

## CLONAL SELECTION IN SIYAH CULTIVARS AT BLACK SEA REGION OF TURKEY

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### Abstract

Anatolia is the main world genetic origin of the fig. Various types of fig cultivars are growing in different climatic conditions of Anatolia. Black Sea Region is more valuable, especially for fresh consumption fig cultivars. This study was conducted to select promising Siyah fig (*Ficus carica* L.) types at the Black Sea Region of Turkey.

80 Siyah fig trees were evaluated and given the mean values of first year in this study. The pomological analysis, on 10 fruit chosen between 20 ripe fruit taken from each tree were carried out, and total soluble solids (TSS) was measured with a hand-held refractometer in fruit.

Fruit weight was between 30.84 to 90.92 g, fruit width 35.08 to 71.80 mm, total soluble solids (TSS) 8.00 to 21.70%, internal cavity 1.84 to 17.51mm, and ostial width 2.09 to 9.87 mm. In addition, fruit shape, fruit symmetry, shape of the fruit stalk, ease of peeling, ribs, skin cracks, skin color, over color, color formation in the meat, internal color, fruit flavor, fruit size, fruit color, and condition of seeds were determined. Of 80 Siyah fig types, ten types were selected for general quality traits (fruit weight, fruit width, fruit length, internal cavity, ostial width). As a result, 5 fig types promising for fruit quality were selected and they will be assessed for further studies in the next years.

In order to obtain high quality fig fruits, further studies will be realized in wider field at the Black Sea Region.

**Key words:** *Ficus carica*, fig, Siyah cv., Fruit characteristics, selection, Black Sea Region, fresh consumption.

### 1. Introduction

Fig have been grown in Anatolia from time immemorial. This species is one of the subtropical fruit species cultivated in Anatolia. A number of cultivated and wild forms of fig can be found in Anatolia with a great diversity of color, shape and flavor, primarily for fresh consumption (Özbek [13]). Fresh figs are accepted as exotic fruits in Western and Northern European countries

where they cannot be cultivated. Nevertheless, these countries are developing and increasing interest in fresh figs. The unit price of fresh figs is very high. For these reasons, their commercial production has been increasing (Özeker and İsfendiyaroğlu [14]). The most important advantage of Turkey is the wealth of cultivars present on the local fresh fig markets. These fresh fig cultivars do not require additional cost and expose to infection of caprifigation.

Fig cultivars for fresh consumption are grown in different regions of Turkey, but growing these cultivars are not an economic activity (Aksoy *et al.*, [1]). The Black Sea Region, due to ecological conditions, produces only fresh figs in a mixed cropping system with fruits or nuts.

At the Black Sea Region, due to ecological conditions, fresh figs are only produced in a mixed cropping system with fruits or nuts (Karadeniz [9]). The aim of this study was to select the Siyah cv. types that shown high quality and to standardize the fig production in area.

### 2. Materials and Method

The study was conducted at the Black Sea Region of Turkey, in 2005 - 2006. The analyses of collected fruits from selected types were done in the Laboratory of Agricultural Faculty of Ordu University. Pomological characteristics of selected Siyah cv. include fruit weight (g), fruit width (mm), fruit length (mm), peel thickness (mm), total soluble solids % (TSS), internal cavity (mm), ostiole width (mm), fruit shape, fruit symmetry, shape of the fruit stalk, ease of peeling, ribs, skin cracks, skin color, over color, color formation in the meat, internal color, fruit flavour, fruit size, fruit color, condition seeds. These characteristics were determined in randomly chosen 10 fruits from a 25 - 30 fruit samples. Scoring and evaluations were made according to the selection form (Table 1). Fruit characteristics were evaluated based on the weighted - ranked method (Aksoy *et al.*, [2]) and descriptors for fig (Aksoy *et al.*, [3]). The total point of each genotype was recorded with multiplication of these values.

**Table 1. Values of frontiers, coefficients and relative scores of examined fruit traits based on the weighted-ranked method**

Fruit traits	Frontiers of traits and their coefficients												Rel. scores
	F	C	F	C	F	C	F	C	F	C	F	C	
<b>Fruit weight (g)</b>	≤ 80.01	3	80.00 - 60.01	2	≤ 60.00	1							50
<b>Fruit cavity (mm)</b>	≤ 2.00	10	2.01 - 5.00	8	5.01 - 8.00	6	8.01 - 11.00	4	11.01 - 14.00	2	≤ 14.01	1	25
<b>Ostiol width (mm)</b>	≤ 3.00	8	3.01 - 4.50	6	4.51 - 6.00	4	6.01 - 7.50	2	≤ 7.51	1			25

F - frontiers; C - coefficients.

### 3. Results and Discussion

80 Siyah fig types were examined with respect to fruit traits. Fruit size is an important trait in the fresh consumption group (Aksoy *et al.*, [1]). Genotypes showed a range of 30.84 g and 90.92 g for fruit weight, 35.08 mm and 71.80 mm for fruit width, 43.88 mm and 73.57 mm for fruit length, 1.84 mm and 17.51 mm for internal cavity, 2.09 mm and 9.87 mm for ostiole width. At the end of two-year-study (2005 - 2006), based on the weighted-ranked method, fig genotypes ranked 175 points or more for general fruit quality. 5 genotypes were chosen in order to assess the next year. Important fruit traits of these promising types are presented in Table 2. Selected types showed a range of 55.68 g and 76.86 g for fruit weight, 44.99 mm and 52.01 mm for fruit width, 55.10 mm and 70.41 mm for fruit length, 1.84 mm and 7.60 mm for internal cavity, 3.64 mm and 4.35 mm for ostiole width (Table 2).

Kabasakal [8], reported that fruit weight was 65 g in Sarılop suitable for both fresh and dried consumption, 30-31 g in Siyah Orak and 56 - 60 g in Beyaz Orak cultivars for fresh consumption. In similar studies, fruit weight ranged between 14.2 - 60.8 g (Aksoy *et al.*, [1]), 36.65 - 117.89 g (Küden *et al.*, [11]), 17.1 - 71.5 g (İlgin [7]), 25.1 - 75.7 g (Chessa and Nieddu [5]), 80 - 100 g

(Yung *et al.*, [16]), 40.40 - 65.0 (Bostan *et al.*, [4]), 9.73 - 67.72 g (Mars *et al.*, [12]), 31.5 - 76 g (Aksoy *et al.*, [2]) and 22.21 - 77.40 g (Karadeniz, 2008). The results related to fruit weight, fruit width and fruit length of the present study are in agreement with the findings of previous reports.

A fruit index calculated as the ratio of fruit width to fruit length has been great importance in packing and transportation (Condit [6]). All the types are suitable for commercial production (Table 2).

Total soluble solids of our fig types were varied between 10.00 and 14.50%. In other studies, total soluble solids were between 13 - 25% (Küden *et al.*, [11]), 13.40 - 29.40% (Chessa and Nieddu [5]), 15.5 - 26% (Aksoy *et al.*, [2]), 8.4 - 15.75% (Mars *et al.*, [12]), 10.34 - 20.50% (Karadeniz [10]). The results of other similar studies are in harmony with ours.

The ostiol width ranged between 3.64 - 4.35 mm, and it was narrower or similar than other studies (Özeker and İskendiyaroğlu [14]; Şahin [15]; Mars *et al.*, [12]; Aksoy *et al.*, [2], Karadeniz [10]).

At the Black Sea Region of Turkey, the harvest period of Siyah fig cultivars is long, from early August to

**Table 2. Some fruit properties of promising selected Siyah fig cv. according to averages of two years**

Type no	Fruit			IC (mm)	OW (mm)	W/L index	Fruit symmetry	Ease of peeling	Ribs	Skin cracks	TSS (%)
	We (g)	Wi (mm)	L (mm)								
<b>52 MRZ 22</b>	76.86	52.01	70.41	3.46	4.09	0,74	Symmetrical	Easy	Intermed.	Scarce longit. cracks	14.50
<b>52 MRZ 49</b>	55.68	44.99	60.99	1.84	3.64	0,82	Symmetrical	Easy	Slightly	Minute cracks	12.50
<b>52 MRZ 25</b>	66.04	48.98	64.62	3.35	3.66	0,76	Symmetrical	Easy	Intermed.	Minute cracks	10.00
<b>52 MRZ 74</b>	61.46	46.06	55.10	7.60	4.35	0,84	Symmetrical	Easy	Prominent	Minute cracks	12.80
<b>52 MRZ 18</b>	63.55	47.90	59.64	3.11	4.29	0,80	Symmetrical	Easy	Slightly	Minute cracks	10.00

We- weight; Wi - width; L - length; IC - Internal cavity; OW - Ostiole width; W/L - width/length index; TSS - total soluble solids.

September. Since Siyah fig cultivar are better adapted to this ecological conditions and suitable for fresh consumption, it is one of the most popular local fig cv (Figures 1 - 4).

As a result, 5 fig types promising for fruit quality were selected and they will be assessed for further studies in the next years. In addition to this, to obtain high quality fig fruits, further studies will be realized in wider field at the Black Sea Region.



Figure 1, 2, 3, 4. Fruits maturation of the Siyah fig cv.

#### 4. Conclusions

- 5 fig genotypes, or more precisely: viz. 52 MRZ 22, 52 MRZ 49, 52 MRZ 25, 52 MRZ 74 and 52 MRZ 18 are promising good fruit quality. That's why they were selected and twill be assessed for further studies in the next years.

- This research showed that in order to obtain high quality fig fruits, further studies should be conducted in wider area at the Black Sea Region.

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