yercaud	8.0	2.28	2.20	2.24	11.4	111	Semi–spreading
Gulsha Rose Pink	9.6	2.26	1.68	1.78	6.9	68	Erect
Shirin Anar	8.5	2.12	1.66	1.79	6.4	83	Semi–spreading
Jodhapur Red	8.8	2.37	1.75	1.84	8.0	65	Erect
Sural Anar	7.5	1.90	1.40	1.40	4.0	73	Erect
Surkh Anar	7.8	2.33	1.62	2.02	7.6	64	Erect
Gulsha	11.0	2.08	1.55	1.80	5.8	69	Erect
Achikdana	8.8	2.08	1.57	1.58	5.2	74	Erect
Kazaki Anar	7.1	2.07	1.66	1.78	6.3	66	Semi-spreading
Gulsha Red	4.3	1.70	1.22	1.22	2.6	67	Erect
SE	3.6	12.5	13.0	12.5	1.1	7.5	–
C.D. at 5%	N.S.	35.4	36.2	32.6	3.3	21.3	–

tion programme, should be looked for evergreen types.

Fruit characters : Large variation in fruit surface colour, in ground as well as imposed pigmentation, was noticed. The ground colour varied in various shades of yellow, green to red. The super-imposed pigmentation of various intensities from dots to blush of various shades was observed which was mostly scarlet red, red or orange (Randhawa 1959, Malhotra *et al.* 1983). The fruit colours of Bedana Thin Skin, Kabul, Ganesh, G-137, P-16, P-26 and KRS were quite attractive. Bedana Thin Skin was the most attractive and had crimson red colour. It also had smooth and shinning fruit surface with round fruits, and is quite important cultivar in hybridization programme for imparting external fruit qualities.

Among the 29 cultivars, 16 had smooth surface with shinning lustre while remaining 13 had semi-smooth fruit surface. No cultivar had rough fruit surface. Smooth fruit surface with shinning lustre G-137, Muscat, KRS, and Bedana Thin Skin had exceptionality. The commercial cultivar Ganesh had semi-smooth surface and would need improvement for shinning lustre.

In present study large variation was observed in fruit length (5.1 to 8.87 cm), diameter (5.19 to 9.12 cm) and weight. Fruit weight (Table 1) varied between 62.83 (Bedana Sedana) to 214.2 g (G-137). Such variability in fruit weight was also reported by Nath and Randhawa (1959), Patil and Sanghavi (1980) and Malhotra *et al.* (1983).

The cultivars can be tentatively categorized, into smaller (< 100), medium (100.1 to 175 g) and big sized fruit (> 175.1 g). Accordingly, 10 cultivars had small sized fruits which were of temperate zone cultivars, except Jodhpur Red. Twelve cultivars had medium sized and 7 had big sized fruits. The big sized fruits in G-137, Ganesh, Muscat, P-23, P-26 and KRS are worth considering. There appears to be relation between fruit size and the smoothness of surface. G-137 and Muscat had bigger fruits with smooth and shinning fruit surface.

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