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YIELD, QUALITY AND RESISTANCE TO FUSARIUM WILT OF EGYPTIAN MELON LANDRACES

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ABSTRACT

This study was conducted during the period from 2005 to 2007 at Kahha Vegetable Research Farm (KVRF), Qalubia Governorate to evaluate 31 local melon landraces collected from different geographic regions of Egypt. Selfing was carried out in the open field for the 31 local melon landraces at (KVRF) in April and August 2005.

From all these landraces twenty-two Ecotypes was selected (Aswan, quena1, quena2, quena3, sohag1, sohag2, EL-menia-sandafa, Beni swif1, Beni swif 2, Beni swif 3, Beni swif 4, Fayoum, El-Qalubia-Basousi, Ismailia, Marsa Mattrouh, El-Behaira 1, El-Behaira 2, El-Behaira 3, El-Behaira 4, , Esmaellawy, Giza-Berkash 1, Giza-Berkash2) in addition to three local variaties (Ananas El- Dokki, Kahera 6, Shahd El-dokki) to evaluate them in two successive seasons in summer planting date. The results showed significant differences among the evaluated landraces and revealed a wide range of variation for all studied traits. Beni Swif 4 melon landrace had the lowest significant Number of days to flowering in both seasons (50.20 and 47.07 days, respectively). Quena 2 melon landrace exhibited the lowest significant Number of days to ripening (34.63 and 35.60 days in 2006 and 2007, respectively). In 2006, El-Menia-Sandafa produced the highest significant Total yield (TY) / plant over all evaluated genotypes with TY being 12.68 kg. Meanwhile, El-Behaira2 exhibited the highest significant TY / plant (10.20 kg) in 2007. In 2006, Giza-Berkash 2 exhibited the highest significant Fruit firmness (FF) over all evaluated genotypes with FF being 24.10 pound/inch^2. In 2007, the hjghest significant Fruit flesh thickness over all evaluated genotypes was obtained by Beni Swif 1 (26 pound/inch^2). El-Menia-Sandafa, Ananas El-Dokki and Kahera 6 Produced Round fruits. Oblate varieties was obtained by Sohag 2, Quena 2 and Beni Swif 1landraces. Cylindrical varieties were obtained by Ismailia, Ismailawi and El-Behaira 4. El-Menia-Sandafa had the highest significant Average fruit weight (AFW) (5.32 kg) over all evaluated genotypes in 2006 meanwhile, in 2007 the highest significant AFW over all evaluated genotypes was obtained by the genotypes Ismailia and El-Behaira 2 with AFW being 4.27 kg. Only 3 melon landraces were moderately resistant, Aswan, El-Behaira 1 and El-Behaira 2, meanwhile all the evaluated genotypes were slightly resistant.

Key words: ***Melon, Landrces, Yield,Quality, Fusarium Wilt***

INTRODUCTION

Melon, (*Cucumis melo* L.), is considered one of the most important vegetable crops grown in Egypt. According to the last estimates of the Ministry of Agriculture and Land Reclamation, melon cultivated area reached 92050 fed. in 2008, yielding 923718 tons with an average of 9.9 tons/fed.

All over the world, many investigators are interested in collecting landraces or local lines and estimate their agronomic traits or pathogenicity test in order to search for new genotypes for breeding programs.

In Egypt, recently attention has been focused on collecting and screening landraces from different geographic areas and evaluating its horticultural characters, then preserve them in the national gene bank.

The aim of this investigation was to collect some melon landraces and identify, characterize them pathogenically test even also conducted in order to establish a breeding program for melon to improve this crop and raise a new hybrid.

Hussain *et al* (1986) studied comparative morphology and qualitative evaluation of some exotic and local muskmelon (*Cucumis melo*) cultivars.

A collection of 54 accessions representing diverse genotypes from 23 countries was surveyed and described. The accessions in this study were tentatively assigned to one of these varietal groups *Cucumis melo* var. *agristis*, *C. melo* var. *cantalupensis*, *C. melo* var. *inodorus*, *C. melo* var. *flexuosus*, *C. melo* var. *conomon*, *C. melo* var. *chito* and *dudaim*, and *C. melo* var. *momordica*. (Stepansky *et al* 1999).

Hirai *et al* (2002) released two new rootstock cultivars of melon resistant to race 1,2y of *Fusarium oxysporum* f. sp. *melonis*.

Screening of genotypes of melon for resistance to wilt caused by *Fusarium oxysporum* f.sp. *melonis* is often characterized by wide variability in their responses to inoculation, even under carefully controlled conditions. (Burger *et al* 2003).

Eleven local melon landraces were collected from different regions of Egypt. They were evaluated for morphological performance, yield, quality as well as genetic relationships, and pathogenicity test for damping-off caused by *Fusarium spp.* and *Verticilium alboatrum*. (El- Shimi and Ghoneim, 2003).

Ricciardi *et al* (2003) studied phenotypic and genetic characterization of *Cucumis melo*. landraces collected in Apulia (Italy) and Albania.

Six melon inbred lines were utilized in half diallel crosses and inbreds and their hybrids were evaluated. In general, the results indicated that some new hybrids might be promising, even for exporting or for local market type 'Shamam' since they produced higher total and earlier yield than the commercial hybrids, with favorite fruit quality. Therefore, new promising melons could be produced locally (Glala 2007).

Jani *et al* (2007) evaluated nineteen melon cultivars from various regions in Albania for plant and fruit morphology, pest and disease resistance, and fruit quality, among other traits. Most of the genotypes had satisfactory morphological and agro-economic characteristics.

Szamosi *et al* (2010) studied a total of 58 *Cucumis melo* accessions to compare the morphological characteristics of Hungarian and Turkish germplasm, including typical landraces as well as melons from gene banks of various origins.

The aim of this investigation was to collect melon landraces and to evaluate them for horticultural traits and reaction to fusarium wilt in a trial to establish them in a breeding programms to improve this crop.

MATERIALS AND METHODS

This study was conducted during the period from 2005 to 2007 at Kahha Vegetable Research Farm (KVRF), Qalubia Governorate to evaluate 31 local melon landraces which were collected from different geographic regions of Egypt. Selfing was carried out for 31 local melon landraces in the open field at (KVRF) in April and August 2005.

From all these landraces twenty-two genotypes was selected in addition to three local variaties (Ananas El- Dokki, Kahera 6, Shahd El-dokki) (Table 1 and Fig.1) to evaluate them in two successive summer seasons. In The first season, the seeds were sown date was on April 3, 2006. Whereas in the second season, (2007) the seeds were sown date was on March 26. In both seasons a randomized complete block design (RCBD) with three replicates was used. The experimental plot (EP) consisted of two rows , each row was 1.5 wide and 5 m long (EP= $15m^2$). seeds were sown 50 cm apart and the field was given the recommended agricultural practices. Data obtained were statically analyzed (Snedecor and Cochran 1976) and comparisons were based on Duncan's multiple range test (Steel and Torrie 1981).

Table 1. Ecotypes and code number .

No.	Ecotypes	No.	Ecotypes	No.	Ecotypes
1	Aswan	10	Beni Swif 3	19	El-Behaira 4
2	Quena 1	11	Beni Swif 4	20	Ananas El-Dokki
3	Quena 2	12	Fayoum	21	Kahera 6
4	Quena 3	13	El-Qalubia-Basousi	22	Ismailawi
5	Sohage 1	14	Ismailia	23	Giza-Berkash 1
6	Sohage 2	15	Marsa Mattrouh	24	Giza-Berkash 2
7	El-Menia-Sandafa	16	El-Behaira 1	25	Shahd El-Dokki
8	Beni Swif 1	17	El-Behaira 2		
9	Beni Swif 2	18	El-Behaira 3		

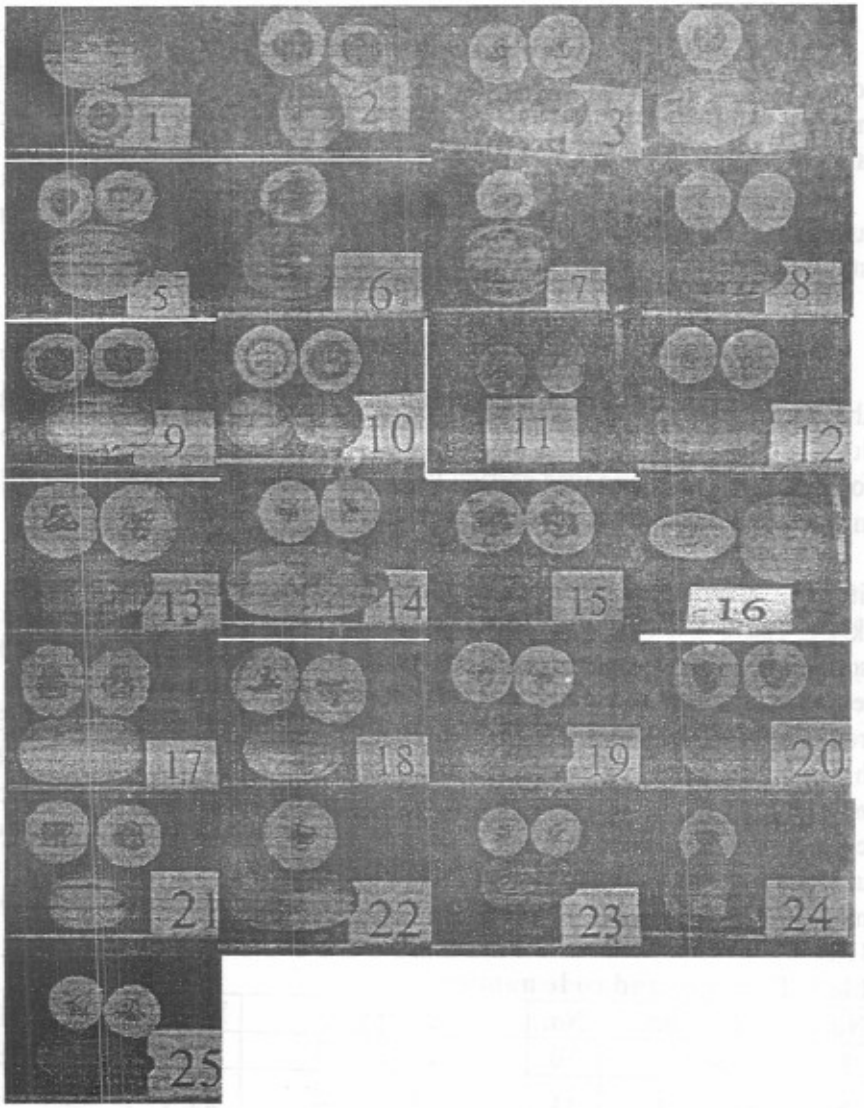

Fig .1 Shapes and flesh colour of the 22 landraces and 3 Local verity collected from different regions in Egypt.

Data recorded

The following characters were measured as follows:

1-Number of days to 50% flowering (on plot basis).

2-Number of days to ripening (on plot basis).

3-Total yield per plant: The weight in kg of all fruits harvested per plant.

4-Average fruit weight: The mean weight in kg of 5 fruits, randomly chosen from each plot.

5- Average fruit length (cm): The mean length of 5 fruits, randomly chosen from each plot.

6-Average fruit width (cm):The mean width of 5 fruits, randomly chosen from each plot.

7-Fruit shape index: The ratio of fruit length to fruit diameter of 5 fruits per plot.

8- Dry Weight / 100 g fresh weight: The dry weight of 100 g from fresh fruit after drying at 70° c to astable weight.

9-Fruit firmness (pound/inch^2): Measured in the ripe stage using a needle type penetrometer by bushing the penetrometer needle slowly at the equatorial plane. Each plot was represented by 5 randomly chosen fruits.

10-Fruit flesh thickness (cm):was determinated in a sample of 10 fruits / plot.

11-Netting: as the descriptor degrees from 0 to 5. The 0 = without netting and 5 = full netting.

12-Total soluble solids: TSS % was determined in at least 5 red-ripe fruits of each plot using a hand refractometer.

Evaluation of fusarium wilt

The experiment was carried out at the period 1/9/2007 to 15/10/2007 according the method described by Barnes (1972) as follows.

Inoculum preparation and sowing medium infestation

The inoculum used for infestation of the growing medium (peatmoss+vermiculite, 2:1) was prepared in 500 ml bottles containing75g washed dried maize grain. 100g washed dried coarse sand and 65 ml tap water per bottle. The bottles were incubated at 28+2c° for two weeks to obtain sufficient growth of the fungus.

The inoculum was then mixed with the growing medium at the rate of 4.0% (w/w) one week before planting. In check experiment, equal amount of the uninoculated substrate was added to the growing medium.

Pathogenicity test in green house

Inoculum preparation and growing medium (peatmoss+vermiculite) infestation were carried out as described before. Seeds of melon were planted in pots No 25 (5seeds/pot) containing infested growing medium with *Fusarium oxysporum*

f. sp. melonis and was replicated 4 time. Other pots filled with uninfested growing medium were prepared to serve as control. After 45 days form planting number of plants showing symptoms of wilt and or dead plants were coeented .

Disease assessment

Disease induce was determined according to Barnes (1972) who pointed out four degrees of linear scale (form 0-100%)

- 0-10 % wilt = highly resistant (HR)
- 11-40 % wilt = moderately resistant (MR)
- 41-70 % wilt = slightly resistant (SR)
- 71-100 % wilt = susceptible (S)

RESULTS AND DISCUSSION

Number of days to flowering (NDF)

Data obtained on NDF of melon landraces in the 2006 and 2007 summer plantings are presented in Table (2). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. Beni Swif 4 melon landrace had the lowest significant NDF in both seasons (50.20 and 47.07 days, respectively). Quena 2 melon landrace had the highest significant NDF (59.87 days) in 2006 meanwhile, in 2007 Sohag 1 exhibited the highest significant NDF (56.42 days). El-Shimi and Ghoneim (2003) found that melon landraces of Sandafa, El-Wahat el-Bahria, Fayoum and Brolussi, as well as Kahera-6, exhibited earliness for male and female flowers on 50% of the plants, while Ismailawi and Waraki showed the opposite.

Number of days to ripening (NDR)

Data obtained on NDR of melon landraces in the 2006 and 2007 summer plantings are presented in Table (2). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. Quena 2 melon landrace exhibited the lowest significant NDR (34.63 and 35.60 days in 2006 and 2007, respectively). El-Behaira1 showed the highest significant NDR in 2006 and 2007 (42.93 and 43.17 days, respectively).

Total yield per plant (TY)

Data obtained on TY / plant of melon landraces in the 2006 and 2007 summer plantings are presented in Table (2). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. In 2006, El-Menia-Sandafa produced the highest significant TY / plant being 12.68 kg. The lowest significant TY /

Table 2. Number of days to flowering, number of days to ripening and total yield per plant[z] for the melon genotypes in two seasons.

Genotypes	No. days to flower		No. days to ripening		Total Yield per plant kg)(	
	2006	2007	2006	2007	2006	2007
Aswan	58.13 a-c	54.67 a-d	35.73 ef	36.07 fg	6.91 f-h	5.98 de
Quena 1	57.20 a-e	52.27 a-f	36.57 d-f	36.83 fg	4.82 i-k	6.39 c-e
Quena 2	59.87 a	51.80 b-f	34.63 f	35.60 g	3.56 jk	5.15 d-f
Quena 3	58.47 ab	52.87 a-f	38.63 b-e	38.03 d-g	11.16 ab	8.55 a-c
Sohage 1	57.47 a-e	56.42 a	40.80 a-c	40.30 b-d	9.22 b-e	7.68 b-d
Sohage 2	56.33 a-e	53.44 a-e	40.20 a-d	40.13 b-e	5.59 g-j	6.12 c-e
El-Menia-Sandafa	52.93 e-g	50.73 d-h	40.13 a-d	40.00 b-e	12.68 a	7.66 b-d
Beni Swif 1	56.80 a-e	53.55 a-e	36.67 d-f	36.53 fg	4.30 i-k	5.70 de
Beni Swif 2	58.47 ab	55.43 ab	40.73 a-c	40.73 a-d	9.66 b-d	7.52 b-d
Beni Swif 3	51.53 fg	47.53 gh	40.87 a-c	40.60 a-d	3.43 k	2.86 f
Beni Swif 4	50.20 g	47.07 h	41.93 ab	41.10 a-c	4.718 i-k	2.88 f
Fayoum	54.67 b-f	53.27 a-f	37.80 c-f	38.57 c-f	6.26 g-i	5.48 de
El-Qalubia-Basousi	55.20 b-f	54.65 a-d	41.80 ab	41.47 ab	10.64 bc	7.42 b-d
Ismailia	54.53 b-g	51.13 c-g	40.40 a-c	40.70 a-d	10.83 a-c	9.49 ab
Marsa Mattrouh	57.40 a-e	55.87 ab	40.83 a-c	40.40 b-d	8.25 d-f	8.91 ab
El-Behaira 1	53.13 e-g	53.93 a-e	42.93 a	43.17 a	4.91 h-k	5.73 de
El-Behaira 2	59.07 ab	55.20 a-c	40.20 a-d	39.47 b-e	11.05 a-c	10.20 a
El-Behaira 3	55.00 b-f	52.07 b-f	38.40 b-e	38.43 c-f	9.05 c-e	9.60 ab
El-Behaira 4	54.87 b-f	55.27 a-c	40.00 a-d	40.30 b-d	7.39 e-g	6.46 c-e
Ananas El-Dokki	53.73 c-g	49.13 f-h	41.47 a-c	41.80 ab	4.58 i-k	5.64 de
Kahera 6	57.87 a-d	55.43 ab	37.80 c-f	37.53 e-g	5.03 h-k	4.90 ef
Ismailawi	53.47 d-g	50.00 e-h	39.67 a-d	39.43 b-e	6.07 g-i	7.62 b-d
Giza-Berkash 1	58.60 ab	55.73 ab	39.13 b-e	39.50 b-e	5.07 h-k	4.81 ef
Giza-Berkash 2	55.67 a-f	54.33 a-d	40.67 a-c	40.50 b-d	5.38 h-k	4.75 ef
Shahd El-Dokki	54.53 b-g	55.20 a-c	40.47 a-c	40.47 b-d	4.38 i-k	4.16 ef

z. Mean in columns sharing any letter are not significantly different at 0.05 level.

plant over all evaluated genotypes was obtained from Beni Swif 3with TY being 3.43kg. El-Behaira2 exhibited the highest significant TY / plant (10.20 kg) but the lowest significant TY /plant was investigated in Beni Swif 3 and Beni Swif 4 melon landrace (2.86 and 2.88 kg, respectively) in 2007. Hussain *et al.* (1986) found that Campo had the highest fruit yield (86.84 t/ha). Campo was recommended for breeding for high yield. El-Shimi and Ghoneim (2003) found that Ismailawi and Waraki were superior for total yield (ton/ fed.) and fruit yield/ plant while Fayoum melon landrace and Anannas El-Dokki recorded the lowest values for aforementioned characters. Jani *et al* (2007) found that 8 cultivars out of 19 evaluated melon cultivars from various regions in Albania produced high total yield.

Fruit flesh thickness (FFT)

Data obtained on FFT of melon landraces in the 2006 and 2007 are presented in Table (3). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. El-Qalubia-Basousi had the highest significant FFT (5.12 cm) over all evaluated genotypes meanwhile, Beni Swif 3 recorded the lowest significant FFT (2.53 cm) in 2006. In 2007, Ismailia exhibited the highest significant FFT (4.73 cm) over all evaluated genotypes but the lowest significant FFT was obtained by Beni Swif 3 and Beni Swif 4 (2.20 and 2.10 cm, respectively). Jani (2007) found that 8 cultivars out of 19 evaluated melon cultivars from various regions in Albania produced fruits with thick flesh.

Fruit firmness (FF)

Data obtained on FF of melon landraces in the 2006 and 2007 summer plantings are presented in Table (3). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. In 2006, Giza-Berkash 2 exhibited the highest significant FF over all evaluated genotypes with FF being 24.10 pound/inch^2. In 2007, the highest significant FF was obtained by Beni Swif 1 (26 pound/inch^2). Aswan melon landrace had the lowest significant FF in 2006 and 2007 (9.13 and 9.28 pound/inch^2, respectively).

Netting

Data obtained on netting of melon landraces in the 2006 and 2007 summer plantings are presented in Table (3). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. El-Behaira 1 exhibited the highest significant value of netting over all evaluated genotypes in both seasons. In 2006, the lowest significant value of netting was found in Beni Swif 2 (0). In 2007, The melon landraces Beni Swif 2, Beni Swif 4 and Kahera 6 had the lowest

Table 3. Fruit flesh thickness, fruit firmness and netting [z] of the 25 melon genotypes in two seasons.

Genotypes	Fruit Flesh Thickness (cm)		Fruit Firmness (pound/inch^2)		Netting	
	2006	2007	2006	2007	2006	2007
Aswan	2.93 kl	3.48 d-g	9.13 j	9.28 i	1.20 h	1.20 i
Quena 1	3.33 i-k	3.08 gh	6.17 f-i	15.00 f-h	3.13 e-g	3.13 f-h
Quena 2	2.99 j-l	3.10 gh	23.03 ab	21.83 bc	3.67 c-e	3.67 e-g
Quena 3	4.23 b-e	3.90 c-f	14.77 hi	17.53 d-f	3.47 d-f	2.80 h
Sohage 1	3.77 e-i	3.70 d-g	13.67 i	14.61 f-h	2.67 g	2.40 h
Sohage 2	3.62 f-i	3.38 e-h	14.30 i	17.00 e-h	2.73 fg	2.60 h
El-Menia-Sandafa	4.33 b-d	4.10 b-d	17.80 e-h	15.97 e-h	4.67 ab	3.67 e-g
Beni Swif 1	3.67 f-i	3.27 f-h	22.60 ab	26.00 a	4.27 a-c	3.87 b-f
Beni Swif 2	3.45 h-j	2.79 h	18.10 d-g	16.27 e-h	0.00 i	0.00 j
Beni Swif 3	2.53 l	2.20 i	21.23 a-d	22.14 bc	3.47 d-f	4.57 a-d
Beni Swif 4	4.40 bc	2.10 i	21.23 a-d	14.63 f-h	1.00 h	0.00 j
Fayoum	3.47 h-j	3.57 d-g	22.20 a-c	23.02 b	4.47 ab	4.63 ab
El-Qalubia-Basousi	5.12 a	4.46 a-c	20.10 b-e	16.50 e-h	3.07 e-g	2.67 h
Ismailia	4.67 b	4.73 a	19.90 b-e	15.57 f-h	3.67 c-e	3.07 f-h
Marsa Mattrouh	4.03 c-g	3.97 c-e	15.63 g-i	13.93 gh	2.67 g	2.80 h
El-Behaira 1	3.37 h-k	3.92 c-f	15.73 g-i	13.67 h	4.80 a	5.00 a
El-Behaira 2	4.40 bc	3.55 d-g	19.27 c-f	17.75 d-f	3.67 c-e	2.90 gh
El-Behaira 3	4.07 c-f	4.68 ab	20.53 b-e	13.87 gh	3.27 e-g	3 gh
El-Behaira 4	3.70 f-i	4.07 b-d	19.10 c-f	20.50 b-d	4.20 a-c	3.83 c-f
Ananas El-Dokki	3.50 hi	3.57 d-g	22.00 a-c	22.60 bc	3.47 d-f	3.80 d-f
Kahera 6	3.53 g-i	3.05 gh	19.10 c-f	16.31 e-h	0.67 h	0.00 j
Ismailawi	3.83 d-i	3.63 d-g	19.03 c-f	17.28 d-g	3.13 e-g	2.90 gh
Giza-Berkash 1	3.73 e-i	3.63 d-g	21.77 a-c	19.40 c-e	4.73 ab	4.60 a-c
Giza-Berkash 2	3.87 d-h	4.10 b-d	24.10 a	22.12 bc	2.87 fg	2.53 h
Shahd El-Dokki	3.43 h-j	3.62 d-g	21.50 a-c	22.06 bc	4.07 b-d	4.10 b-e

z:Mean in columns sharing any letter are not significantly different at 0.05 level.

significant values of netting over all evaluated genotypes (0). Jani *et al* (2007) found that 12 cultivars produced fruits with netted skin.

Average fruit length (AFL)

Data obtained on AFL of melon landraces in the 2006 and 2007 summer plantings are presented in Table (3). The results showed significant

differences among the evaluated landraces and revealed a wide range of variation for this trait. Ismailia melon landrace showed the highest significant AFL over all evaluated genotypes in 2006 and 2007 with AFL being 34.70 and 33.75 cm, respectively. Beni Swif 4 had the lowest significant AFL (13.87 cm) over all evaluated genotypes in 2006. Meanwhile, in 2007 Beni Swif 3 and Beni Swif 4 melon landraces were the lowest significant AFL (14.08 and 13.40 cm, respectively). El-Shimi and Ghoneim (2003) found that Ismailawi and Waraki melon were superior for AFL while Fayoum melon landrace and Anannas El-Dokki recorded the lowest values for this trait.

Average fruit diameter (AFD)

Data obtained on AFD of melon landraces in the 2006 and 2007 summer plantings are presented in Table (4). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. The highest significant AFD over all evaluated genotypes was detected in fruits of melon landrace El-Menia-Sandafa with AFD being 22.37 and 18.53 cm in 2006 and2007, respectively. Beni Swif 4 had the lowest significant AFD in 2006 and 2007(10.57 and 10.47 cm, respectively). El-Shimi and Ghoneim (2003) found that Ismailawi and Waraki were superior for AFD while Fayoum melon landrace and Anannas El-Dokki recorded the lowest values for this trait.

Fruit shape index (FSI)

Data obtained on FSI of melon landraces in the 2006 and 2007 summer plantings are presented in Table 4. The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. El-Menia-Sandafa, Ananas El-Dokki, Kahera 6, Marsa Mattrouh, Beni Swif 3, Beni Swif 4, Aswan, Quena 1, Quena 3 and Sohage 1 produced round fruits. Elongated melon was classified as follow: Oblate genotypes (Sohage 2, Quena 2, Beni Swif 1, Fayoum, Beni Swif 2, El-Qalubia-Basousi, El-Behaira 2, El-Behaira 3, Giza-Berkash 1, Giza-Berkash 2 and Shahd El-Dokki); cylindrical genotypes (Ismailia, Ismailawi and El-Behaira 4). The results of El-Dweney (1978) showed that Charentais, Hales Best 36, P.M.R.45 and Casaba Golden Beauty produced round fruits, but the cultivars Honey Dew, Tenderal, O' live d' hiver and Kahera 6 produced elongated fruits and the cylindrical fruits were shown by the cultivars Kafr Hakeem and Shahd Edfina.

Table 4. Fruit length, fruit diameter and, fruit shape index [z] of the 25 melon genotypes.

Genotypes	Average fruit length (cm)		Average fruit diameter (cm)		Fruit shape index	
	2006	2007	2006	2007	2006	2007
Aswan	22.23 f-i	26.98 c-e	15.77 d-f	16.10 c-f	1.36 h-j	1.68 f-h
Quena 1	16.40 k-m	15.71 jk	15.49 d-f	17.17 a-d	1.05 k	0.92 m
Quena 2	23.17 e-i	28.32 c-e	12.03 ij	15.39 e-g	1.93 bc	1.84 d-f
Quena 3	29.23 bc	23.28 f-h	20.67 ab	18.16 ab	1.41 hi	1.28 j-l
Sohage 1	26.30 c-e	27.01 c-e	18.93 bc	17.42 a-c	1.38 h-j	1.55 g-i
Sohage 2	24.87 e-g	30.42 a-c	15.40 d-f	14.28 gh	1.61 fg	2.13 a-c
El-Menia-Sandafa	23.27 e-i	22.81 gh	22.37 a	18.53 a	1.04 k	1.24 j-l
Beni Swif 1	23.53 e-i	2730 c-e	12.90 g-i	12.50 i	1.84 b-d	2.18 ab
Beni Swif 2	32.07 ab	27.43 c-e	18.43 c	16.70 b-e	1.73 d-f	1.65 f-h
Beni Swif 3	14.40 lm	14.08 k	12.77 g-i	12.40 i	1.13 k	1.14 l
Beni Swif 4	13.87 m	13.40 k	10.57 j	10.47 j	1.31 ij	1.28 j-l
Fayoum	23.97 e-h	21.42 g-i	14.07 f-i	12.88 hi	1.70 d-g	1.65 f-h
El-Qalubia-Basousi	31.03 ab	30.00 b-d	18.20 c	15.50 d-g	1.71 d-g	1.94 c-e
Ismailia	34.70 a	33.75 a	17.20 cd	17.00 a-e	2.02 b	1.99 b-d
Marsa Mattrouh	25.44 d-f	26.33 d-f	18.49 c	18.09 ab	1.34 h-j	1.46 h-j
El-Behaira 1	20.67 h-j	24.73 e-g	14.90 e-g	15.50 d-g	1.40 h-j	1.59 f-i
El-Behaira 2	31.60 ab	31.96 ab	17.40 cd	17.73 a-c	1.81 c-e	1.80 d-g
El-Behaira 3	28.63 b-d	29.29 b-d	16.90 c-e	16.97 a-e	1.70 d-g	1.73 e-g
El-Behaira 4	32.07 ab	29.33 d-g	14.27 f-h	14.57 f-h	2.25 a	2.02 a-d
Ananas El-Dokki	18.10 jk	18.19 ij	14.39 f-h	15.68 d-g	1.32 ij	1.16 kl
Kahera 6	17.73 j-l	18.73 ij	14.77 fg	13.47 hi	1.20 jk	1.38 i-k
Ismailawi	29.07 b-d	29.15 b-d	12.97 g-i	12.98 hi	2.24 a	2.24 a
Giza-Berkash 1	21.53 g-j	20.7 hi	13.10 g-i	12.97 hi	1.64 e-g	1.60 f-i
Giza-Berkash 2	19.90 i-k	20.7 hi	12.93 g-i	14.13 g-i	1.52 jh	1.47 h-j
Shahd El-Dokki	20.13 h-k	22.52 gh	12.20 h-j	13.34 hi	1.65 d-g	1.69 f-h

z:Mean in columns sharing any letter are not significantly different at 0.05 level.

Total soluble solids (TSS)

Data obtained on TSS of melon landraces in the 2006 and 2007 summer plantings are presented in Table (5). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. In 2006, Kahera 6 produced the highest significant TSS value (12.76 %) over all evaluated genotypes. The lowest significant TSS value was found in Aswan melon landrace (5.87 %). In 2007, the highest significant TSS value was produced by the melon landraces Beni Swif 3, Ananas El-Dokki and Kahera 6 (11.46, 10.97 and 11.35 %, respectively). Aswan and Quena 1 melon landraces had the lowest significant TSS values (6.97 and 6.17 %, respectively). El-Dweney (1978) found that the cultivars Charantais, Kahera6 and Kahera3 produced the highest significant TSS over all evaluated genotypes.

Average fruit weight (AFW)

Data obtained on AFW of melon landraces in the 2006 and 2007 summer plantings are presented in Table (5). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for this trait. El-Menia-Sandafa had the highest significant AFW (5.32 kg) over all evaluated genotypes meanwhile, Beni Swif 4 had the lowest significant AFW (0.84 kg) in 2006. In 2007, the highest significant AFW was obtained by the genotypes Ismailia and El-Behaira 2 with AFW being 4.27 kg. Beni Swif 4 had the lowest significant AFW (0.72 kg). The results of El-Dweney (1978) study indicated that the highest average fruit weight was found in fruits of Esmaellawy, Kahera 3, Casaba Golden Beauty and Kahera 6. Hussain *et al* (1986) found that Campo had the highest pulp weight (132 g). El-Shimi and Ghoneim (2003) found that Ismailawi and Waraki were superior for AFW while Fayoum melon landrace and Anannas El-Dokki recorded the lowest values for this trait.

Fruit dry weight per 100 g fresh weight (FDW)

Data obtained on FDW / 100 g fresh weight of melon landraces in the 2006 and 2007 summer plantings are presented in Table (5). The results showed significant differences among the evaluated landraces and revealed a wide range of variation for all studied traits. In 2006, Fayoum melon landrace exhibited the highest significant FDW / 100 g fresh weight (7.18 g) over all evaluated genotypes but the lowest significant FDW / 100 g fresh weight was found in El-Behira 3 (4.20 g). The genotypes Quena 2 and Marsa Mattrouh had the highest significant FDW / 100 g fresh weight (7.70 and 7.54 g, respectively) meanwhile, El-Behaira 3 and Giza-Berkash 1 showed the lowest significant FDW / 100 g fresh weight (4.27 and 4.24 g, respectively) in 2007.

Table 5. TSS, fruit weight and fruit dry weight [z] of the 25 melon genotypes in two seasons.

Genotypes	TSS%		Average fruit weight (kg)		Dry weight / 100 g fresh weight	
	2006	2007	2006	2007	2006	2007
Aswan	5.87 j	6.97 i	2.72 ef	2.75 c-f	5.24 d-h	5.47 cdefg
Quena 1	7.43 i	6.17 i	1.92 f-h	3.20 b-d	5.57 c-g	5.57 cdefg
Quena 2	9.43 c-f	8.31 e-h	1.51 g-i	1.78 f-h	6.80 ab	7.70 a
Quena 3	7.50 hi	8.27 e-h	4.82 ab	4.13 ab	6.14 b-e	6.62 abcd
Sohage 1	7.96 f-i	8.07 gh	3.76 cd	3.36 a-c	6.38 a-c	6.79 abc
Sohage 2	9.01 d-g	9.80 bc	2.29 fg	3.01 c-e	6.80 ab	6.38 abcde
El-Menia-Sandafa	7.61 g-i	8.19 f-h	5.32 a	3.19 b-d	6.80 ab	6.78 abc
Beni Swif 1	9.75 cd	9.91 b	1.80 f-i	2 e-h	6.10 b-e	6.41 abcde
Beni Swif 2	7.23 i	8.03 gh	4.02 b-d	3.18 b-d	5.88 b-f	5.86 b-g
Beni Swif 3	11.75 ab	11.46 a	1.17 hi	0.99 hi	5.15 e-i	5.03 d-g
Beni Swif 4	8.95 d-h	8.91 b-g	0.84 i	0.72 i	5.93 b-f	6.58 abcd
Fayoum	8.95 d-h	9.80 bc	2.19 f-h	1.85 f-h	7.18 a	7.41 ab
El-Qalubia-Basousi	8.71 d-i	7.78 h	4.87 ab	3.53 a-c	5.57 c-g	5.63 c-g
Ismailia	9.24 c-f	9.19 b-f	4.71 a-c	4.27 a	6.41 a-c	6.43 a-e
Marsa Mattrouh	8.17 e-i	8.10 f-h	3.70 d	3.42 a-c	6.91 ab	7.54 a
El-Behaira 1	8.31 d-i	8.30 e-h	2.14 f-h	2.63 c-g	6.17 a-e	6.13 a-f
El-Behaira 2	9.03 d-g	9.45 b-d	4.74 a-c	4.27 a	5.53 c-g	5.76 b-g
El-Behaira 3	8.36 d-i	8.77 c-h	3.93 b-d	4.09 ab	4.20 i	4.27 g
El-Behaira 4	8.43 d-i	8.50 d-h	3.28 de	2.79 c-f	4.40 hi	4.50 fg
Ananas El-Dokki	10.67 bc	10.97 a	1.84 f-i	1.97 e-h	4.63 g-i	4.48 fg
Kahera 6	12.76 a	11.35 a	19.02 f-h	1.64 g-i	5.43 c-g	5.40 c-g
Ismailawi	9.65 c-e	8.74 c-h	2.65 ef	2.60 c-g	6.23 a-d	6.51 a-e
Giza-Berkash 1	10.51 bc	9.06 b-g	1.94 f-h	1.66 g-i	4.27 hi	4.24 g
Giza-Berkash 2	9.68 c-e	9.32 b-e	2.11 f-h	2.23 d-g	5.03 f-i	4.89 e-g
Shahd El-Dokki	9.80 cd	9.41 b-d	1.55 g-i	1.92 f-h	6.12 b-e	5.78 b-g

z:Mean in columns sharing any letter are not significantly different at 0.05 level.

Evaluation of different melon genotypes against infection with the fusarium under greenhouse condition for 45 days

Data obtained on Evaluation of different melon genotypes against infection with the fusarium are presented in Table (6). The results showed that only 3 melon landraces were moderately resistant, Aswan, El-Behaira 1 and El-Behaira 2, meanwhile all the evaluated genotypes were slightly resistant. Hirai *et al* (2002) found that Dodai No.1(a selection from the progeny of a cross between Melon Parental Line 1 and Tokyo-wase "maruba" showed incomplete but remarkable resistance to race 1,2y and complete resistance to race 0, but was susceptible to race 2. Dodai No.2, developed from a cross of Barnett Hill Favorit and Dodai No.1, showed complete resistance to race 0 and 2 and moderate resistance to race 1,2y. El- Shimi and Ghoneim (2003) found that Wahat melon landrace was the least susceptible to infection when sown in infested soil with *F. oxysporum f. sp. melonis* being 8.3% of wilt disease, while Sandafa and Fayoum landraces were highly susceptible and recorded 13.5% and 11.5% of wilt disease, respectively.

Table 6. Evaluation of different melon genotypes against infection with the fusarium under greenhouse condition for 45 days.

Genotypes	Disease incidence %	Reaction
Aswan	36.3 j	MR
Quena 1	43.2 hi	SR
Quena 2	45.9 g-i	SR
Quena 3	45.0 hi	SR
Sohage 1	52.7 bc	SR
Sohage 2	50.8 c-e	SR
El-Menia-Sandafa	56.8 a	SR
Beni Swif 1	46.0 gh	SR
Beni Swif 2	49.8 d-f	SR
Beni Swif 3	52.7 bc	SR
Beni Swif 4	54.8 ab	SR
Fayoum	51.8 cd	SR
El-Qalubia-Basousi	48.9 ef	SR
Ismailia	45.0 hi	SR
Marsa Mattrouh	49.8 d-f	SR
El-Behaira 1	31.1 k	MR
El-Behaira 2	32.1 k	MR
El-Behaira 3	46.0 gh	SR
El-Behaira 4	46.0 gh	SR
Arànas El-Dokki	43.1 i	SR
Kahera 6	44.0 hi	SR
Ismailawi	45.0 hi	SR
Giza-Berkash 1	47.9 fg	SR
Giza-Berkash 2	52.5 bc	SR
Shahd El-Dokki	48.9 ef	SR

z:Mean in columns sharing any letter are not significantly different at 0.05 level.

CONCLUSION

El-Behaira2 exhibited the highest significant TY / plant (10.20 kg) and were moderately resistant to fusarium wilt. Beni Swif 4 melon landrace had the lowest significant Number of days to flowering. This landraces can be used it in a breeding programms to improve this crop.

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تقييم بعض طرز القاوون المصرى للمحصول وصفات الجودة والمقاومة لذبول الفيوزاريوم

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القاوون من أهم محاصيل الخضر التى تزرع فى جمهورية مصر العربية. تمت هذه الدراسة خلال الفترة من 2005 –2007 فى محطة بحوث قها- القليوبية وزلك لتقييم القاوون المحلى والذى تم تجميعه من المناطق الجغرافية المختلفة داخل مصر. تم إنتخاب و تقييم 22مصدراً وراثياً (أسوان، قنا1، قنا2، قنا3،سوهاج1، سوهاج2، المنيا–صندفا، بنى سويف 1، بنى سويف2، بنى سويف3، بنى سويف4، فيوم، القليوبية–باسوس، اسماعيلية، مرسى مطروح، البحيرة1، البحيرة2، البحيرة3، البحيرة4 ، اسمعيلاوى، جيزة–برقاش1، جيزة–برقاش2) إلي جانب 3 أصناف تجارية (أناناس الدقي–قاهرة 6–شهد الدقي) و ذلك خلال العروة الصيفية فى موسمين متتاليين 2006و2007. وأظهرت النتائج اختلافات معنوية عديدة بين المصادر وبعضها البعض. و كان المصدر بنى سويف4 أقل في عدد أيام حتى تفتح أول زهرة مؤنثة خلال الموسمين (50.20، 47.07 على الترتيب) والمصدر قنا2 أعطى أقل عدد أيام من العقد وحتى نضج الثمرة خلال الموسمين (34.63 ، 35.60 على الترتيب) والمصدرالمنيا–صندفا أعطى أعلى محصول بالنسبة للنبات (12.68 kg)فى موسم 2006 واعطى المصدر البحيرة 2 أعلى محصول بالنسبة النبات (10.20kg) فى موسم 2007 . فى موسم 2006 أعطى المصدر جيزة–برقاش2 أعلى صلابة (24.10 رطل/بوصة ^{2}) وفى موسم 2007 سجل المصدر بنى سويف1 أعلى قيمة معنوية للصلابة (26 رطل–بوصة ^{2}). وبالنسبة لمعامل شكل الثمرة أعطت المصادر المنيا–صندفا وأناناس الدقى وقاهرة6 شكلاً كروياً بينما سوهاج2 وقنا2 وبنى سويف 1 ثمارا بيضاوية وأعطت المصادر اسماعيلية واسماعيلاوى والبحيرة4 ثمارا اسطوانية . سجل المصدر المنيا–صندفا أعلى قيمة معنوية لمتوسط وزن الثمرة (5.32 كجم) فى 2006 بينما فى 2007 سجلت أعلى قيمة معنوية لاسماعيلية والبحيرة2 (4.27 كجم) بنفس القيمة. كل المصادر أعطت مقاومة ضعيفة لفطر الفيوزاريوم ما عدا أسوان والبحيرة1 والبحيرة2 أعطوا مقاومة متوسطة للفطر.

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