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STUDIES ON THE BEHAVIOUR OF SOME SNAKE CUCUMBER ECOTYPES FROM DIFFERENT LOCATIONS IN EGYPT DURING THREE PLANTING DATES UNDER ASSIUT CONDITIONS

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ABSTRACT

The experiment was carried out at the Faculty of Agriculture Assiut University during 1996, 1997 and 1998 seasons at three planting dates, i.e. January, June and *September on* 12 ecotypes collected from 12 Governorate to study the behaviour of different ecotypes.

As for the ecotypes collected from the South regions it was found that the growth was higher in June and September planting dates. The most pronounced *ecotypes in* growth was collected from El-Minia and Sohage.

However those ecotypes collected from Qena, Assiut and New Valley were *earlier* in the appearance of male and female flowers in June, while it was latest in September planting date. On the other hand those ecotypes from El-Minia, Sohage and Bani-Swif were higher in number of male and female flowers, sex ratio, total yield by number and weight of fruits per feddan in both June and September planting dates, while Qena, Assiut and New Valley ecotypes gave the lowest values of these characters in both planting dates.

Regarding the behaviour of collected ecotypes from north regions it was found that the highest growth values were detected in September than in June plantings. The ecotypes collected form El-Sharkia, Alexandria, Kafr El-Sheikh and El-Behaira were earlier in the appearance of male and female flowers in June and September planting dates, while El-Menofia and El-Dakahlia ecotypes were the latest in this character in both planting dates. Concerning total number of male and female flowers and sex ratio Kafr El-Sheikh, Alexandria and El-Behera ecotypes showed the highest values of these characters, while the lowest values were observed ecotypes, Sharkia, El-Menofia and Dakhlia in both planting dates. As regard the total yield by number and weight of fruits per feddan, the superior ecotypes was observed from the collections of Kafr El-Sheikh and El-Menofia in June and Kafr El-Sheikh only in September planting date, while Dakahlia and El-Behera ecotypes showed the lowest values of this character in both plantings. In January planting date all ecotypes collected from South and North regions did not continue growth and developments and the plants died.

INTRODUCTION

The gourd family (Cucurbitaceae) included a large number of genera and much more species and botanical varieties. "*Cucumis melo*" is an important species from the economical point of view since it contains many *botanical* varieties to which a large number of vegetable crops. Snake cucumber, Snake melon or Armenian cucumber is a vegetable crop that be longs to three botanical varieties "*Cucumis melo*", i.e. *Cucumis melo* vars. Flexuosus, Elongatus and Pubescence Hasan (1984). Although snake cucumber cultivation is widely spread in most parts of Egypt, yet, as far as we know, not more than one cultivar of snake cucumber is know in the Egyptian

Agriculture. However, Snake cucumber cv. Has many ecotypes spread all over the country. In summer especially during July, August and September the demand for snake cucumber fruits is very high to fill the gab caused by the absence of cucumber since the letter fails to set fruits under high temperature conditions prevailing during these summer months. Matlob and Kelly (1973)found that the optimum temperature for pollen germination and pollen tube growth in vitro was found to be 30°C for Snake cucumber and 21°C for cucumber. These study the performance of 12 Snake cucumber ecotypes, collected from different parts of Egypt, in three planting date under Assiut environmental conditions. The study on snake cucumber is very limited, hence the literature reviewed here included some related vegetable crops belongs to the same species. Davis *et al.* (1967) mentioned that melon fruit weight depended primarily on genetic components of different cultivars, Matlob and Kelly (1976) tested some snake cucumber cvs. (forms) i.e., USA to study the effect of different temperature and long or short days on flowering and number of male to female flowers, the results indicated that higher temperature (38/27°C day/night) produced male and female flowers earlier and enhanced than lower temperature. Also Snake cucumber cvs. Differed in number of female flowers production under higher temperature On the other hand, Short day (8 hr) hastened the appearance of both male and female flowers in some Snake cucumber cv. El-Laithy (1978) found that total yield of Snake cucumber per feddan in summer and fall plantings was 7.2 and 3.2 ton, while number of fruits was 24248 and 11557 per feddan respectively Abd-El-Bary, (1988). The tested of ten melon cvs, found that exhibited differences in their growth, fruit weight and fruit shape were between them. Mohamed *et al.* (1989) in Mosul, Iraq. Studied the effect of planting date on growth and yield of Snake cucumber cv. Local Mosul. The results showed that delaying planting date caused a significant decrease in average fruit weight and total fruit yield. Novi (1990) tested 8 early melon cultivars under 4 sites in Albania, he found that the differences in yield and quality between sites. Kaya and Sen (1992) tested nine melon cultivars collected from different regions of Turkey. They found that the different of average fruit weight and yield were different regions. Mohamadin *et al.* (1993). In Egypt, presented some data on yield and quality characteristics for 10 exotic cantaloupe (*Cucumis melo*) hybrids. The results obtained showed that highest were given by M_{422}, while Radar and Haras had greatest mean in flesh thickness and Jivara and Haras were rated highest in taste and aroma. Varo *et al.* (1995) in Spain, They found that the total yield was different between five melon cultivars planted in the same time. Nerson and Burger (1996) and Gu in China (1998). They found that the different of sources and genotypes in melon cvs and time of planting is were effect on the yield and characteristics of fruits.

MATERIALS AND METHODS

Experiments were conducted in the experimental farm of Assiut University, to study the performance of 12 Snake cucumber ecotypes under Assiut conditions. The experiments were carried out during 1996, 1997 and

1998 in three planting dates namely June planting : seeds were sowing on 15 June in 1997 and 1998.

1. September planting : seeds were sowing on 15 September in 1996 and 1997.
2. January planting : seeds were sowing on 15 January in 1997 and 1998.

The twelve ecotypes of Snake cucumber which were collected from different regions of Egypt and there are presented in Table (1) and Figure (1).

Experimental design : A randomized complete block design with three replications was used. Each experimental plot consisted of three ridges, each was 3.5 m long and 2 m, 1.75 m and 1.5 m wide in June, Sept. and Jan. plantings respectively.

Table (1) : Serial number and sources of Snake cucumber ecotypes.

Ecotypes No.	Source
1	Sohage
2	El-Sharkia
3	Alexandria
4	El-Menofia
5	Kafr El-Sheikh
6	Assiut
7	New Valley
8	El-Minia
9	El-Dakahlia
10	Bani-Swif
11	El-Behaira
12	Qena

The sowing dry seeds in hills at 40 cm a part on the northern side of ridges in June and Sept. planting date, while in Jan. plantings seeds were peregrinated and planted 40 cm apart on the Southern Side. The soil type was clay loam. The plants were fertilized were calcium superphosphate (15.5 % P_2O_5), Ammonium nitrate (33.5 % N) and Potassium sulphate (48 % K_2O) at rates of 200, 200 and 100 kg/feddan, respectively. The superphosphate fertilizer was add to soil at time of soil preparation. The quantity of nitrogen and potassium fertilizer was splitted into three equal doses, and applied after thinning, after 50 % flowering and after the first picking. Irrigation and all other cultural practices were as usual. Weeds were controlled by hand hoeing and the control of diseases and insects was practiced according to the recommendations of Ministry of Agriculture .

During the course of this study, the following data were recorded :

A. Growth : Three random plants from each experimental plot were labeled to determine the following :

1. Main stem length and number of leaves per plant after 40, 45 and 60 days from planting
2. Number of days to first male and female flower appearance.
3. Number of male and female flowers per plant after 60 days from planting.
4. Sex ratio % = $\frac{\text{Number of female flowers}}{\text{Number of male flowers}} \times 100$ after 60 days from planting

fig1

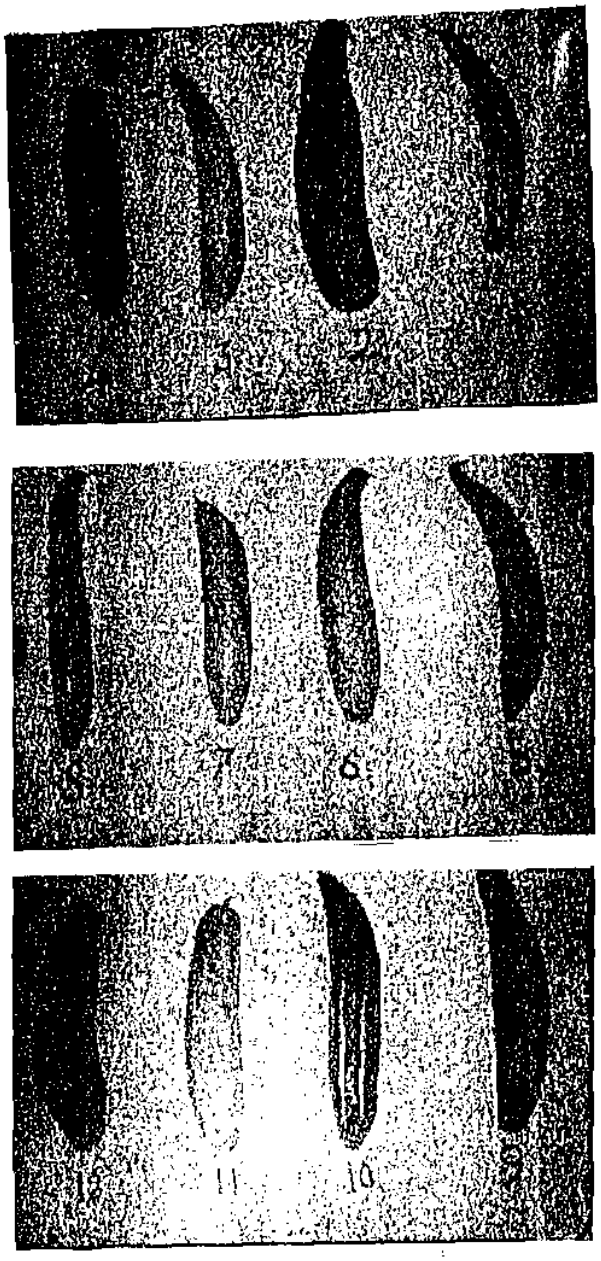

Figure (1) : *The pictures photgraph of sources of snake Cucumber ecotypes at the same serial number In table (1).*

B. Yield :

1 Total yield in tons per feddan.
2. Number of fruits/feddan.

C. Fruit characteristics :

Ten marketable fruits collected from two pickings from each plot were used to determine the following :

1. Average fruit weight (g.).
2. Average fruit length (L) and diameter (D) in cm.

3. Fruit shape index = $\frac{\text{Length (cm)}}{\text{Diameter (cm)}} = \frac{L}{D}$

All data were subjected to statistical analysis and means of ecotypes were compared using the Duncan's Multiple range test (Steel and Torrie, 1984).

Means of maximum and minimum air temperature in Shade and Sun at biweekly intervals during the course of growth were obtained from the Meteorological station of Assiut. These data are illustrated in Figures (2,3 and 4).

RESULTS AND DISCUSSION

1. Vegetative growth :

The effect of 12 Snake cucumber ecotypes on main stem length and number of leaves per plant at different stage of growth in June planting date are presented in Table (2). There were significant different in the main stem length among the studied ecotypes at different plant ages i.e. 30, 45 and 60 days after planting in both years 1997 and 1998. At all stage of growth in both years the longest main stems length were found in ecotypes of Assiut, Qena, New Valley, Sohage and El-Minia, while the shortest main stem length were found in El-Behaira, El-Sharkia, Alexandria and El-Dakahlia ecotypes, other ecotypes were in between. The data showed that main stem length increased as plants advanced in age, while the growth was faster in all ecotypes in age from 45 to 60 days than from 30 to 45 days after planting.

On the other hand, the number of leaves per plant are presented in the same table, which shown the data significantly differed among ecotypes in all stages of growth in both years of June planting date. El-Minia and Sohage ecotypes gave the highest number of leaves per plant at all stages, while El-Sharkia, Alexandria and El-Behaira gave the lowest values.

Concerning, the second planting date at September in years 1996 and 1997, the results in Table (3) showed that the ecotypes of Alexandria, El-Sharkia, El-Behaira, El-Dakahlia and Kafr El-Sheikh recorded higher in main stem length at all stages, while the shortest of main stem lengths were found in Qena, Assiut and New Valley ecotypes. The data showed the increased of stem length was faster as plants advanced in age from 45 to 60 days than 30 to 45 days after planting.

Table (2) : Main stem length and number of leaves/plant at 30, 45 and 60 days from planting as affected by 12 Snake cucumber ecotypes grown in June plantings of 1997 and 1998.

Eco type sNo	Sources	1997						1998					
		Mains tem length (cm)			No of leaves			Mains tem length (cm)			No of leaves		
		30	45	60	30	45	60	30	45	60	30	45	60
1	Sohage	76.55AB	133.55A	190.33C	48.44A	132.44A	174.77BC	73.89AB	129.00AB	191.33AB	48.66A	123.00AB	176.11AB
2	El-Sharkia	69.33CDE	127.00B	172.77F	32.44E	96.77E	147.22G	65.44DE	113.22EF	171.66E	31.44F	91.11H	146.11H
3	Alexandria	67.22DE	120.77CD	179.00E	35.89D	106.55D	155.87F	63.22E	108.66F	162.22F	34.44E	97.00G	150.33G
4	El-Menofia	71.11CD	127.88B	183.77D	35.33DE	108.33D	154.11f	68.44CD	115.44DE	172.11E	34.11E	104.20F	153.22G
5	Kafr El-Sheikh	73.00BC	125.33BC	190.55C	45.00B	118.66B	172.22C	70.88BC	122.66BC	181.22Cd	45.89B	118.20C	172.33C
6	Assiut	78.33A	134.00A	202.33A	40.33C	116.55BC	166.89D	77.11A	132.00A	194.44A	42.11D	107.20E	158.22F
7	New Valley	75.44AB	136.44A	191.66C	43.33C	114.89BC	176.66B	73.11AB	127.77AB	186.88BC	44.89BC	113.30D	168.44D
8	El-Minia	75.22AB	135.78A	185.00D	49.55A	130.66A	182.22A	73.55AB	128.00AB	187.11BC	50.89A	125.10A	179.11A
9	El-Dakahlia	69.77CDE	128.33B	176.22EF	33.38DE	116.00B	174.44BC	65.78DE	112.33CD	172.11E	33.55EF	114.00D	165.22E
10	Bani-Swif	70.88CD	127.66B	176.88FF	44.33B	129.22A	172.89C	67.44CDE	120.22CD	179.66D	45.88B	121.30B	174.00BC
11	El-Behaira	66.89E	119.66D	176.22EF	32.22E	100.00E	161.55E	64.55DE	112.44EF	166.22EF	31.66F	99.00G	152.00G
12	Qena	76.88AB	136.77A	197.22B	42.88BC	113.89C	162.00E	74.66AB	128.22AB	194.77A	42.89CD	112.00D	163.33E

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

Table (3) : Main stem length and number of leaves/plant at 30, 45 and 60 days from planting as affected by 12 Snake cucumber ecotypes grown in September plantings of 1996 and 1997.

Eco type s No.	Sources	1996						1997					
		Mains tem length (cm)			No. of leaves			Mains tem length (cm)			No. of leaves		
		30	45	60	30	45	60	30	45	60	30	45	60
1	Sohage	44.00CD	84.88CDE	132.00BC	21.33EF	70.22B	118.33CD	44.33	96.00AB	140.66ABC	22.11FG	78.88C	129.77BC
2	El-Sharkia	50.00AB	94.77AB	142.88A	24.11AB	74.11A	122.11B	50.00AB	101.66A	148.44A	25.22BC	82.00B	125.00DE
3	Alexandria	52.22A	96.11A	143.55A	24.89A	75.66A	127.66a	52.00A	102.77A	143.33AB	26.77A	84.66A	135.33A
4	El-Menofia	46.11BC	89.11BC	136.88AB	22.66CD	65.66D	105.55E	46.00BCDE	92.00BC	136.55BCD	23.55DE	77.11D	109.11G
5	Kafr El-Sheikh	47.89ABC	93.66AB	135.33AB	23.22BC	67.66C	117.66D	47.55ABCD	102.78A	145.44A	24.00CD	72.89E	122.89E
6	Assiut	44.33CD	81.89DE	125.00CD	20.33FG	60.44F	92.22G	45.44BCDE	89.66BC	127.22E	21.44FG	62.22G	98.44H
7	New Valley	43.89CD	80.55EF	124.00DE	20.85FG	63.33E	99.55F	44.88CDE	85.44CD	130.11DE	21.22FG	72.77E	100.55H
8	El-Minia	44.33CD	86.44CDE	133.22B	21.77DE	70.66B	120.94BC	45.55BCDE	87.89C	133.66CDE	22.44EF	72.77E	126.89CD
9	El-Dakahlia	47.89ABC	90.55ABC	136.11AB	24.44A	66.11CD	107.77E	46.66BCDE	102.33A	144.78AB	25.89AB	69.33F	117.55F
10	Bani-Swif	47.66ABC	87.22CD	134.33B	21.89DE	67.44C	119.55CD	49.11ABCD	88.55C	141.22ABC	22.11FG	69.55F	122.89E
11	El-Behaira	50.66AB	93.66AB	138.11AB	24.55A	74.44A	125.89A	49.44ABC	99.00A	143.77AB	26.55AB	80.89B	132.66AB
12	Qena	40.55D	75.55F	116.55E	20.11G	59.00F	89.78H	41.89E	79.66D	116.44F	20.66G	61.89G	93.11I

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

As shown in the same table, the Alexandria and El-Behaira ecotypes gave the highest number of leaves per plant at most stages, while, the same ecotypes which gave shortest of main stem length too gave the lowest number of leaves.

In the third planting date which sowing in January in years 1997 and 1998, the behavior of these ecotypes for main stem length and number of leaves per plant at different stage of growth are presented in Table (4). There were significant differences in main stem length and number of leaves between them. The longest main stem length was found in Alexandria and El-Sharkia ecotypes at all stages, too the Alexandria and El-Behaira ecotypes gave the highest number of leaves, while the Qena ecotype gave the lowest value in this parameters.

The general conclusion from this results, the means of maximum and minimum temperatures during the all time growth and the source of ecotype were very important and stated factors for stronger growth of Snake cucumber plants. Accordingly, and the previously results, the twelve Snake cucumber ecotypes divide to three parts. The first part of Snake cucumber ecotypes, which collected from south sources as Qena, Sohag, Assiut, El-Minia and New Valley were needed to the high and fixity means of maximum and minimum temperature during the all time growth for the stronger growth (Fig. 2).

The second part of Snake cucumber ecotypes which collected from north sources as Alexandria, El-Behaira, El-Sharkia and El-Dakahlia were needed to the high temperature in start growth and depression by degrees in the means of maximum and minimum temperatures during the growth stage for the good vegetative growth (Fig. 3).

The third part was included on the Snake cucumber ecotypes from sources El-Menofia, Kafr El-Sheikh and Bani-Swif which were needed to moderate temperatures in start growth and increase by degrees of temperatures during the growth stages, therefore this sources from Snake cucumber ecotypes gave medial growing of vegetative growth in all planting dates under study. The depression of temperatures and wide range between maximum and minimum temperatures or drop the freeze is cause debility of growth for all snake cucumber ecotypes (Fig. 4). These results were in agreement with those found by Matlob and Kelly (1976) on Snake cucumber.

2. Earliness of flowering :

Number of days passed from planting date to first male and female flower appearance were indicative the earliness of yield. Usually, in all Snake cucumber ecotypes under study, the male flower took lower number of days to first flower appearance than did female one.

The earliness of flowering at twelve Snake cucumber ecotypes which sowing in June planting date were recorded in number of days to first flower formation in Table (5) data show the first male and female flower appeared earlier was after 22 and 28 days respectively in ecotypes of El-Sharkia, Alexandria, Qena, Assiut, E-Behaira and New Valley than the other ecotypes in both years.

Table (4) : Main stem length and number of leaves/plant at 30, 45 and 60 days from planting as affected by 12 Snake cucumber ecotypes grown in January plantings of 1997 and 1998.

Ecotypes No	Sources	1997						1998					
		Mains tem length (cm)			No of leaves			Mains tem length (cm)			No of leaves		
		30	45	60	30	45	60	30	45	60	30	45	60
1	Sohage	7 50EF	16 61EF	31 89D	1 55EF	4.89DE	14 67BC	8.61C	15.00D	34 55CDE	2 11D	5 77D	14.89C
2	El-Sharkia	11 50AB	22.61A	39.55B	3.33BC	6.33B	15.00BC	12.22A	24.16A	42.00AB	4 55A	7 11B	16 66B
3	Alexandria	11.72A	22.50A	41.72A	4.33A	7.44A	18.33A	12.55A	24.33A	43 27A	4 66A	8.22A	18.88A
4	El-Menofia	8.50D	19.05CD	32.39D	2 11D	6.33B	13.77CD	9.05C	18 44BCD	34 78CDE	3.55B	7.11B	16.22B
5	Kafr El-Sheikh	9 94C	19.72BC	35.44C	2.89C	6.44B	15.22B	10.72B	21.27ABC	37.44BCD	3 00C	6 78B	15 11C
6	Assiut	6.61G	14 16G	28.11E	1.55EF	4.11FG	11 89E	6 94D	15.89D	30.77EF	1.55E	4.77E	13.22D
7	New Valley	7 28F	15.94F	29 44E	1.55EF	4.86EF	13.66CD	8 16C	17 33CD	31.94DEF	2 11D	5 44D	13.66D
8	El-Minia	8 11DE	17.05F	32.27D	1.89DE	4.89DE	13.89CD	8.66C	18.66BCD	34.5CDE	2.22D	5.88CD	14.66C
9	El-Dakahlia	10 16DE	19.89BC	35.50C	3.22BC	6.22BC	15.44B	11 16B	21 63AB	32.72DEF	4 00B	6.77B	16 55B
10	Bani-Swif	8.16DE	18.27D	32.33D	2.00DE	5.55CD	13.33D	9.00C	20.00BC	34 66CDE	2 78C	6 44BC	14.55C
11	El-Behaira	10.89B	20.11B	36.28C	3.55B	7.66A	17 22A	12.16A	22.11AB	38.88ABC	4.55A	7.89A	18.22A
12	Qena	5.77H	14.22G	26.22F	1 22F	3.55G	10.66F	6.50D	14.61D	28.05F	1.22E	4.55E	11.77E

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

Table (5) : Days to first male and female flowers appearance in twelve ecotypes of Snake cucumber during the three planting dates.

Ecotypes sources	June planting date				September planting date				January planting date			
	1997		1998		1996		1997		1997		1998	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1. Sohage	23.3CD	29.7B	24.7BC	29.3B	33.7B	41 0C	32.3C	38.7C	77.0C	85.7B	78.0B	87.7B
2. El-Sharkia	21.3G	28.0CDE	22.7D	27.0C	29.7FG	35.7F	27.7FG	33 0G	74 3EF	81.3E	73.7EF	81.7E
3. Alexandria	21.7FG	29.0BC	23.0D	27 7C	29 3G	35.0F	27.3G	32.7G	73.7F	81.0E	72 3F	80.3E
4. El-Menofia	24.7AB	32.0A	25.7A	31.3A	30.0EFG	36.3EF	29.3E	36.3EF	77.0C	86.0C	75.7CD	84.0CD
5 Kafr El-Sheikh	23 3CD	28.0CDE	24.3BC	29.0B	30.7DEF	36.7EF	29.7E	35.3F	76.7Cd	85.3CD	75.3CDE	84.0CD
6. Assiut	22.3EF	27.7DE	22.7D	27.3C	34.0B	41.3BC	33.3B	41.7B	81.0A	91.0AB	80.3A	91.7A
7. New Valley	22 7DE	28.0CDE	23.0D	27.7C	34 7AB	42.7AB	33.7B	42.3AB	79.0B	89.3B	80.0A	91.7A
8. El-Minia	24.0BC	29.3B	23.7CD	29 0B	32.0C	39.0D	31.3D	38.0CD	77.3BC	86.0C	77.0BC	85.3C
9. El-Dakahlia	25 0A	31.7A	25.3AB	30.7A	31.0CDE	36.7EF	30.7D	37.0DE	75.7CDE	83.3DE	75.0DE	82.3DE
10. Bani-Swif	23.3CD	28.7BCD	24.7BC	29.3B	31 3CD	38.0DE	30.7D	36.7DEF	77 3BC	85.7CD	76.3BCD	85.0C
11 El-Behaira	22.3EF	28.0CDE	23.3D	27.7C	30.0EFG	36.0F	28.3F	33.7G	75.0DEF	82.0E	73.7EF	81.0E
12 Qena	22.0EFG	27.3E	22.7D	27.3C	35.3A	43.7A	34.7A	43.3A	82.0A	92.7A	81.0A	91.0A

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

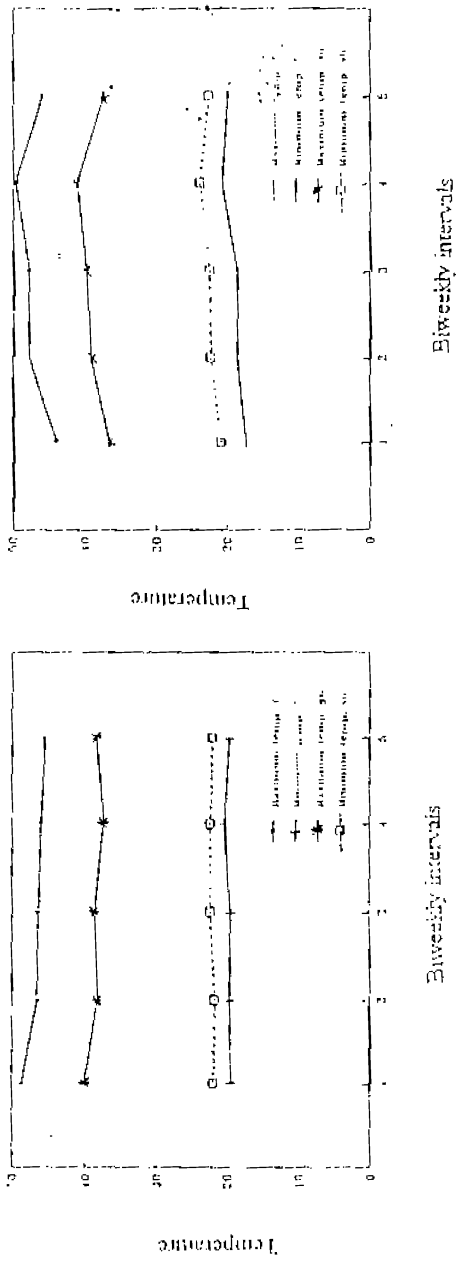

Fig. (2) Means of maximum and minimum air temperature in shade and sun (field), at biweekly intervals during the course of growth in june plantings 1997 and 1998.

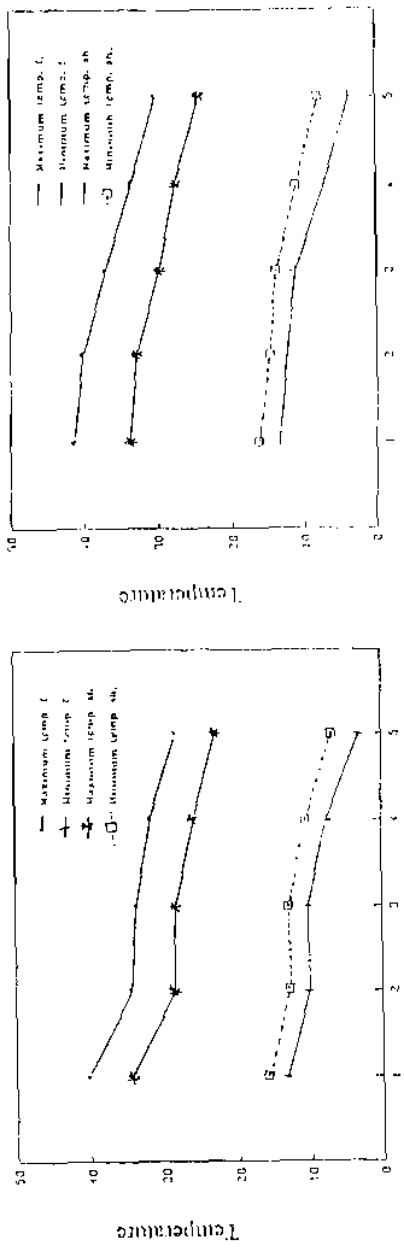

Fig. (3) Means of maximum and minimum air temperature in shade and sun (field), at biweekly intervals during the course of growth in sept. plantings 1996 and 1997.

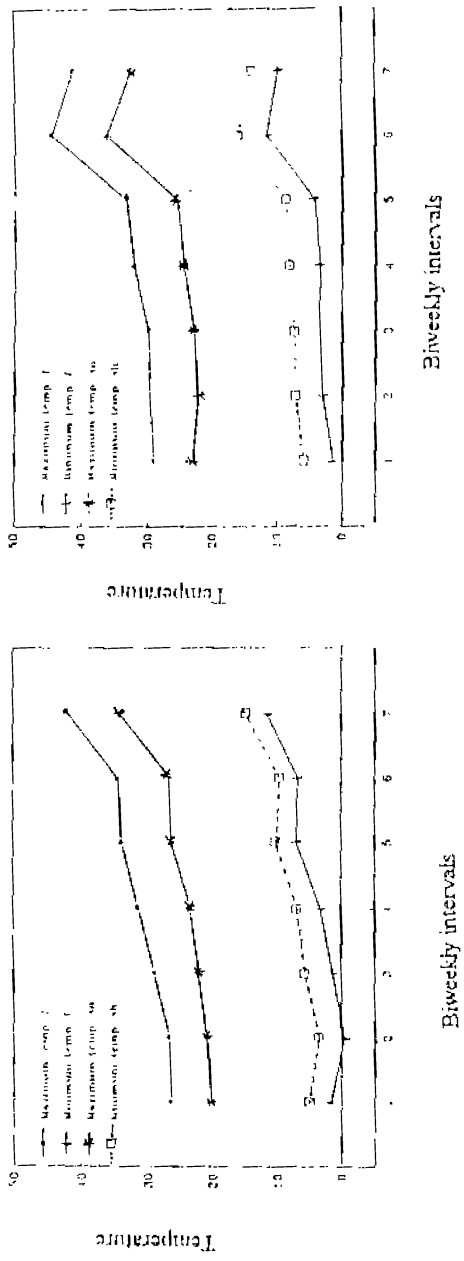

Fig., (4) Means of maximum and minimum air temperature in shade and sun (field), at biweekly intervals during the course of growth in jan. plantings 1997 and 1998

The latest ones were in El-Menofia and El-Dakhlia ecotypes, which was the first male and female flower appeared after 25 and 32 days *respectively*.

Concerning the earliness of flowering in September planting date are presented in the same table, which shown the first male and female flower appeared earlier was after 29 and 32 days respectively in Alexandria, El-Sharkia and El-Behaira ecotypes than in other ecotypes, while the latest was in Qena, New Valley and Assiut ecotypes, which was the first male and female flower appeared after 35 and 43 days respectively.

So, the earliness of male and female flower at this ecotypes, which sowing in Jan. planting date were recorded in the same table. The data show clearly, the all ecotypes in this planting date were lasted in first male and female flower appearance than the two privies planting date. In other words, the first male and female flower appearance earlier were after 73 and 81 days respectively by Alexandria, El-Sharkia, El-Behaira and El-Dakahlia ecotypes, while the latest ones were in Qena. Assiut and New Valley ecotypes, which was the first male and female flower appeared after 81 and 91 days respectively.

The general conclusion from this results, the ecotypes from sources, Alexandria, El-Sharkia, El-Behaira and El-Dakhalia were earliness of male and female flower in wide range from degree of temperatures, whereas this ecotypes gave earliness of flowering in all planting dates with the different means of maximum and minimum temperatures from date to other, while the ecotypes from sources, Qena, Assiut and New Valley gave earliness of male and female flower with high means of maximum and minimum temperatures in June planting date only. Although El-Menofia ecotypes was late of flowering with high temperature. As mentioned also by Matlob and Kelly (1973) on Snake cucumber, Nerson and Burger (1996) and Gu (1998) on melon.

3. Number of flowers and sex ratio :

As shown in Table (6) number of male and female flower per plant at different stage of growth during June planting date was significantly different among twelve Snake cucumber ecotypes. El-Minia, Sohage, Bani Swif and Kafr El-Sheikh produced the highest number of male and female flowers, which was the number of male and female flowers at most stages of growth about 390 – 400 and 19-22 respectively, during the two years of study. Whereas, El-Sharkia, El-Behaira, Alexandria and El-Menofia produced the lowest number of male flowers, while the ecotypes from El-Sharkia, El-Menofia, Qena and Assiut gave the lowest number of female flowers. The data show, after 30 days from planting all ecotypes gave the first female flower except the El-Menofia and El-Dakahlia ecotypes.

Concerning the sex ratio expressed as % female : male flowers after 60 days from planting during June planting date were shown in the same table, the highest sex ratio was produced by Alexandria, Sohage, El-Minia and Kafr El-Sheikh, while the lowest sex ratio was found in Qena, Assiut, New Valley and El-Sharkia ecotypes.

On the other hand, the number of male of female flowers per plant at these ecotypes in September planting date was stated in Table (7), the data shown, non appearance of female flowers after 30 days from planting on any ecotypes under study. In this stage the most ecotypes which collected from north sources gave the first male flower, while the ecotypes which collected from south sources non appearance of male flowers in this stage. After 60 days from planting the data shown, Kafr El-Sheikh, El-Behaira, Alexandria, El-Minia, Sohage and Bani Swif ecotypes produced the highest number of male and female flowers, while, El-Menofia, El-Sharkia, New Valley, Assiut and Qena ecotypes produced the lowest number of male and female flowers.

In the same table, the highest sex ratio was found in El-Behaira and Alexandria ecotypes, while the lowest sex ratio was pertain the El-Sharkia, El-Menofia and El-Dakhalia ecotypes.

However, there were no significant differences in sex ratio among El-Behaira, Alexandria, Qena, Assiut, Kafr El-Shaikh and New Valley ecotypes on one hand and among Bani-Swif, Sohage, El-Minia, El-Menofia and El-Dakahlia on the other hand.

In Jan. planting date no recording date on the number of male and female flower per plant at these ecotypes in this planting date, where as the all Snake cucumber ecotypes could not stand the unfavorable environmental conditions prevailing during their course of growth. So that none of the tested ecotypes could survive to produce flowers and set fruits in this planting date.

4. Fruit yield and number :

Fruit yield and number per feddan of 12 Snake cucumber ecotypes growing in June planting date is presented in Table (8). Significant differences in total yield was recorded among ecotypes in both years. Three ecotypes from south sources, Sohage, El-Minia and Bani Swif and one ecotype from north sources, Kafr El-Sheikh, out yielded than other ecotypes in both seasons. The least yield was produced by the other ecotypes from south sources, Qena, Assiut and New Valley, while the other ecotypes from El-Menofia, El-Sharkia, Alexandria, El-Dakahlia and El-Behaira gave medial fruit yield, which was the El-Menofia ecotype the best in this group.

On the other hand, the number of fruits per feddan as illustrated in the same table. The same ecotypes which gave significantly higher of fruit yield were surpassed too in number of fruits than other ecotypes in both years. El-Sharkia ecotype gave the lowest fruit number with no significant differences in most cases between this ecotype and Qena, El-Behaira, Alexandria and Assiut ecotypes.

Concerning, the fruit yield and number per feddan of these Snake cucumber ecotypes during Sept. planting date are presented in the same table, the data show, the higher yields and the lowest yields were produced by the same ecotype in June planting date with the different in amount of total yield between the two planting date only. The all Snake cucumber ecotypes gave the highest of total yield in June than Sept. planting date.

Table (6) : Number male and female flowers/plant and sex ratio (%) at 30, 45 and 60 days from planting as affected by 12 Snake cucumber ecotypes grown in June plantings of 1997 and 1998.

Ecotypes sources	1997							1998						
	No. of male flowers (M)			No. of female flowers (F)			Sex ratio F M %	No. of male flowers (M)			No. of female flowers (F)			Sex ratio F M %
	30	45	60	30	45	60		30	45	60	30	45	60	
1. Sohage	64.22A	227 55B	392.89B	1.11B	13 77AB	22.33AB	5.68A	65.33A	232.00B	395.22B	1 22BC	14.66A	21.33A	5.39A
2. El-Sharkia	52.22A	162.22J	323.00J	1.44AB	9.33F	15.89G	4.92BCD	52.33G	166 22J	324.11K	1.44ABC	10.33C	14 77E	4.55DEF
3. Alexandria	55.11DE	171 33I	334.00I	1.22AB	11.55CDE	19.00CDE	5.69A	54.00FG	171.11I	332.89J	1 11C	11.66C	17 33C	5.20ABC
4. El-Menofia	53.88DE	191.66G	343.11H	0.00C	10.77DEF	17.67DEFG	5.15ABC	53.33G	198.77F	351.44H	0.00D	11 33C	16 77CD	4.77CDEF
5. Kafr El-Sheikh	62.77AB	215.22D	383.88C	1 44AB	13.78AB	21.55AB	5.61A	63.44BC	217 00D	390.44C	1.44ABC	14.22A	20.44A	5.23AB
6. Assiut	56.89C	192 22G	360.00G	1 55AB	10.33eF	17 00EFG	4 72CD	59.78E	196.33G	369.66G	1.66AB	10.66C	16.11CDE	4.35FG
7. New Valley	61 89AB	207 11EF	376.77D	1.77A	11.55CDE	18.55CDEF	4.92BCD	62.66CD	207.89E	383.66D	1.77A	11 22C	16.66CD	4.39EFG
8. El-Minia	63 33A	231 88A	399 55A	1 33AB	13.66A	22.66A	5 67A	64 44AB	241.89A	405.55A	1.44ABC	14.55A	21 11A	5.19ABC
9. El-Dakahlia	55.66D	208.67E	368.33E	0.00C	12.44ABCD	19.22CD	5.21ABC	55.22F	208.00E	378.77E	0.33D	11 88BC	17.44C	4.60DEF
10. Bani-Swif	62.33AB	222.88C	390.55B	1.33AB	12.69ABC	20.55BC	5.26ABC	63 11BC	224.77C	396 00B	1.33ABC	13.33AB	19.008	4.79BCDE
11. El-Behaira	53.22E	177 44H	333.33I	1 22AB	11 78BCDE	18.11DEF	5 43AB	53.00G	182.22H	341.22I	1.22BC	11.22C	16.55CD	4.84BCD
12. Qena	60.44BC	205 67F	364 77F	1.55AB	10.33EF	16.44FG	4.51D	61 11DE	207.22E	376.44F	1.66AB	10.55C	15.33DE	4.06G

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

Table (7) : Number male and female flowers/plant and sex ratio (%) at 30, 45 and 60 days from planting as affected by 12 Snake cucumber ecotypes grown in September plantings of 1996 and 1997.

Ecotypes sources	1996							1997						
	No. of male flowers (M)			No. of female flowers (F)			Sex ratio F	No. of male flowers (M)			No. of female flowers (F)			Sex ratio F
	30	45	60	30	45	60	M %	30	45	60	30	45	60	M %
1. Sohage	0 00D	87.00A	228.78A	-	2.66CD	14.55A	6.35BCD	0.00C	88.22B	239.89A	-	2.89E	14.88AB	6.20CD
2. El-Sharkia	1.11AB	87.11A	182.55F	-	3.22BC	11.00D	6.02D	1.22A	69.44G	199.33E	-	3.44DE	11.00D	5.52E
3. Alexandria	1.22A	74.77C	208.33D	-	4.77A	15.44A	7.40A	1.44A	77.44E	219.55D	-	5.22A	15.89AB	7 24A
4. El-Menofia	0.67BC	69.77D	188.11E	-	3.22BC	11.55D	6 14CD	1.00A	72.55F	200.11E	-	3.44DE	11.88D	5.94CDE
5. Kafr El-Sheikh	0.00CD	81.11B	220.88B	-	4 00AB	15.55A	7 03AB	0.55B	82.66C	233.00B	-	4 44BC	16.22A	6.96AB
6. Assiut	0.00D	56.44f	151.44H	-	2.66CD	10.66D	7.04AB	0 00C	61.77H	163.88G	-	2.88E	10.89D	6.64ABC
7. New Valley	0.00D	59.89E	170.11G	-	2.66CD	11.66CD	6.85ABC	0.00C	60.89H	182.33F	-	2.89E	11.89D	6.52ABCD
8. El-Minia	0.00D	88.66A	229.11a	-	2.89C	14.66A	6.39BCD	0.00C	90.89A	240.55A	-	3.33DE	15.00AB	6.24CD
9. El-Dakahlia	0.00D	75.89C	213.77C	-	3.44BC	13.00BC	6.07CD	0.33BC	78.77DE	225 55C	-	3.66D	13.33C	5.91DE
10. Bani-Swif	0.00D	72.22C	220.22B	-	3.44BC	14.22AB	6.45BCD	0.22BC	80.11D	231.11B	-	4 00CD	14.55BC	6 29BCD
11. El-Behaira	1.00AB	70 33D	207.78D	-	4.44A	15.55A	7.48A	1.22A	70.99FG	219.44D	-	4.77AB	15.89AB	7.24A
12. Qena	0.00D	54.55f	144 77I	-	2 00D	10.33D	7.13AB	0.00C	56.11I	156.55H	-	2.11F	10.55D	6.74ABC

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

Table (8) : The effect of twelve Snake cucumber ecotypes on No. of fruits and total yield per feddan during the different planting date under study.

Ecotypes sources	June planting date				September planting date			
	1977		1998		1996		1997	
	No. of fruits/feddan thousands	Total yield/ feddan (ton)	No. of fruits/feddan thousands	Total yield/ feddan (ton)	No. of fruits/feddan thousands	Total yield/ feddan (ton)	No. of fruits/feddan thousands	Total yield/ feddan (ton)
1. Sohage	15.1A	6.6A	13.7A	6.4A	8.2AB	3.3A	8.7AB	3.5AB
2. El-Sharkia	9.7E	5 4CD	8.3E	5.1C	5.9Cd	2.7BC	5.8dE	3.0CD
3 Alexandria	10.6CDE	5.3De	9.3D	5.0C	8.3AB	2.7BC	8.6B	2.9D
4. El-Menofia	11.2CD	5.8BC	9.6D	5.5B	6.4CD	2.6C	6.7CD	2.9D
5. Kafr El-Sheikh	14.1AB	6.3AB	12.4B	6.0A	9.0A	3.3A	9.6A	3.6A
6. Assiut	10 7CDE	4.0F	9.3D	3.8EF	4.7EF	1.8D	5.1EF	2.0E
7. New Valley	11.8C	4.3F	10.4C	4.1E	5.5DE	2.0D	5.6EF	2.1E
8 El-Minia	15.0A	6.5A	13.5A	6.2A	8.0B	3.1AB	8 4B	3.2Bc
9. El-Dakahlia	11.9C	4.9E	10.5C	4.7D	6.6C	2.4C	6.8C	2.7D
10. Bani-Swif	13.5B	6.4A	11.8B	6.1A	8.1AB	3.2A	8.3B	3.3B
11. El-Behaira	10.2DE	4.9E	8.9DE	4.5D	7.8B	2.5C	8.4B	2.7D
12. Qena	10.3DE	3.8F	8.9DE	3.7F	4.3F	1.7D	4.8F	1 9E

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.
*No yield concern the Jan. planting date during years of study.

As regards, the number of fruits per feddan in Sept. planting date as illustrated in the same table, the data show, all Snake cucumber which gave the highest of fruit yield were too highest of number of fruits, as well as the Alexandria ecotype gave highest of fruit number with medial of fruit yield. Kafr El-Sheikh ecotype gave the highest of fruit number, while Qena and Assiut produced the lowest number in this date. The fruit number in Sept. planting date was less in all ecotypes compared with the other date in June.

The general conclusion, the highest of fruit yield and number in both planting dates June and Sept. were produced by Kafr El-Sheikh, Sohage, Bani Swif and El-Minia ecotypes, while the Qena and Assiut produced the lowest of fruit yield and number, the other ecotypes were between them. These results are in harmony with those reported by El-Lithy (1978) and Mohamed *et al.* (1989) on Snake cucumber and Novi (1990) and Kaya and Sen (1992) on melon and Mohamadin *et al.* (1993) on Cantaloupe and Varo *et al.* (1995) and Nerson and Burger (1996) and Gu (1998) on Melon.

5. Fruit characteristics :

In June planting data in Table (9) demonstrate that there were significant differences among the tested ecotypes in fruit characters in both seasons. El-Sharkia ecotype gave the highest of average fruit weight, while El-Dakahlia ecotype produced the least of average fruit weight in both seasons. Other ecotypes in descending order were Alexandria idem El-Behaira, Assiut, El-Menofia idem Qena, new Valley, El-Minia, Bani-Swif, Sohage and Kafr El-Sheikh.

On the other hand, the average fruit weight of these ecotypes during Sept. planting date are presented in the same table, the data shown, the same ecotypes which gave highest and least of average fruit weight in June planting date were itself in Sept. plantation. The same trend of other ecotypes for average fruit weight was symmetrical in June and Sept. planting dates.

Concerning, the fruit length and fruit diameter, data presented in the same table also indicate that ecotypes differed significantly in fruit length and fruit diameter in each season during. June and Sept, planting dates. The longest fruits were found in El-Minia and Sohage ecotypes, while, the least fruit lengths were recorded for El-Sharkia, Qena, New Valley and Assiut ecotypes in both seasons.

However, there was no significant difference in furit length between Sohage and Kafr El-Sheikh ecotypes on one side and between El-Behaira, El-Menofia, El-Dakahlia and Alexandria ecotypes, in most cases on the other side.

The same trend of all ecotypes for fruit length was found in Sept. planting date, although, the fruits of all ecotypes in June were longer than Sept. planting dates.

Data presented in the same table, also indicate that ecotypes differed significantly in fruit diameter in June and Sept. planting dates, the data show, fruit diameter in June planting date was wide in El-Sharkia ecotype and narrow in El-Dakahlia, El-Minia, Bani Swif, Sohage and Kafr El-Sheikh ecotypes. Qena, Alexandria and Assiut ecotypes were ranked second.

Table (9) : The effect of 12 Snake cucumber ecotypes on some fruit characteristics in June and September planting during years of study.

Ecotypes sources	June planting date								September planting date							
	1997				1998				1996				1997			
	Fruit weight (gm)	Fruit length (cm)	Fruit diameter (cm)	Shape index (L/D)	Fruit weight (gm)	Fruit length (cm)	Fruit diameter (cm)	Shape index (L/D)	Fruit weight (gm)	Fruit length (cm)	Fruit diameter (cm)	Shape index (L/D)	Fruit weight (gm)	Fruit length (cm)	Fruit diameter (cm)	Shape index (L/D)
1 Sohage	454 7F	37.8AB	5 1FG	7 4A	445.8F	36.7AB	5.1FG	7.1A	367 1GH	31 2AB	4.6E	6 8AB	385 9EF	31 8AB	4 6E	6 9A
2 El-Sharkia	657 0A	27 8H	7.6A	3 7F	648 7A	27.1F	7 4A	3.6F	568 5A	23.3F	6.6A	3.5D	585 3A	24.2F	6 7A	3.6C
3 Alexandria	566 4B	32.9DE	6.8BC	4.8CD	560 0B	32.3C	7.0B	4 6CD	479.3B	28 7CD	5.9B	4.9C	492.4B	29 3BCD	6.2B	4 8B
4. El-Manoria	511 2D	31 9EF	6.5D	5.0CD	502 2D	31 2CD	6.3DE	4 9C	416.0E	25.3EF	5.5C	4.6C	426.5D	27 0DE	5 6C	4 9B
5 Kafr El-Sheikh	423.3H	36 2BC	5.4F	6.7B	414 7H	35 5AB	5 4F	6.6B	355.7IJ	30 4ABC	4.3E	7 0A	365 1EF	31.5AB	4 5E	7 0A
6. Assiut	526 3C	30 4FG	6 6BCD	4.6DE	521.2C	29 9DE	6.6BC	4.4D	431.2D	24 7F	5.4C	4 6C	442.3CD	25 5EF	5 6C	4 6B
7 New Valley	677 0E	30 0FG	5.9E	5 1C	469.6E	29.5DE	6.2E	4 8C	393.3F	23.9F	5.0D	4.8C	381 3EF	25 0EF	5.2D	4 8B
8 El-Minia	463 4F	38 5A	5.2FG	7 4A	455.0F	37.5A	5.3FG	7 1A	383.6FG	31 4A	4.5E	6.9AB	392.6E	32 8A	4 6E	7 1A
9. El-Dakahlia	412 7I	33 1DE	5.0G	6.6B	407 5H	32.5C	5.1G	6 4B	346.0J	28 9C	4 4E	6.5B	357.3F	30.4ABC	4 5E	6 7A
10. Bani-Swif	439 1G	35.1CD	5.1G	6.9B	432 1G	34.8B	5.3FG	6.6B	365 9HI	29 4BC	4.6E	6.5B	375 5EF	30.6ABC	4 6E	6 7A
11 El-Behaira	559 7B	32 0EF	6.5CD	4 9CD	552.3B	31.6CD	6 7CD	4.8C	452.0C	27 0DE	5.8B	4 7C	465 1C	28 2CD	6.0B	4 7B
12 Qena	5.11 8D	28.5GH	6.9B	4.2E	501 7D	28.1EF	6.9B	4 1E	419.8DE	24 5F	5.3C	4.6C	430 1D	25.3EF	5 7C	4.5B

Means followed by the same letter or letters in each column are not significantly different from each other at 5 % level.

In Sept. planting date, the data show, the same ecotypes which gave wide and narrow diameter of fruits in June were itself in Sept. planting dates. This difference was in as much as the high temperature all time in June planting date, executed to the rapidity in growing of fruits there of in Sept planting date. The different between the two planting dates was in measurement only.

On the other hand, the fruit shape index L/D is clearly signed on stability the different between the length and diameter of fruits in each ecotype under any planting date, whereas, the increase or decrease in length of fruit there was increase or decrease is correspond in diameter of fruit for stability of fruit shape endex at each ecotype. This the conclusion was confirmed

by the obtained data presented in the same table, which showing the corresponded of fruit shape endex of each ecotype in June and Sept. planting date. These results are in harmony with those reported by (1988) on melon and Nerson and Burger (1996) on melon and Gu (1998) on melon.

REFERENCES

Abd-El-Bary, F.A. (1988). Evaluation of some new melon cultivars and its relation to powdery mildew disease resistance. M. Sc. Thesis, Faculty of Agric. Ain Shams Univ., Egypt. Pp. 63.

Davis, G.N.D.; U. Meinert, K.A. Kimble; L.G. Brown; D.K. May; G.E. May, L.C. Hendricks, R.W. Scheuerman, V.H. Schweers and D.N. Wright (1967). Developmental aspects or field to field variations in selected cantaloupe characteristics (*Cucumis melo* L. var. Zeticularus Naud). Higardia, 38 : p. 165 – 180.

El-Laithy, Y.T.E. (1978). A comparative study for cucumber and Snake cucumber. M. Sc. Thesis, Fac. Agric., El-Minia Univ., Egypt. P. 31, 35, pp. 70.

Gu, W. (1998). Evaluation of main horticultural characters and selection of melon varieties. Acta, Agriculture Shanghai , 14 (3): 41-45 China. (C.F. Plant Breed. Abst. 1999, Vol. 69, No. 1, 507).

Hasan, A.A.E.M. (1984). Cucurbits (in Arabic) First Edition p. 63, pp. 207, Egypt.

Kaya, N. and S.M. Sen (1992). Research on growing of some local melon cultivars in van. Yuzuncu Yil Universitesi Ziraat Fakultesi Dergisi Vol. 2 : No. 2, p. 41-42. Turkey. (C.F. Hort. Abst. 1994, Vol. 64, No. 2, 9966).

Matlob, A.N and W.C. Kelly (1973). The effect of high temperature on pollen tube growth of Snake melon and cucumber. J. Amer. Soc. Hort. Sci., 1973, 98 (3): 296-300.

Matlob, A.N and W.C. Kelly (1976). The effect of environmental conditions on the flowering of Snake cucumber and cucumber. J. Agric. Vol. II, No. 1, p. 27-30 Mosul. IRAQ.

Mohamed, E.S.; M.T.A. El-Habar and A.R.S. Mohamed (1989). Effect of planting date and plant spacing on growth and yield of Snake

cucumber Cv. Local (Mosulli). (C.F. Annals Agric. Sci., Fac. Agric., Ain Shams Univ., Cairo, Egypt. 1989, Vol. 34, No. 2, p. 1113-1121).

Mohamedin, S.E.A.; H.H. El-Deweny; M.H Mahmod and A.M. El-Gamal (1993). A comparison between some cantaloupe hybrids grown under protected cultivation. Egyptian Journal of Horticulture Vol. 18, No. 2, 151-160, Alexandria, Egypt.

Nerson, H. and Y. Burger (1996). Parental characteristics limit yield and quality of winter-grown Galia-type muskmelon. J. of Genetics and Breeding Vol. 50, No. 1, p. 61-66. (C.F. Plant Breed. Abst. 1997, Vol. 67, No. 4, 3899). Israel.

Novi, A. (1990). Regional comparison of some early melon cultivars and hybrids in the field. Buletini Shaken cave Bujqesore No. 1, p. 47-53 Tirana, Albania. (C.f. Hort. Abst. 1993. Vol. 63, No. 2, 1620).

Steel, R.G. and J.H. Torrie (1984). Principles and procedures of statistics. McGraw-Hill Book Company New York, pp. 194-230.

Varo, P.; M.C. Gomez; F. Contreras and A. Canaveras (1995). Trials with Galia melons in a greenhouse. Trailing cultivation. Horticulture, Revista de Hortalizas, Floresy Plants Ornamentals No. 109, p. 93-94, 96 Spain. (C.F. Hort. Abst. 1997, Vol. 67, No. 3, 2508).

دراسات على سلوك بعض الطرز البيئية للقثاء من مناطق مختلفة فى مصر خلال ثلاث مواعيد زراعة تحت ظروف اسيوط

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**** مركز البحوث الزراعية – معهد بحوث البساتين – بحوث الخضر**

اجرى هذا البحث بمزرعة قسم بحوث الخضر بكلية الزراعة جامعة اسيوط خلال موسمين 1997/1996 ، 1998/1997 فى ثلاث مواعيد للزراعة هى يونيو وسبتمبر ويناير لدراسة سلوك 12 طراز بيئى للقثاء تعدت الظروف البيئية لاسيوط وقد جمعت هذه الطرز البيئية من اماكن مختلفة فى مصر من الاسكندرية شمالا الى قنا جنوبا .

وقد اظهرت النتائج المتحصل عليها وجود اختلافات معنوية بين الطرز المختلفة فى جميع الصفات المختبرة كما ان هذه الطرز اظهرت ايضا بعض الاختلافات فى سلوكها خلال مواعيد الزراعة الثلاث . وتتلخص النتائج المتحصل عليها فيمايلى :

1- بخصوص الطرز المجمعة من مناطق الجنوب كان النمو جيد فى ميعادى الزراعة فى يونيو وسبتمبر وكان احسن الطرز فى النمو الخضرى التى جمعت من المنيا وسوهاج .

2- اظهرت الطرز التى جمعت من قنا واسيوط والوادى الجديد تبكير فى ظهور الازهار المؤنثة والمذكرة فى ميعاد يونيو – بينما كانت متأخرة فى ميعاد الزراعة فى سبتمبر.

3- اظهرت الطرز المجمعة من المنيا وسوهاج وبنى سويف زيادة فى كل من الازهار المذكرة والمؤنثة والنسبة الجنسية والمحصول الكلى عند وزن للغدان فى كلا ميعادى الزراعة فى يونيو وسبتمبر – بينما كانت الطرز من قنا واسيوط والوادى الجديد اقل فى الصفات السابقة فى كلا الميعادين .

4- بخصوص الطرز المجمعة من مناطق الشمال كان النمو الخضرى اكثر قوة فى ميعاد سبتمبر عن ميعاد الزراعة فى يونيو .

5- اظهرت الطرز المجمعة من مناطق الشرقية والاسكندرية وكفر الشيخ والبحيرة تبكير فى الازهار المذكرة والمؤنثة فى كلا ميعادى الزراعة فى يونيو وسبتمبر – بينما الطرز المجمعة من المنوفية والدقهلية كانت متأخرة فى ظهور الازهار المؤنثة والمذكرة فى كلا الميعادين .

6- بخصوص عدد الازهار المذكرة والمؤنثة والنسبة الجنسية كانت الطرز من كفر الشيخ والاسكندرية والبحيرة اعلى الطرز فى هذه الخواص – بينما كانت الطرز من الشرقية والمنوفية والدقهلية اقلها فى عدد الازهار المذكرة والمؤنثة والنسبة الجنسية .

7- اما بخصوص المحصول الكلى عند وزن للغدان كانت اعلى قيمة متحصل عليها من الطرز التى جمعت من كفر الشيخ والمنوفية فى ميعاد الزراعة فى يونيو ومن طراز كفر الشيخ فقط فى ميعاد الزراعة فى سبتمبر – بينما كانت طرز الشرقية والبحيرة اقل فى المحصول الكلى عند وورن بالنسبة للغدان فى كلا الميعادين .

8- اما بخصوص ميعاد الزراعة فى يناير فكانت جميع الطرز المجمعة من الجنوب والشمال اعطت نمو خضرى ضعيف وازهار قليلة ولم تصل الى مرحلة تكوين الثمار والمحصول شرودة الجو .