



TABLE FIG (*Ficus carica* L.) SELECTION IN MIDYAT DISTRICT OF MARDIN PROVINCE

Mikdat SIMSEK^{1,3}, Hilmi KOCATAŞ², Ferit COBANOGLU²

¹Department of Horticulture, Faculty of Agriculture, University of Bingöl, 12000, Bingöl/Turkey

²Department of Horticulture, Erbeyli Fig Research Enstitute, İncirliova, Aydın/Turkey

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ABSTRACT

Turkey has great variations in distributions of both wild fig forms and as fig cultivars. Although Midyat district has a special importance in respect to the fig genetic resources, no studies have been made about selection of them in the location by researchers up to now. Therefore, this study was very important with respect to the table fig genotypes. This research was carried out during 2006–2007 in Midyat location of Mardin province. Four different fig genotypes which had higher scores were selected in this study. According to the results of analysis in the weighted ranked method, 47-MID-3 and 47-MID-4 genotypes which had the highest scores in all the fig types were determined to be best table fig types. Average fruit weight and TSS content ranged from 54.82 g to 33.55 g and from 24.05 % to 20.47%, respectively. The objectives of this study were select, preserve and disseminate the productions of the fig types of good quality for fresh consumption.

Key Words: Table fig, Selection, Midyat.

MARDİN İLİNİN MIDYAT İLÇESİNDE SOFRALIK İNCİR (*Ficus carica* L.) SELEKSİYONU

ÖZET

Türkiye, hem yabancı incir formları ve hem de kültür incir formlarının büyük varyasyonlarına ve dağılımlarına sahiptir. Midyat ilçesi, incir genetik kaynakları açısından özel bir öneme sahip olmasına rağmen şimdiye kadar araştırmacılar tarafından bu lokasyonda hiç bir çalışma yapılmamıştır. Bu yüzden, bu araştırma sofralık incir genotipleri açısından çok önemlidir. Bu araştırma 2006-2007 yılları arasında Mardin ilinin Midyat ilçesinde yürütülmüştür. Bu çalışmada, daha yüksek puan alan dört farklı incir genotipi seçilmiştir. Tartılı derecelendirme yöntemindeki analiz sonuçlarına göre, tüm incir tipleri içinde en yüksek puanları alan 47-MID-3 ve 47-MID-4 genotipleri en iyi sofralık incir tipleri olarak belirlendi. Ortalama meyve ağırlığı ve Toplam kuru madde içeriği 54.82 g ile 33.55 g ve 24.05 % ile 20.47% arasında sıralanmıştır. Bu çalışmanın amacı, taze tüketim için iyi kaliteye sahip incir tiplerini seçmek, korumak ve üretimlerini yaygınlaştırmaktır.

Anahtar Kelimeler: Sofralık incir, Seleksiyon, Midyat.

INTRODUCTION

Turkey is an important gene source for horticultural crops with varieties which have multiplied numerous during the centuries. Some temperate fruit species as well as figs are also originated in Anatolia (Ozbek, 1978; Kuden, 1995). West, North and South regions of Turkey contain rich fruit germplasm and the fig is one of the most important one among them (Aksoy et al., 1992; Bostan et al., 1997; Kuden and Tanriver, 1997). The fig is widely grown and extended to the South East Anatolia, the Aegean and the Mediterranean Regions. On the way of the extension of the fig to the neighbour countries such as Caspian Sea, Caucasia, Iraq and Syria a rich genotype population is occurred in Anatolia. Therefore, South East Anatolia Region has a special place of containing rich fig germplasm (Ilgin, 1995).

The total fig production of Turkey is 290.151 tons (Anonim, 2006). Recently there has been a big demand for fresh figs in the European markets. So, the fresh figs from Turkey should have a big market in the very near future (Polat and Ozkaya, 2005).

Bursa Siyahi is one of the best quality fresh fig cultivar grown in the country and there is an increase

in its export (Caliskan, 2003). In addition to Bursa Siyahi, there are many other good quality fresh cultivars (Polat and Ozkaya, 2005). The importance of fresh fig production and exportation tended the researchs to find good quality fig genotypes. So, the fig selection studies have begun since 1990's with the experiments of Kaska et al. (1990); Aksoy et al. (1992); Polat and Ozkaya (2005); Alper (2006); Caliskan and Polat (2008); Simsek and Kuden (2008); Simsek (2009a) and Simsek (2009b). The objectives of this study were select, preserve and disseminate the productions of table fig types of good quality for fresh consumption.

MATERIALS AND METHODS

This study was carried out in the Midyat district of Mardin province in Turkey during years 2006-2007. Ten female fig trees were determined primarily from about forty fig trees as subjective. Then, in ten types, four fig types were selected according to the weighted ranked method (Table 1) of Aksoy (1991). The characteristics of the fruit used to evaluate the genotypes were carefully selected for the requirements of the table fig industry. These characteristics were fruit weight, fruit length, fruit width, fruit shape, neck length, ostiolum width, peeling of the fruit skin, skin

² Sorumlu Yazar: miksimsek2001@yahoo.com

cracking, and TSS content and titrable acidity. In this research, 30 fruits were randomly selected from the each fig tree in each year. Harvested fruits were immediately transferred to ice boxes and stored at 0 °C. Then, they were analysed with 3 replication and 10 fruits in each replication for the each year. The data were subjected to analysis of variance using JMP 5.0.1. The means were separated by Tukey's test at 0.05 level. Fruit weight was measured with a scale sensitive to 0.01 g. The fruit length and width, neck

length, ostiole width were measured by a digital compass. Total soluble solids were determined with a hand-held refractometer. Titrable acidity was determined by titrating with 0.1 N NaOH to an endpoint of pH 8.10. The fruit shape index was calculated by dividing the width by length. In addition, ease of peeling and fruit skin cracks also were evaluated. The coordinates and altitudes of the types were determined with GPS tool.

Table 1. Evaluation of the selected fig genotypes according to the weighted ranked method.

Characteristics	Weighting Factor (coefficient)	Classification and points			
Fruit weight	40	<20.0 g	0	20.1 -30,0 g	2
		30.1 -40,0 g	4	40.1 -50,0 g	6
		50.1 -60,0 g	8	> 60.0 g	10
Fruit shape index	9	I<0,9	8	I=0,9-1.1	10
		I>1,1	6		
Neck length	6	<5.0 mm	0	5.1-10,0 mm	10
		10.1-15,0 mm	6	>15.0 mm	2
Fruit skin cracks	10	none-little	10	medium	6
		high	0		
Peeling of skin	10	easy	10	medium	6
		difficult	0		
Ostiolum width	5	0.0-2,0 mm	10	2.1-4,0 mm	8
		4.1-6,0 mm	6	>6.1 mm	2
Total soluble solid content	10	< 13.0%	2	13.1-16,0%	4
		16.1-20,0%	10	20.1-25,1%	8
		> 25.1%	6		
Titrable acidity	10	< 0.050%	0	0.051-0.125%	6
		0.126-0.225%	8	0.226-0.300%	10
		> 0.301%	4		
Total	100				

RESULTS AND DISCUSSION

Pomological properties

During the research, 4 genotypes were selected with special emphasis on the fruit quality characteristics of figs. It was presented the some important characteristics of the fig genotypes in Table 2. Considering two years mean results, the fruit weight, the fruit width, the fruit shape index, the fruit length, the ostiole width, the TSS and the titrable acidity of the these genotypes were determined statistically different from each other at 5 % level except the neck length. The fruit weight is one of the most significant components for determining size of the fig fruits and for fresh consumption in figs. According to the averages in two years, the fruit weight differed from 33.55 g (47-MİD-6) to 54.82 g (47-MİD-3). These results were found as better than the results of Koyuncu (1997) but weren't found better than those of Simsek (2009a). Although Koyuncu (1997) determined the fruit weight ranged between 9.00 g and 39.37 g. Simsek (2009a) determined the fruit weight ranged between 71.77 g and 43.29 g. The fruit width changed from 43.12 mm (47-

MİD-6) to 73.22 mm (47-MİD-3). Our results were higher than the results of Kuden et al. (2008). They stated the fruit width ranged from 49.97 mm to 32.97 mm. Average fruit length ranged from 30.03 mm (47-MİD-6) to 64.79 mm (47-MİD-3). Controversy, These results were lower than the results of Sen et al. (1993). They stated the fruit length differed from 39.00 mm to 72.00 mm. Average fruit shape index ranged from 1.13 (47-MİD-3) to 1.51 (47-MİD-4). These results partly were similar group to the results of all the Abbas types of Ilgin (1995). She stated the fruit shape index ranged from 1.20 to 1.40 of Abbas types. The ostiole width changed from 1.64 mm (47-MİD-6) to 3.49 mm (47-MİD-1). Aksoy et al. (1992) stated that the ostiole width changed between 9.10 mm and 0.60 mm. High ostiolum width is an undesirable character in general. Thus, it wasn't found to be the high ostiolum width of the fig genotypes in this study. For titrable acidity, the lowest and the highest values changed from 0.14 % (47-MİD-4) to 0.24 % (47-MİD-1). These results were lower than the results of Kuden et al. (2008). TSS content of the fig genotypes ranged from 20.47 % (47-MİD-6) to 24.05 % (47-MİD-1).

Koyuncu (1997) ranged from 11.90 % to 24.30 % of TSS content under Sanliurfa conditions. For high quality table figs, TSS contents can better to be between 13.0 % and 25.1 % (Aksoy, 1991).

Table 2. The fruit characteristics of the selected fig genotypes (average two years)

Accession number	Fruit weight (g)	Fruit length (mm)	Fruit width (mm)	Fruit Shape Index	Ostium width (mm)	TSS (%)	Titration acidity (%)
47-MİD-1	38.99 b	46.91 b	67.74 b	1.44 a	3.49 a	24.05 a	0.24 a
47-MİD-3	54.82 a	64.79 a	73.22 a	1.13 b	2.55 b	20.60 b	0.20 ab
47-MİD-4	53.91 a	47.66 b	71.79 a	1.51 a	3.46 a	21.73 ab	0.14 c
47-MİD-6	33.55 c	30.03 c	43.12 c	1.44 a	1.64 c	20.47 b	0.19 b

Mean separation within columns by Tukey's test at 0.05 level

In this study, the fruit skin cracks weren't present in three fig genotypes (47-MİD-3, 47-MİD-4 and 47-MİD-6) but it was medium in one fig genotype (47-MİD-1). In addition, the peelings of skin of the fig genotypes were easy in two genotypes (47-MİD-3 and 47-MİD-6) and medium in the others (47-MİD-1 and 47-MİD-4). In addition, no neck was observed in all the this genotypes Fruits with neck which has too long isn't desired by the table fig industry.

The scores of the types

When all the characteristics were evaluated together using the analysis, it was determined that all the fig types had the fruit shape index 54 score, the neck length 0 (zero) score, the ostium width 40 score and the TSS 80 score (average of years 2006-2007). In addition, it was showed that the scores of the total points and the fruit weight of all the fig types were Figure 1, the scores of the fruit skin cracks, the peeling of skin and the titration acidity of them were Figure 2.

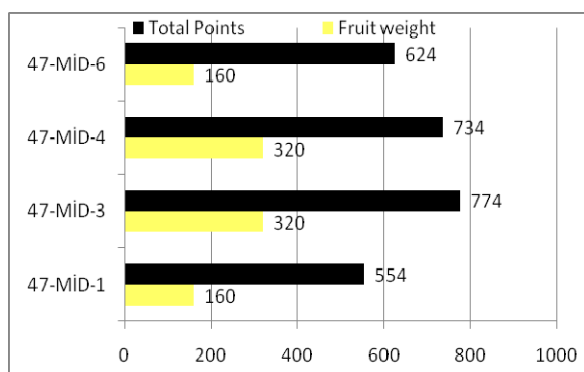


Fig 1. The scores of the total points and the fruit weight of all the fig types.

It was determined that the total point ranged from 554 (47-MİD-19) to 774 (47-MİD-3). These results were found to be partly different than the results of Simsek (2009a) and Şimşek and Kuden (2008). Simsek and Kuden (2008) stated the total point changed from 950 to 559 and Simsek (2009b) determined the total point changed between 754 and 634. In addition,

the score of the fruit weight ranged from 160 to 320. The results with respect to the the scores of the fruit weight was found to be the similar to Simsek (2009b). He determined that the scores of the fruit weight changed between 160 and 320.

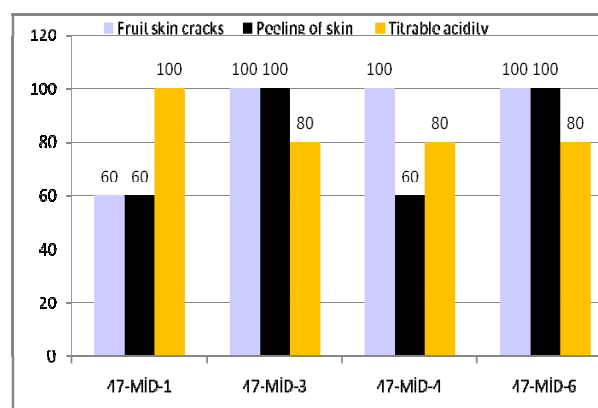


Fig 2. The scores of the fruit skin cracks, the peeling of skin and the titration acidity of all the fig types

According to Figure 2, the scores of the fruit skin cracks ranged from 60 to 100. These results were found to be partly lower than those of Simsek (2009b). He determined that the scores of the fruit skin cracks of all the types were 100. The scores of the peeling of skin of the types were found to be lowest at 60 and highest at 100. The results with respect to the peeling of skin of the types were found to be similar to those of Simsek (2009b). He determined that the scores of the peeling of skin of the types changed from 60 to 100. In addition to the scores of the fruit skin cracks and the peeling of skin, the scores of the titration acidity of them was found between 60 and 80. Simsek (2009b) determined that the scores of the titration acidity were changed from 80 to 100. The reason of different from the results of these studies in term of the scores of the fig types can say the fruit quality characteristics and environmental conditions of the types.

Names, Origins, Coordinates and Altitudes

Names, origins, coordinates and altitudes of all the fig types were showed in Table 3. All these types were selected in Midyat district of Mardin province. The local names of the types were Mor incir, Yeşil incir, Hejira sor and Ser. Although the coordinates of the

lowest accession number (47-MİD-1) were 37706970 E-4150046 N, the coordinates of the highest accession number (47-MİD-6) were 37697975 E-4132803 N. The altitudes of the fig types changed from 725 m to 975 m.

Table 3. The Type names, the origins, the coordinates and the altitudes of the selected fig genotypes in 2006

Accession number	Names	Origins	Coordinates	Altitudes (m)
47-MİD-1	Mor incir	Midyat	37706970 E-4150046 N	971
47-MİD-3	Yeşil incir	Midyat	37706985 E-4150063 N	975
47-MİD-4	Hejira sor	Midyat	37698024 E-4132799 N	725
47-MİD-6	Ser	Midyat	37697975 E-4132803 N	757

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