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FLOWERING IN RELATION TO YIELD, YIELD COMPONENTS AND FIBER PROPERTIES OF FOUR PROMISING EGYPTIAN COTTON GENOTYPES

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ABSTRACT

Four Egyptian promising cotton genotypes (G. barbadense L.) i.e. (L 97 derived from cross Giza 90 x Aust.), (Giza 90), (L 95 derived from cross [(G.83 x (G.75 x 5844) x G.80] and (Giza 80) and (Giza 80) were tested for their fruiting habit, aiming to evaluate their earliness, yield, its component characters and fiber properties during 2013 and 2014 seasons. The study showed that flowering started slowly and then increased gradually, reached the peak in the fifth week (4 to10 July) after 111 days from planting in all studied genotypes. The line 97 produced higher number of flowers/plant compared to other tested genotypes. The number of flowers/plant significantly different among genotypes. The periods in which each genotype produced 50 % of the total flowers/plant, existed after 31, 32, 33 and 34 days from the initiation of flowering in the four genotypes, respectively. The number of open bolls/plant showed the same trend of flowering in the tested genotypes. The best flowering weeks which produced high number of boll retentions and consequently open bolls/plant was in the fifth week (4-10 July) for all studied genotypes. The first 50 % of flowers produced 67 %, 64 %, 62 % and 59 % of the number of open bolls/plant, determining the yield/plant in the four genotypes, respectively. The obtained mean values of boll weight were not significant, while significant differences were found among the genotypes in seed cotton yield/plant. The genotype line 97 produced better seed cotton yield/plant compared to the other genotypes. The line 97 had the highest lint percentage followed by that of Giza 90. Line 97 showed the longest values for in staple length and strength. The obtained results clarify that L 97 was the earliest compared to the other genotypes. The fifth week showed the best values in the studied characters except micronaire reading.

Key words: *Cotton, Fiber Properties, Flowering, yield.*

INTRODUCTION

Cotton breeders are doing their best in developing new promising genotypes. The economic importance of cotton plant depends mainly on its potentiality for giving more flowering buds and in turn flowers, consequently open bolls. It is important to study the mode and time of flowering in Egyptian cotton genotypes to be cultivated in middle Egypt. The relation between the number of initiated flowers and the number of open bolls is considered one of the most important characters in breeding new cotton genotypes. The present work aimed to study the time and mode of flowering and its effect on different yield components and fiber properties in four promising cotton genotypes i.e. (Line 97), (Giza 90), (Line 95) and (Giza 80). These genotypes are related to medium-long varieties (>1 3/8 inch) in as attempt to through light about such genotypes and then planning breeding programe for improving its strains.

MATERIALS AND METHODS

The present study was carried out at the Experimental Farm of the Faculty of Agriculture, El-Fayoum University, during 2013 and 2014 seasons. Promising new Egyptian cotton genotypes (*G. barbadense* L.) i.e. (Line 97 derived from cross Giza 90 x Aust.), (Giza 90), (Line 95 derived from cross [(G.83 x (G.75 x 5844) x G.80] and (Giza 80) and (Giza 80) were obtained from the Cotton Research Institute, Agricultural Research, Center, Giza. The afore-mentioned genotypes were sown on 21 and 22 March in the first and second seasons, respectively. The experimental design was Randomized Complete Blocks with three replications was used. Each plot consisted of five ridges of 3 m long and 60 cm width. Hills were spaced 20 cm. apart.

Thinning to two plants per hill was done 30 days after planting. The recommended cultural practices applied did not differ from that applied for the region. Ten guarded plants in each plot were taken from the inner rows. The following data were recorded on each of these experimental plants:

1- Flower counts were made daily from the initiation of flowering along the season, and the dates were recorded on labeled flowers of each.
2- Mature bolls with the same date of flowering were picked individually and kept in separate paper bags. The seed cotton of bolls from weekly flowering dates was pooled, then ginned, and lint percentage of each weekly lot was estimated using the formula:

$$\text{Lint percentage} = \frac{\text{Weight of lint cotton}}{\text{Weight of seed cotton}} \times 100$$

3- The lint cotton of successive flowering weeks from each plot of the four genotypes were sent to Cotton Technology Research Division, of the Cotton Research Institute, Agricultural Research, Center, Giza for determining of some fiber properties. The following tests were made:

A-The upper-half mean length was determined by the digital fiberograph.
B- The tensile strength was measured by the stollometer.
C- The micronaire reading which indicated the fineness and maturity.

Data were statistically analyzed according to the procedures of ANOVA of the Randomized Complete Blocks design outlined by Snedecor and Cochran (1990). Test of homogeneity of the data was applied, and then combined analysis of variance was performed over the two seasons. Least significant difference (LSD) test at 5% level of probability was used to compare the genotypes means.

RESULTS AND DISCUSSION

Combined data presented in Table (1) show the values of the number of flowers/plant, the number of open bolls/plant and the percentage of boll formation (retention) in the studied genotypes during the flowering weeks.

1- The nature of flowering in the studied genotypes:

The period of flower formations (retentions) in the four studied promising genotypes, extended eleven weeks, started from 6 June to 21 August. Flowering started slowly in the first week (6 to 12/6) and gradually increased from the beginning of the second week (13 to 19/6) until the fifth week of flowering. The increment reached its maximum after 111 days from planting, then the rate of flowering decreased gradually till the last week of flowering (15 to 21/8). The statistical analysis indicated significant differences among the genotypes for the number of flowers/plant and flowering weeks Table (1). The line 97 produced higher number of flowers/plant compared to the other tested genotypes. (The date in which each studied genotype gave 50 % of its total number of flowers during the growing seasons, was taken as an indication of earliness under the experimental conditions). In this respect, the four studied genotypes, reached the percentage of 50 % of the number of flowers/plant after 31 to 34 days from the start of flowering (Fig. 1). The line 97 was the earliest, reached the percentage of 50 % after 31days from the start of flowering, followed by Giza 90 (after 32 days). While, genotype (Giza 80) was the latest. These results are in complete confirmation with those of Badr *et al*. (2001), Haneef *et al.* (2001), Rehana *et al.* (2001), Badr (2003), El-Adly (2003), Rehmat *et al.* (2003), Sawan *et al.* (2005), Amir *et al.* (2008), Sawan (2009), Sawan *et al.* (2010), Ismail *et al.* (2012), Dhamayanthi and Rathinavel (2013) and Sawan *et al.* (2014).

Table 1. Mean values of the number of flowers/plant, the number of open bolls/plant and the percentage of boll formation (retention) in the four cotton genotypes at successive weeks of flowering (combined data over 2013 and 2014 seasons).

No.	Weeks of flowering	Number of flowers/plant					Number of open bolls/plant					Percentage boll formation (retention)				
		Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05
1	6/6-12/6	1.57	1.50	1.23	1.53	N.S	1.02	0.95	0.79	0.98	N.S	65	63	64	64	N.S
2	13/6-19/6	4.87	2.83	2.63	2.90	1.23	3.21	1.90	1.71	1.97	1.09	66	67	65	68	N.S
3	20/6-26/6	7.07	4.17	4.57	5.40	2.15	4.67	2.88	2.97	3.51	1.37	66	69	65	65	N.S
4	27/6-3/7	7.67	5.67	6.07	6.90	1.15	4.37	3.23	4.01	4.55	0.55	57	57	66	66	N.S
5	4/7-10/7	10.8	7.67	8.07	8.87	1.76	7.99	5.52	5.65	6.03	1.17	74	72	70	68	N.S
6	11/7-17/7	7.10	6.17	6.57	7.43	N.S	4.62	4.07	3.68	4.16	N.S	65	66	56	56	N.S
7	18/7-24/7	4.43	4.33	4.73	5.90	N.S	2.92	2.90	2.89	3.72	N.S	66	67	61	63	N.S
8	25/7-31/7	2.90	1.63	2.30	2.77	0.54	1.94	1.12	1.47	1.77	N.S	67	69	64	64	N.S
9	1/8-7/8	2.03	1.170	1.90	2.20	0.62	1.30	0.75	1.27	1.39	0.32	64	64	67	63	N.S
10	8/8-14/8	1.20	0.70	0.70	1.60	0.35	0.77	0.47	0.44	1.01	N.S.	64	67	63	63	N.S
11	15/8-21/8	0.73	0.37	0.53	1.10	0.43	0.49	0.22	0.36	0.70	N.S.	67	59	68	64	N.S
Mean		50.37	36.21	39.30	46.60	4.57	33.30	24.01	25.23	29.80	2.59	66	66	64	64	N.S

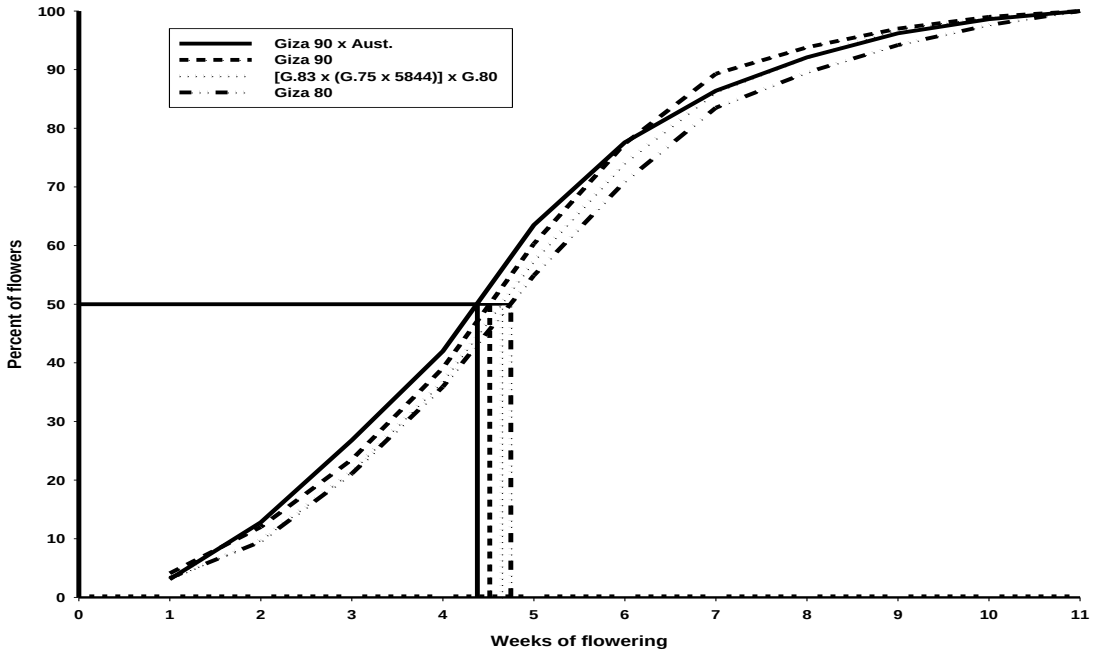

Fig. 1. Curves of cumulative number of flowers/plant produced along successive weeks in the four tested genotypes, 50 % flowering dates are assigned by ordinate lines (average of combined data over 2013 and 2014 seasons).

2- Number of open boll/plant:

Significant differences existed among the studied genotypes concerning the character in the forward weeks (2, 3, 4 and 5), while the number of open bolls/plant was approximately the same at the rest of flowering weeks. The line 97 showed better values in this respect. The best flowering week which produced high number of open bolls/plant was the fifth (4 to10 July) for all the studied genotypes (Table 1). The curves of accumulative percentages of open bolls/plant are produced from the successive flowering weeks. Fig. (2) shows the percentages of open bolls produced from the first 50 % of flowers for the studied genotypes. These percentages were 67 %, 64 %, 62 % and 59 % for L 97, G 90, L 95 and G 80, respectively (Fig. 2). These results are supported by Jones *et al.* (1996), Rabadia *et al.* (2006) and Sawan *et al.* (2010).

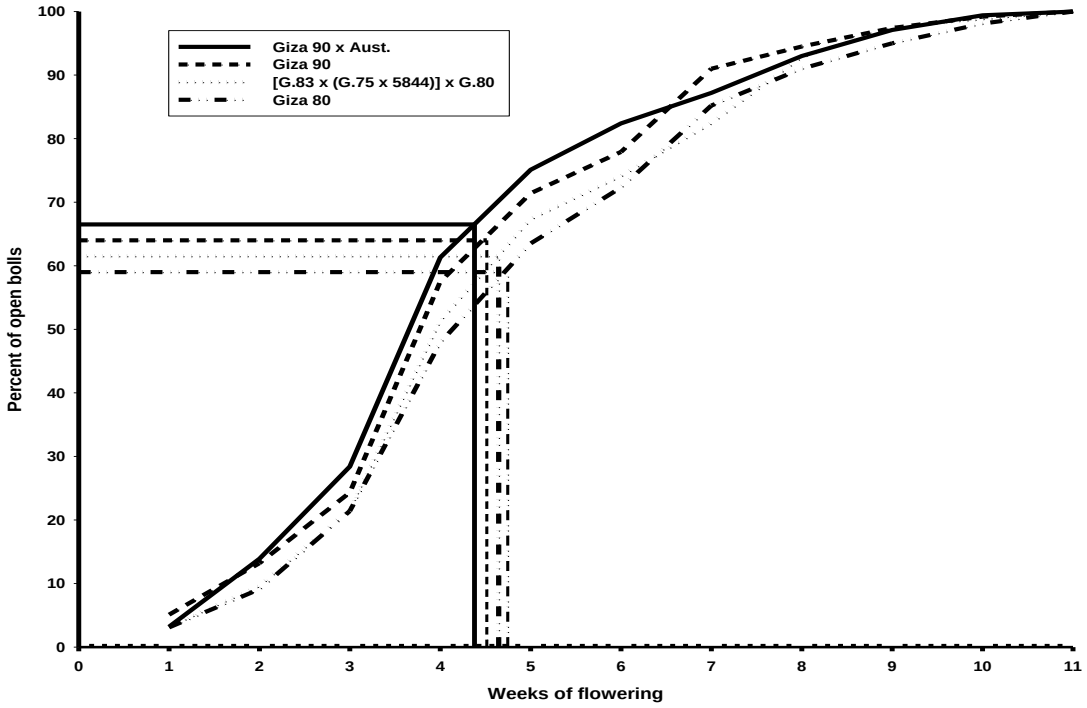

Fig. 2. Curves of cumulative number of open bolls/plant produced from successive weeks of flowering in the four tested genotypes, percentages of bolls produced from the first 50 % of the total flowers (average of combined data over 2013 and 2014 seasons).

3- Percentage of boll formation (retentions):

Table (1) included the average values of boll formations (retentions) in each studied genotype. The character values were obtained by dividing the number of open bolls x 100 by the number of flowers produced in each week. It was clear that the tested genotypes did not show any significant difference in boll retention. During the flowering period which extended eleven weeks, the best week which produced high percentage of boll retentions, was the fifth week (4 to 10 July), where the percentage was between 68 to 74 % in the studied genotypes. The results are in accordance with the earlier findings of Sawan *et al.* (1999), Kausar *et al.* (2010) and Dhamayanthi and Rathinavel (2013).

Table (2) shows the values of boll weight, seed cotton yield/plant and lint percentage in the studied genotypes during the flowering weeks.

4- Boll weight (g):

Mean values of boll weight in the studied genotypes did not attain the level of significance (Table 2). Also, no significant differences were found between the mean values of boll weight in each genotype along the successive flowering weeks. While, reduction was observed in the value of the character in the last flowering weeks. This trend of inferiority of the late produced bolls supports the previous findings of Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Rabadia *et al.* (2006).

5- Seed cotton yield/plant (g):

The mean performances of the tested genotypes for the concerned character are shown in Table (2). The genotypes differed significantly in seed cotton yield/plant. It is obvious that the line 97 gave the highest value (23.97 g) of seed cotton/plant and showed positive significant differences compared with the other tested genotypes. Seed cotton yield/plant gradually increased in the studied genotypes in the successive first four weeks of flowering and increased extensively in the fifth week. While, the obtained values for the character gradually decreased in the following flowering weeks, extensively in the last weeks of flowering (25 July to 21 August). This trend was similar in the four tested genotypes. It was obvious from (Fig. 3) that the date in which each genotype gave 50 % of the number of flowers/plant during the growing season and considered as an ideation of earliness, produced 65 % from seed cotton yield in the line 97. While, the date of earliness produced from 56 % to 62 % from seed cotton yield/plant in the other three tested genotypes. These results are supported by Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Rabadia *et al.* (2006).

6- Lint percentage:

Statistical analysis for lint percentage character of the four tested genotypes shows that the line 97 gave the highest values and possessed significant differences relative to the other genotypes. Lint percentage was affected by flowers produced along successive weeks. The character showed high significant values in the fifth week of flowering. While, the last weeks of flowering showed lower values. This trend was obvious in all the tested genotypes. The decline of lint percentage towards the end of the season was likewise previously stated by Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Rabadia *et al.* (2006).

Table (3) shows the values of lint length, lint strength and micronaire reading in the studied genotypes during the flowering weeks.

7- Lint length (mm):

The mean of lint length assigned to successive flowering dates in the four cotton genotypes are given in Table (3). The line 97 gave the higher value in lint length compared to the other genotypes. Significant differences existed among the studied genotypes in this respect. The fifth week of flowering was the best week which recorded high lint length in the studied genotypes. The previous investigation of Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Zhao *et al.* (2012) claimed significant decline of lint length in later bolls.

8- Lint strength (g/tex):

The mean strength values of lint issued from successive flowering weeks in the four cotton genotypes are given in Table (3). It is clear that the higher value observed in line 97. The statistical analysis revealed significant difference between genotypes. The value of this character was higher in the fifth week of flowering. A contradicting result was reported by Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Zhao *et al.* (2012) stated significant decline of lint strength with the advance of flowering season.

9- Micronaire reading:

The mean values of micronaire reading of lint cotton issued from cotton picked from successive flowering weeks in the four cotton genotypes are given in Table (3). Line 97 was more fineness compared to the other genotypes. Mean micronare reading of the ninth flowering week was lower all other weeks indicating its more fineness. This trend is due to incomplete maturity which might be considered undesirable as compared with the earlier weeks. Similarly, **Jones *et al.* (1996), Abo El-Zahab *et al.* (2003) and Zhao *et al.* (2012)** stated significant superior fineness in late bolls.

Table 2. Mean values of boll weight, seed cotton yield/plant and lint percentage in the four cotton genotypes at successive weeks of flowering (combined data over 2013 and 2014 seasons).

No.	Weeks of flowering	Boll weight (g)					Seed cotton yield/plant (g)					Lint percentage				
		Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05
1	6/6-12/6	2.9	2.7	2.5	2.3	N.S.	2.96	2.57	1.98	2.25	1.14	35.2	34.8	31.5	31.2	1.7
2	13/6-19/6	2.8	2.5	2.4	2.6	N.S.	8.99	4.75	4.10	5.12	2.35	37.5	35.7	34.2	33.1	2.3
3	20/6-26/6	2.6	2.4	2.7	2.4	N.S.	12.14	6.91	8.02	8.42	2.57	38.7	36.5	35.1	34.8	1.3
4	27/6-3/7	2.2	2.3	2.2	2.5	N.S.	9.61	7.43	8.82	11.38	N.S.	37.2	36.1	36.1	35.0	0.9
5	4/7-10/7	3.0	2.9	2.8	2.7	N.S.	23.97	16.01	15.82	16.28	7.71	39.2	37.8	36.6	35.5	3.1
6	11/7-17/7	2.5	2.2	2.0	1.9	N.S.	11.55	8.95	7.36	7.90	N.S.	38.1	37.3	35.3	34.2	2.1
7	18/7-24/7	2.9	2.6	2.6	2.1	N.S.	8.47	7.54	7.51	7.81	2.59	36.7	36.9	34.7	33.7	1.7
8	25/7-31/7	2.7	2.8	2.2	2.2	N.S.	5.24	3.14	3.23	3.89	1.37	36.3	35.2	33.2	32.6	1.3
9	1/8-7/8	2.5	2.3	2.3	2.0	N.S.	3.25	1.73	2.92	2.78	N.S.	35.8	34.1	33.8	32.1	1.9
10	8/8-14/8	2.4	2.8	2.4	2.2	N.S.	1.85	1.32	1.06	2.22	0.75	34.7	33.7	31.1	31.8	0.7
11	15/8-21/8	2.3	2.4	2.1	2.1	N.S.	1.13	0.53	0.76	1.47	N.S.	34.2	33.2	30.7	30.7	1.5
Mean		2.6	2.5	2.4	2.3	N.S.	86.58	60.03	60.55	68.54	21.3	36.7	35.6	33.8	33.2	2.7

Table 3. Mean values of lint length (mm), lint strength (g/tex) and micronaire reading in the four cotton genotypes at successive weeks of flowering (combined data over 2013 and 2014 seasons).

No.	Weeks of flowering	Lint length (mm)					Lint strength (g/tex)					Micronaire reading				
		Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05	Line 97	Giza 90	Line 95	Giza 80	L.S.D. 0.05
1	6/6-12/6	34.4	34.0	30.7	30.4	1.4	52.2	51.8	48.5	48.2	2.5	3.5	4.0	3.8	4.4	N.S.
2	13/6-19/6	36.7	34.9	33.4	32.3	2.3	54.5	52.7	51.2	50.1	2.7	4.1	3.8	4.4	3.9	N.S.
3	20/6-26/6	37.9	35.7	34.3	34.0	2.7	55.7	53.5	52.1	51.8	3.0	3.9	4.4	4.0	4.1	N.S.
4	27/6-3/7	36.4	35.3	35.3	34.2	N.S.	54.2	53.1	53.1	52.0	N.S.	3.5	3.6	3.5	4.3	N.S.
5	4/7-10/7	38.4	37.0	35.8	34.7	3.1	56.2	54.8	53.6	52.5	3.1	3.3	4.2	4.1	4.0	N.S.
6	11/7-17/7	37.3	36.5	34.5	33.4	2.9	55.1	54.3	52.3	51.2	2.9	3.1	3.5	4.0	4.4	0.95
7	18/7-24/7	35.9	36.1	33.9	32.9	N.S.	53.7	53.9	51.7	50.7	N.S.	4.2	4.0	3.9	4.2	N.S.
8	25/7-31/7	35.5	34.4	32.4	31.8	3.3	53.3	52.2	50.2	49.6	1.5	3.3	4.1	4.4	3.5	0.83
9	1/8-7/8	35.0	33.3	33.0	31.3	3.2	52.8	51.1	50.8	49.1	N.S.	2.7	3.0	3.3	3.4	0.45
10	8/8-14/8	33.9	32.9	30.3	31.0	N.S.	51.7	50.7	48.1	48.8	N.S.	3.7	4.1	3.7	3.5	N.S.
11	15/8-21/8	33.4	32.4	29.9	29.9	2.8	51.2	50.2	47.7	47.7	2.3	3.3	4.0	4.3	4.4	0.75
Mean		35.9	34.8	33.0	32.4	2.6	53.7	52.6	50.8	50.2	1.9	3.5	3.9	4.0	4.1	N.S.

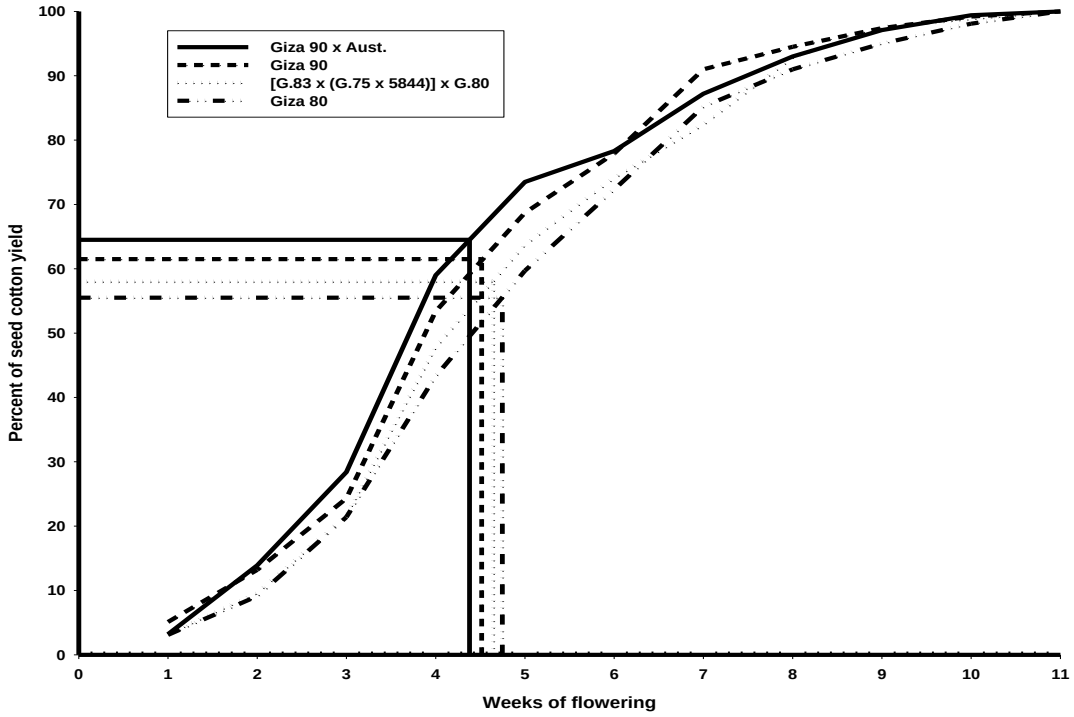

Fig. 3. Curves of cumulative percentages of seed cotton yield/plant produced from flowers of the successive weeks in four tested genotypes, percentages of seed cotton yield produced from 50 % of the first flowers (average of combined data over 2013 and 2014 seasons).

CONCLUSION

The accumulative flowering curves revealed that the first 50 % of flowers i.e. the early initiated flowers and bolls are of great importance in determining the seed cotton yield/plant of the different tested genotypes. The promising line 97 was found to excell the other genotypes with regard to both yield and fiber quality. Accordingly, it is recommended to grow the aforementioned promising hybrid in middle Egypt.

REFFERENCES

Abo El-Zahab, A. A.; H. Y. Awad and K. M A. Baker (2003). Comparative performances of Pima and Egyptian cotton cultivars: I. Cotton yield and its components, earliness in maturity and fiber properties. Egypt, J Agric. Res. 81(1): 273-254.

Amir, S., F. M. Azhar and L. A. kahan (2008). Assessment of earliness in *Gossypium hirsutum* L. Pak. J. Sci. 45(1): 80:87.

Badr, S. S. M. (2003). Evaluation of some Egyptian cotton varieties by the yield and seven methods of earliness of crop maturity measurements. Egypt. J. Agric. Res. 81(2) : 671-687.

Badr, S. S. M., I. S. M. Hassan and Laila, M. A. Abdel-Rahman (2001). Comparative study on flowering, yield components and lint properties of some new Egyptian cotton cultivars. J. Agric. Sci. Mansoura 26 (6): 3473-3486.

Dhamayanthi, K. P.M. and K. Rathinavel (2013). Studies on flowering behavior and fruiting pattern of early maturing germplasm lines of Egyptian cotton (*G. barbadense* L.). Cotton Res. J. 5(2):150-157.

El-Adly, H. H. (2003). Earliness study on new Egyptian cotton genotypes. Egypt. J. Agric. Res. 81(4): 1783-1796.

Haneef, M., M. Arshad, S. Haidar, M., Afzal, M. Rashid and Z. Oamar (2001). The flowering and fruiting behavior of some commercial varieties of cotton (*G. hirsutum* L.). Pakis. J. of Bio. Sci. 4 (8): 940-944.

Ismail, F. M., M. D. H. Dewdar and A. H. A. Mahdi (2012). Multiple regression and correlation analysis of earliness and potential traits of five cotton varieties (*G. barbadense* L.) grown under different environments. Bull. Fac. Agric., Cairo Univ. 63 (4): 386-395.

Jones, M. A., J. R. Wells and D. S. Guthrie (1996). Cotton response to seasonal patterns of flower removal: I. Yield and fiber quality. Crop Sci. 36: 633-638.

Kausar, M. N. S.; S. A. Malik, N. Murtaza, I. Ullah, H. Rahman and U. Younis (2010). Early and rapid flowering coupled with shorter boll maturation period offers selection criteria for early crop maturity in Upland cotton . Pak. J. Bot. 42(5): 3569-3576.

Rabadia, V. S., V. S. Thaker and Y. D. Singh (2006). Influence of flowering time and fruiting pattern on yield components of three cotton genotypes. Plant Breed. & Seed Sci. 53: 17-25.

Rehana, A., A. R. Soomro and M. A. Chang (2001). Measurement of earliness in Upland cotton. Pak. J. Biol. Sci. 4(4): 462-463.

Rehmat, A., M. Arshad, M. I. Khan and M. Afzal (2003). Study of earliness in commercial cotton (*G. hirsutum* L) genotypes. Pak. J. Res. Sci. 14(2): 153-157.

Sawan, Z. M. (2009). Response of flower and boll development to climatic factors in Egyptian cotton (*Gossypium. barbadense* L.). Climate Change 97: 553-591.

Sawan, Z. M. (2014). Statistical study: Nature relationship between climatic variables prevailing prior to flowering or subsequent to boll setting and cotton production. Natural Science 6: 583-596.

Sawan, Z. M., Li, H.N. and W. L Mc Cuistions (1999) Effect of climatic factors during the development periods of flowering and boll formation on the production in Egyptian cotton (*Gossypium barbadense* L.). Agron., 1: 435-443.

Sawan, Z. M., Li, H.N. and W. L. Mc Cuistions (2005). Response of flower and boll development to climatic factors before and after a thesis in Egyptian cotton (*Gossypium. barbadense* L.). Climate Research 29: 167-179.

Sawan, Z. M., Li, H. N., W. L. Mc Cuistions, and R. J. Foote (2010). Egyptian cotton (*Gossypium barbadense* L.) flower and boll production as affected by climatic factors and soil moisture status. Theoretical and Applied Climatology 99: 217-227.

Snedecor, G. W. and W. G. Cochran (1990). Statistical Methods 8th Ed. Iowa State Univ. Press Ames, Iowa, U.S.A.

Zhao, W., Y. Wang, Z. Zhou, Y. Meng, B. Chen and D. M. Oosterhuis (2012). Effect of nitrogen rates and flowering dates on fiber quality of cotton (*Gossypium hirsutum* L.). American Journal of Experimental Agriculture 2(2): 133-159.

التزهير وعلاقته بالمحصول ومكوناته وصفات التيلة في أربعة تراكيب وراثية واعدة من القطن المصري

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استخدم في هذا البحث أربعة تراكيب وراثية واعدة من القطن المصري وهي (سلالة رقم 97) ، (جيزة 90) ، (سلالة رقم 95) ، (جيزة 80) زرعت بمزرعة الكلية بدار الرماد بالفيوم خلال موسمي 2013 ، 2014 في تصميم القطع الكاملة العشوائية في ثلاثة مكررات. وكان الهدف دراسة التزهير في هذة التراكيب الوراثية وعلاقته بالمحصول ومكوناته وصفات التيلة.

- بدأ التزهير بطيئا ثم ازداد تدريجيا إلي أن وصل إلي قمتة العظمي في الأسبوع الخامس بعد حوالي 111 يوم من الزراعة للتراكيب الوراثية الأربعة ، وأعطت السلالة 97 أعلي عدد من الأزهار للنبات مقارنة بالتراكيب الوراثية الأخري ، اختلف عدد الأزهار للنبات معنويا بين التراكيب الوراثية.
- كانت المدة اللازمة لتكوين 50 % من الازهار 31 ، 32 ، 33 ، 34 يوما علي التوالي للتراكيب الوراثية الأربعة.
- إختلف عدد اللوز المتفتح علي النبات معنويا بين التراكيب الوراثية ، أعطت السلالة 97 أعلي عدد من اللوز المتفتح علي النبات خلال أسابيع التزهير المتتالية ، كان الأسبوع الخامس أفضل أسابيع التزهيرمن حيث عدد اللوز المتفتح علي النبات مقارنة بأسابيع التزهيرالأخري.
- أنتج اللوز المتكون من 50 % من الازهار الاولي للنبات 67 % 64، % ،62 % ، 59 % من عدد اللوز المتفتح علي النبات للتراكيب الوراثية الأربعة علي التوالي.
- لم تختلف نسبة اللوز المتفتح معنويا بين التراكيب الوراثية ، وكانت أعلي نسبة لتفتح اللوز في الأسبوع الخامس ، وبلغت نسبة اللوز المتفتح من 50 % من الازهار الاولي 74 % ، 72 % ، 70 % ، 68 % للتراكيب الوراثية تحت الدراسة علي الترتيب.
- كان متوسط وزن اللوزة الأكبر في السلالة رقم 97 والأصغر للتركيب الوراثي جيزة 80 ، ولم يختلف متوسط وزن اللوزة معنويا بين التراكيب الوراثية.
- إختلفت التراكيب الوراثية معنويا في محصول النبات من القطن الزهر ، وأعطت السلالة 97 أعلي محصول من القطن الزهر للنبات ، ومحصول النبات المتكون من 50 % من الازهار الاولي كان 65 % ، 62 % ، 58 % ، 56 % من محصول النبات من القطن الزهر للتراكيب الوراثية الأربعة علي التوالي.
- كان تصافـي الحليج أعلـــي في السلالة 97 يليه جيزة 90 يليه السلالة 95 يليه جيزة 80 بفروق معنوية عالية.

- كان قياس طول التيلة بالفيبروجراف 35.9 ، 34.8 ، 33.0 ، 32.4 ملليمتر للتراكيب الوراثية الأربعة علي التوالي - وكانت السلالة 97 الأطول تيلة بفرق معنوي عن بقية التراكيب الوراثية - وأعطي الأسبوع الخامس أطول تيلة مقارنة بأسابيع التزهيرالأخري.
- أعطت متانة التيلة مقاسة بجهاز الأستيلوميتر قيماً 53.7 ، 52.6 ، 50.8 ، 50.2 جرام/تكس للتراكيب الوراثية الأربعة علي التوالي - وكانت قيمة السلالة رقم 97 عالية مقارنة بالتراكيب الوراثية الأخري - وكانت قيم الأسبوع الخامس أكثر متانة مقارنة بقيم أسابيع التزهيرالأخري.
- سجلت نعومة التيلة مقاسة بجهاز الميكرونير قيماً 3.5 ، 3.9 ، 4.0 ، 4.1 للتراكيب الوراثية الأربعة علي التوالي - وكانت السلالة 97 أكثر نعومة عن بقية التراكيب الوراثية الأخري (القيمة الأقل تدل علي النعومة) - وكانت أقصي نعومة في الأسبوع التاسع ويمكن أن يعزي ذلك لعدم تمام النضج.

يتضح مما سبق أن السلالة 97 هي أبكر التراكيب الوراثية جميعا ، وأن أفضل أسابيع التزهيرهو الأسبوع الخامس في جميع الصفات المدروسة عدا صفة قراءة الميكرونير.