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Short Communication

Evaluate marketability of ten selected genotypes of tomato under subtropical climate conditions

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ABSTRACT:

Tomato contains vitamins A, C and lycopene etc., Red colour of tomato is because of lycopene. Lycopene is recognized as a strong antioxidant, and is also an anti-cancer substance. It prevents breast and prostate cancers. It also reduces the aging process and removes free radicals damaging cells. Thus high quality fruits make the tendency of people's consumption for this strategic vegetable's increase. Genotypes prepared with its native from Russia, Netherlands and Iran were evaluated and Chef cultivar was taken as a control. In this examination, 10 new genotypes were analyzed as far as a few indicators of quality in Ahvaz. One of the tomato quality assessment techniques is sensory lab assessment (plant test). This exploration was completed at 2013 in Chamran University, Ahvaz, Iran. Genotypes mean comparison showed that the most quality was related to M_{48}, 21 genotypes and the lowest of this was related to 16, 19 cultivars. Also result indicated that M_{48}, 25 had the most sourness and the lowest of this was belonged to cultivar 18. Chef cultivar as a control had the fleshiest tissue and also 33 and 36 genotypes had the most appropriate colour according of the consumer evaluation.

Keywords:

Genotype, Marketability, Sensory laboratory evaluation.

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INTRODUCTION

Fruits and vegetables assume a huge part in human nutrition, especially as sources of vitamins, minerals, dietary fiber and antioxidants. Utilization of a variety of fruits and vegetables regularly are exceptionally prescribed due to related medical advantages, which incorporate lessened risk of a few types of tumor, coronary illness, stroke and other chronic diseases. Processing technologies have been developed for a few fruits, while a number of processing technologies are still under development. Potatoes and tomatoes are the only vegetables that are processed. Given the high perishability of fruits and vegetables and the absence of proper processing and storage facilities, there is wide price variation along the producer-consumer chain (Bardrud-doza, 2006)

Varieties, testing and certification facilities:

Lack of suitable varieties which allow the locally produced fruits and vegetables to compete in international markets and for the manufacture of value added products are another constraint to improving the marketing of fruits and vegetables. Tomato varieties grown in Iran are not suitable for manufacturing value added products such as tomato sauces. Leading manufacturers in Iran therefore import considerable quantities of tomatoes on an annual basis for the production of tomato-based products for the local market.

Safety and quality standards for imported in and processed foods are authorized by many importing nations. Local exporters must, in this manner, lead examination, testing and accreditation of their export products. A significant number of these administrations are not accessible in Iran. Exporters are subsequently subject to expensive remote hotspots for these administrations. Existing research centers and testing offices are deficient to keep up a high export and domestic standard. The cost of investigation for pesticides residues is restrictive, and exorbitant to the regular merchant or even the exporter.

In Iran, tomatoes are grown over about 139 thousand hectares with an average yield of about 34.4 tons/ha (Zahedi *et al.,* 2012). Various investigations on the processing and marketing of agricultural products including fruits and vegetables have been led in Iran. Research directed on tomato and potato marketing uncovered that the share of the producer in the final cost changes in the vicinity of 36 and 40%. Inefficiency for potato has been evaluated at 0.3 while that for tomato is 0.7 (Bardrud-doza, 2006). Tomatoes can be stored for a time of up to 20 days at 16°C and 89% relative humidity (Luengwilai and Beckles, 2013) consequently, quick utilization, handling and promoting are vital. Quality characters, for example, colour, sweetness and pickle's

Table 1. Yield parameters of ten new tomato genotypes and a control cultivar in the field of Ahvaz, Iran

S. No.	Genotypes and Cultivar	Fruit weight at first fruit (g)	Fruit weight at second fruit (g)	Fruits weight at first harvest (kg)	Fruits weight at second harvest (Kg)	Fruits weight at three harvest (Kg)	Total yield/ plant (Kg)
1	25	60.8^{f}	52.6^{e}	0.5^{d}	1.18^{bc}	0.96^{ab}	2.67^{cde}
2	18	183.5^{ab}	148.5^{ab}	0.8^{a}	1.06^{bc}	0.96^{ab}	2.90^{bc}
3	36	112^{de}	83.6^{d}	0.7^{abc}	0.97^{bc}	0.7^{d}	2.39^{de}
4	34	142.5^{bcde}	97.9^{cd}	0.61^{cd}	1.14^{bc}	0.76^{cd}	2.52^{cde}
5	33	121.6^{de}	93.9^{cd}	0.68^{bcd}	1.04^{bc}	0.93^{bc}	2.66^{cde}
6	28	227.2^{a}	153.5^{a}	0.865^{a}	1.19^{bc}	1.12^{a}	3.18^{ab}
7	19	150.8^{bcd}	110.2^{cd}	0.72^{abc}	1.07^{bc}	0.83^{bcd}	2.63^{cde}
8	16	171.3^{bc}	121.9^{bc}	0.73^{abc}	1.55^{a}	1.13^{a}	3.42^{a}
9	21	98^{ef}	80.3^{d}	0.8^{ab}	1.25^{ab}	0.79^{bcd}	2.85^{cd}
10	M_{48}	115.3^{de}	99.4^{cd}	0.83^{ab}	0.57^{d}	0.84^{bcd}	2.25^{e}
11	Chef	135^{cde}	105.3^{cd}	0.62^{cd}	0.82^{cd}	0.83^{bcd}	2.27^{e}

Figure 1. Tomato genotypes

quality are one of the fundamental sensory parameters for food quality and enormously impacts customers' preferences and quality perception (Calvo *et al*., 2001). In tomato, characters assume a huge part in the perception of tomato quality and overall acceptability.

MATERIALS AND METHODS

Evaluation of plant growth and yield parameters

Tomatoes were harvested three times (tomatoes were picked when ripe or almost ripe) and standard procedures were adopted for recording the data on yield and yield components. Vegetative growth parameters measured included plant height, time of fruit ripening and growth habit. Reproductive growth parameters measured were fruit weight at first, second and third harvest, weight of first and second fruit in first harvest and total weight were also recorded (Figure 1) (Growing Tomatoes, 2012).

Sensory evaluation by consumer panel

In this trial, we utilized 35 consumer panelists for sensory assessment in light of subjective characters. Consumers were given a list of definitions of each sensory trait and assessments were influenced utilizing a

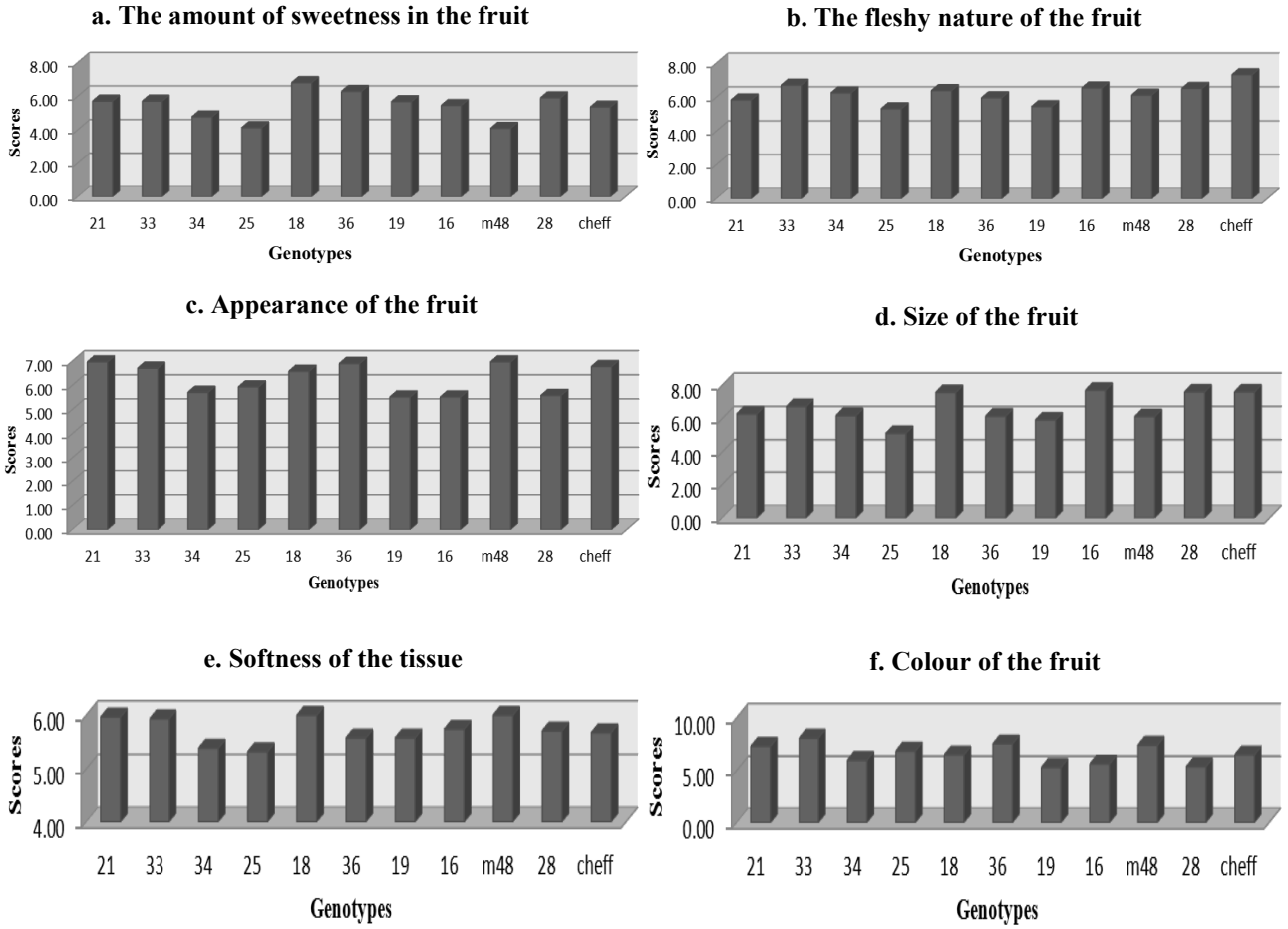

Figure 2. Sensory evaluation by consumer panel

10 point scale moored with low (1) and high (10) power of each characteristic. Consumers were first solicited to start from intensity appearance properties of fruity, colour, and size and were then asked some information about internal and taste features.

Data analysis

The consumer panel data were analyzed utilizing a mixed impacts ANOVA model holding the panelists as a random impact. ANOVA examinations were performed utilizing SAS (SAS, 2002). Where appropriate, separation of the means was proficient utilizing Turkey's HSD. Principal Components Analysis (PCA) with no rotation was performed utilizing XLSTAT. The significance value for all investigations was set up as $P \leq 0.05$.

RESULTS AND DISCUSSION

The results, generally, indicated that the differences among the genotypes and chef cultivar (control) in all the characters of tomato are statistically significant. There were significant differences in yield and yield components among genotypes and Chef cultivar. Table 1 gives the yield variation among the genotypes. Total fruit yield was significantly lower in genotype No. M_{48} and Chef cultivar and it could be due to the lowest average fruit weight. The highest yield (3.42 kg/plant) was given by genotype No.16. Except genotype M_{48} and Chef cultivar, all the other genotypes gave yields higher than 2.5 kg/plant.

Qualitative assessment results showed that genotype M_{48} was better than other varieties in the pickled fruit characters, possessing soft tissue and surface quality of the fruit. According to consumer panel, Genotype No.18 in the attribute sweet fruit, genotype No. 33 in fruit colour attribute and genotype No.16 in terms of size were better than other varieties. The ANOVA results of the untrained panel evaluation of the tomato under the subtropical climate conditions are shown in Figure 2.

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