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Evaluation of Some Quantitative and Qualitative Characteristics of 5 Mango Superior Genotypes from South-eastern Areas of Iran

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ABSTRACT: Mango (*Mangifera indica* L.) is one of the most important tropical fruits and they have been cultivated since many years in southern region of Baluchistan. However in most of the mango gardens, trees are cultivated by seeds, then seedlings are characterized by noticeable genetic diversities and consequently the fruits have often low quality and don't present good marketing interest. Also the diversity in tree features causes serious difficulties in managing gardens and endures costly expenses for gardeners. In order to suggest to farmer superior cultivars for marketing, from 2007 to 2012 a research was performed assessing the mango diversity by determination of phonotypical characteristic of mango genotypes cultivated in Sistan and Baluchistan province. The experimental strategy consisted a randomized complete clock design of five superior selected genotypes**.**An experimental unit was constituted by 3 grafted trees planted at 8x8 m distance each other and three units was used for each of the five selected genotype with a total 60 studied plants. Data showed that the tree heights among the different genotypes were not statistically significant. Conversely 1 % of significant difference in the shoot diameter was observed among the different selected genotypes. In particular genotype number 8 had the highest diameter (360 cm) in comparison with genotypes number 59 and 27 which presented a diameter of 263cm and 238cmrespectively and this genotype might be selected as superior genotype according to shoot diameter characteristic

Keywords**:** Mango, Genotype, Superior cultivars, Quantity and Quality Characters

INTRODUCTION

Mango (*Mangifera indica* L.), often named as 'King of fruits' is one of the choicest fruit crops of tropical and sub-tropical regions of the world, especially in Asia (Singh, 1996).Most of the commercial mango cultivars resulted from selection of mango seedlings, after identification of which the high-grade features are vegetative reproduced, and by creating a collection, in which the qualitative and quantitative traits of the fruits are evaluated every year. Additionally, the fruit characteristics suitable for different purposes in different regions are determined and recommended (Bose and Mitra, 1996; Singh, 1996; Singh, 1995).

Due to suitable climatic condition, this fruit tree has been cultivated in Sistan and Baluchestan and Hormozgan (Iran) since long time ago and it is largely appreciated among people in the region. However, mango plants have been cultivated by seeds, and consequently due to the large genetic diversity, noticeable differences are present among the trees regarding their shape, size, and fruit quality. Thus a remarkable amount of mango fruits are

imported from Pakistan and other Asian country, every year. Thus the identification of marketable traits and the selection of the superior genotypes are compulsory for the improvement of the Iranian mango industry.
In a previous research 32 mango trees were studied in two regions, Chabahar and Konarak cities. Based on a few significant traits of the fruit and stone, the genotypes were classified and graded and the 3 better genotypes were introduced (Latifikhah, 2002). In another work performed from 2001 to 2003 on 69 mango genotypes grown in the south of Baluchestan, 9 genotypes were selected as the better genotypes (Saboki, 2004).
The aim of this research was to study the morphological characteristic such as, trunk and shoot diameter, as well tree height of five selected Iranian mango genotypes frequently cultivated in southern areas of the country.

Materials & Method

The study was carried out from March 9th, 2007 until March 15th , 2012 at the Agriculture and Natural Resources Research and Training Station BahuKalat (South-eastern of Iran)on five mango genotypes arranged in a randomized complete block Design consisting of 3 replicate units of 3 plants for each genotype. . The seeds from five mango genotypes were obtained from gardens of the leading farmers of Baluchistan (South-eastern of Iran). Genotypes were named 8, 27, 53, 57 and 59 respectively.
In the first and second, year of the research, the seeds were planted to produce the seedlings grown in pots of 0.5*0.5*0.5 and also grafting of the scions of the desired genotypes. After successful grafting, the seedlings were planted on the orchard with distance 8×8 m. Then in the third, fourth and fifth year, the vegetative growth traits of the seedlings were studied and statistically analyzed SAS software

Results & Discussion:

The genotype 8 and 27 showed the highest trunk diameter (10.0 mm) and genotype 59 the lower (7.5 mm). On the other hand genotype 8 and 57 had the highest tree height, 290 cm and 263 cm, and shoot diameter 360 mm and 293 .33 mm, respectively. The genotype 59 showed the lower tree height (213.33 cm) and genotype 27 the lower shoot diameter.

Table 1. Comparison between the mean of different growth traits in mango genotypes

GenotypeNum.	Trunk Diameter (mm)	Tree height (cm)	Shoot Diameter (mm)
8	10.0	290.00	360.00 a
27	10.0	241.33	238.33 b
53	9.5	250.00	288.33 ab
57	8.6	263.33	293.33 ab
59	7.5	213.33	263.33 b

- Similar letters after the means in every column indicates last of significant difference at level of probability of 1% based on Duncan's multiple range tests.

However, the results of variance analysis indicated that there wasn't significant difference in the diameters of the trunk above the graft place (table 2) and in the tree height among the different mango genotypes (table 3).

Table 2. variance analysis of trunk diameter above the grafting place

Source of Differences	Degrees of Freedom	Total of squares	Mean of squares	F
Frequency	2	11.363	5.686	4.510 *
Treatment	4	14.096	3.526	2.798 ns
Error of test	8	10.063	1.251	
Total	14	35.522		

Table 3. variance analysis of tree height

Source of Differences	Freedom degree	Total of squares	Mean of squares	F
Frequency	2	940.800	470.400	0.452 ns
Treatment	4	9553.600	2388.400	2.296 ns
Error of test	8	8323.200	1040.400	
Total	14	18817.600		

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Conversely there was a significant difference at level of 1% of the shoot diameters among the genotype 8 with maximum diameter (360 cm) and the genotypes 59 and 27 (table 4).

Table 4. variance analysis of the shoot diameter

Source of Differences	Freedom degree	Total of squares	Mean of squares	F
Frequency	2	6803.333	3401.667	7.637 *
Treatment	4	24856.667	6214.167	13.951 **
Error of test	8	3563.333	445.417	
Total	14	35223.333		

Conclusion

Our work is a first contribution to understand the morphological features of different mango genotypes cultivated in Baluchistan. In conclusion our results demonstrated that genotype 8 might be selected as superior genotype if an high shoot diameter is considered a suitable characteristic by the farmers. Further investigation will be performed studying the fruit nutritional qualities at selecting the best genotypes for the exploitation of Iranian mango cultivation.

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