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EVALAUTION OF SOME EGYPTIAN LONG STAPLE COTTON GENOTYPES UNDER DIFFERENT ENVIRONMENTS

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ABSTRACT: ***Ten Egyptian cotton genotypes belong to long staple cotton were evaluated during the two successive seasons at five locations represented Middle and Upper Egypt (Beni Souef - El-Fayuom – Assiut – Sohag and Luxor) to estimate the effects of genotypes, locations, years and the interaction between them. The effects of genotypes and environments were significant for all the traits studied, except Upper half mean (UHM) which recorded significant difference mean squares only for locations. Years effects were highly significant for all the traits studied, except for seed index (SI), lint index (LI), Micronair reading (Mic) and Yarn strength (Y.St). However, the first order interaction genotype x environments (G x L) was significant and highly significant for all the traits studied, except for lint percentage (L %). The second order interactions genotypes x environments x years interaction (G x L x Y) were highly significant for all the traits studied, except for Micronair reading (Mic). All cotton genotypes produced seed cotton yield (SCY) and lint yield (LY) compared with Giza 90 and Giza 80. The variation between traits from environment to another may be due to the differences in climatical conditions from year to another.***

Key words: ***Evalaution, cotton, genotypes***

INTRODUCTION

Cotton yield and its components are great interest to the cotton producer. Cotton area of cultivation extends longitudinally about 1000 Km from north to south of Egypt. Therefore the environmental effect is different from one environment to another and from season to season in this extended area. Evaluation process of the cotton genotypes over different environments and over seasons is of great importance to the cotton breeders. It is essential to develop new varieties characterized by high yielding abilities and better fiber qualities to replace old ones or these which had deteriorated, therefore breeder should test new cotton genotypes under different environments.ie seasons and locations.

Several workers studied the performance of cotton varieties under different environments, Hassan (2000) reported that the first order interaction of genotypes x years was statistically significant for all traits studied, except seed index. The genotypes x locations interaction were highly significant for all traits. The second order interaction (Genotype x location x year) was found to be highly significant for lint yield and boll weight. Mohamed *et al*. (2005) showed highly significant genotype x environment interaction for boll weight, seed cotton yield and lint yield and it was significant for lint percentage. El-Adly *et al* (2008) indicated that the genotypes x environments interaction were found to be significant for yield components and fiber properties, except length uniformity ratio was insignificant. Campbell *et al*. (2012) found that the genotypes x environments interaction for lint percentage, lint yield, fiber length and

fiber strength were significant. Navdeep *et al*. (2016) determined the effect of genotype x environment interaction of cotton genotypes for seed cotton yield and related traits. They showed significant genotype, environments, genotype x environment interaction were observed for all traits. El-Seidy *et al*. (2017) reported that the variety x environment mean square was significant for seed cotton yield, indicating different response of varieties in different environments.

The main objective of this study was to determine the effect of genotypes, environment, seasons and their interaction on yield, yield components and fiber properties of some long staple cotton genotypes (*Gossypium barbadense L*).

MATERIALS AND METHODS

This study included eight Egyptian long staple cotton genotypes, (G83Radited × Austerely) × G91, (G80 × Austerely) × G83, (G83 × Karashnsky) × [(G83 × G80) × G89], [(G83 × G80) × G75] × Karashnsky, [(G83 × G80) × G89] × (G83 × Delt703), [G83 × (G75) × 5844)] × G91, [(G83 × G75) × 5844] × G80 and (G90 × Austerely) and two commercial cotton varieties Giza90 and Giza80. These genotypes were evaluated in a randomized complete block design with four replications. The experiments were carried out at five locations representing wide range of Middle and Upper Egypt governorates, the growing environments were Beni- Souef (seds experimental research station), El- Fayuom, Assiut, Sohag and Luxor (EL- Matana experimental research station) for the two successive seasons 2014 and 2015. Each genotype was planted in a plot of three rows (4 m long 25cm between plants and 60 cm apart). The three rows of each plot were harvested manually to obtain estimates of yield components. While, picking 25 bolls from each plot, for estimating boll weight. Culture practices were carried out as recommended in cotton fields. Data were collected for the following traits:

A. yield and yield components traits:

[1] Boll weight (B.W) (gm).
[2] Seed cotton yield (S.C.Y) (K/F).
[3] Lint cotton yield (L.C.Y.) (K/F).
[4] Lint percentage (L %).
[5] Seed Index (SI gm).
[6] Lint index (LI gm).

Samples of lint cotton from each genotype under each location were analyzed in the laboratories of the Cotton Technology Research Division, Cotton Research Institute to determine fiber qualities, under controlled condition of 65 ± 2% of relative humidity and 70 ± 2°F temperature for all samples. Fiber properties were measured by using High Volume Instrument (HVI) according to (A.S.T.M.D-4605-1986) for fiber properties:

1- **Micronair reading (Mic).**
2- **Yarn strength (Y.St gm/tex).**
3- **Upper half mean length (UHM. mm).**

Statistical analysis:

Analysis of variance was computed for each experiment, combined analysis for genotypes, locations, seasons and their interaction were done according to Snedecor and Cochran (1982) for each location. Differences between means were compared by using the least significant differences (L.S.D.) (Steel and Torrie, 1980).

RESULTS AND DISCUSSION

The present investigation aimed to evaluate eight long staple cotton genotypes and tow cotton cultivars belongs to Egyptian cotton (*Gossypium barbadense*. L) in two seasons 2014 and 2015 at five different locations of Middle and Upper Egypt in order to study

genotypes performance under different locations and the effects of genotype (G), location (L), years and their interactions.

The combined analysis of the genotypes, locations, seasons and interactions between them are shown in Table (1). Results of the combined analysis of variance showed that the effect of genotypes and locations were highly significant for all the traits studied, except Upper half mean length (UHM) which recorded significant difference mean squares for locations. The effects of years were highly significant for all the traits studied, except for seed index (SI), lint index (LI), Micronair reading (Mic) and Yarn strength (Y.St). However, the first order interaction genotype x locations (G x L) was significant and highly significant for all the traits studied, except lint percentage (L %). The second order interactions genotypes x locations x years interaction (G x L x Y) were significant or highly significant for all traits studied, except for Micronair reading (Mic).

The results suggested that, comparisons among these cotton genotypes could be dependently estimated at several locations over years. The degree genotypes x location (G x L) interaction for yield and its components and fiber properties were observed in the present data were in agreement with Abdalla *et al.* (2005), Satish and Chabra (2009), Campbell *et al.* (2012). Leonel Domingos *et al.* (2014), and Manuel pedro Maleia *et al*. (2017). They reported that effect of genotypes × environments interaction (G × E) was significant for all traits studied. These results indicated that the cotton crop as well as other crop varieties showed differential responses when grown under different locations and years.

Differences among genotypes for the studied characters.

Data in Table (2) showed the effect of different cotton genotypes on yield, yield components and fiber properties. The genotypes G7, G8, Giza 90 and Giza 80 were significantly different with the grand mean performance of cotton genotypes for boll weight. The genotype Giza 80 gave the highest value (3.06 gm) of boll weight (BW). The genotype G6 produces the highest seed cotton yield (SCY K/f) than all cotton genotypes with value (9.55 K/f) and it was significant differences with grand mean performances. Lint yield (LY) and lint percentage (L %) traits were insignificant for the all genotypes under study. The genotypes G6 and G2 had the highest value of lint yield (11.97 K/f) and lint percentage (39.91%), respectively. All cotton genotypes produced higher seed cotton yield (SCY) and lint yield (LY) compared with Giza 90 and Giza 80.

Seed index (SI gm) and lint index (LI gm) traits were insignificant for all cotton genotypes, except of the genotypes Giza 90 and Giza 80 for (SI) and the genotypes Giza 80 for LI which showed significantly different mean performances with genotypes grand mean.

The Micronair reading (Mic), Table (2) indicated that the mean performance of all cotton genotypes was found to be insignificant with grand mean, except of the genotype G8 which recorded significant difference (Mic). Genotypes G2 and G5 were significant for yarn strength (Y.St g/tex) and gave the higher values of (Y.St) comparing with the other genotypes under study. Upper half mean length (UHM) showed significant differences mean performances of the genotypes G1, G2, G4, G5, G6 and 10. It could be seen from Table (2) that the genotypes G2 and G6 exceeded all other cotton genotypes in seed cotton yield (SCY) by (9.55 and 9.18 K/f) and lint yield (LY) by (11.56 and 11.97 K/f), respectively and had the same characteristic of long staple cotton which grown in Middle and

Table (1): Mean squares for all traits studied of Egyptian cotton genotypes grown at five locations over two years (2014 and 2015).

Source	DF	BW (gm)	SCY (K/f)	LCY (K/f)	L %	SI (gm)	LI (gm)	Mic	Y.St (g/tex)	UHM(mm)
Y	1	1.10**	23926770**	3277367**	12.33*	0.21	1.55	0.003	32942.25	54.00**
L	4	1.36**	46142830**	5452747**	22.40**	12.40**	7.31**	6.41**	133097.8**	3.04*
Y* L	4	1.20**	30262670**	6457508**	29.51**	9.06**	4.20**	2.58**	632691.3**	0.93
R(YL)	30	0.06	784247	122226.5**	1.76	1.10	0.43	0.14	9409.33	0.90
G	9	0.57**	1595239**	271198.1**	7.39**	5.95**	2.06**	0.313**	57873.75**	3.67**
G*Y	9	0.24**	438720.4**	60193.64	2.41*	1.92**	1.13**	0.14*	38316.7**	0.30
G*L	36	0.13**	518646.6**	84772.47**	1.48	0.71**	0.53**	0.09*	34565.83**	1.35*
G*L*Y	36	0.14**	402656.6**	56711.11*	1.68**	0.69**	0.42**	0.06	38163.33**	1.45**
Error	270	0.04	221625.4	35157.22	1.11	0.36	0.20	0.05	6963.4	0.80

Table (2): Effect of different cotton genotypes on yield components and fiber properties at five locations over seasons.

Characters / Genotypes	BW (gm)	SCY(K/f)	LCY(K/f)	L %	SI (gm)	LI (gm)	Mic	Y.St (g/tex)	UHM
G1	2.96	8.71	10.93	39.71	9.57	6.32	3.96	1945	30.6
G2	2.89	9.18	11.56	39.91	9.27	6.17	4.03	2030	30.7
G3	2.86	8.92	11.24	39.81	9.22	6.10	3.95	1935	30.2
G4	2.84	8.95	11.11	39.34	9.24	6.02	3.83	1985	31.0
G5	2.76	8.88	11.07	39.48	9.32	6.05	3.80	2050	30.6
G6	2.73	9.55	11.97	39.70	9.13	6.02	3.92	1955	30.8
G7	3.04	8.40	10.58	39.83	9.73	6.44	4.01	1990	30.4
G8	3.02	8.09	10.10	39.81	9.23	6.11	4.06	2020	30.3
Giza 90	3.03	7.98	9.73	38.45	10.10	6.33	3.85	1965	30.4
Giza 80	3.06	6.96	8.70	39.47	10.19	6.72	3.98	1990	31.1
Mean	2.92	8.56	10.70	39.71	9.50	6.23	3.94	1980	30.6
LSD 5%	0.09	0.76	0.959	0.46	0.27	0.20	0.11	36.55	0.39
LSD 1%	0.12	1.00	1.26	0.61	0.35	0.27	0.14	48.05	0.52

Upper Egypt. The characters which recorded differ significant or did not differ significant mean performance indicated that the differences between genotypes, environments effects and interaction between them (G x E). These results are in agreement with Abdalla *et al*. (2005) EL- Shaarawy *et al*. (2007), Hassan *et al*. (2012) and Leonal Domingos *et al*. (2014).

Effect of environments on yield, yield components and fiber properties.

Table (3) showed the average values of traits studied as affected by different growing environments. Highest value of boll weight (BW gm) was recorded at Beni- Souef and Sohag environments, it was (3.06gm). Data in Table (3) indicated that the average values of seed cotton yield (SCY K/f) and lint yield (LY K/f) were the highest, in El-Fayuom environment with values (12.43 K/f and 15.63 K/f), respectively. While the highest value of lint percentage (L %) was recorded at Assiut environment (40.02%). Beni-Souef environment recorded the highest values of seed index (SI gm) by (9.86 gm) and lint index (LI gm) by (6.56 gm). On the other hand, El-Luxor environment recorded the lowest values for all yield component traits. With respect to fiber properties Table (3), indicated that the better values for micronair reading (Mic), Yarn strength (Y.St) and Upper half mean length (UHM) were recorded at El-Luxor environment. The results (Table 3) were differing from environment to another for studied traits; this may be due to the variation in climatic conditions from environment to another. Some of investigators reported that the effect of environment was noticed for most previous studied characters i.e Allam *et al*. (2008); Rahoumah *et al*. (2008), Shaker (2013) and El-Seidy *et al*. (2017).

Table (3): Average of traits studied as affected by locations over two growing season.

Characters	Beni-souef	El-Fayuom	Assuit	Sohag	Luxor	LSD	
						5%	1%
B.W	3.06	2.83	2.84	3.06	2.80	0.28	0.37
SCY	7.30	12.43	8.56	9.67	4.84	2.42	3.18
LY	9.22	15.63	10.87	11.84	5.96	3.12	4.22
L%	39.84	39.95	40.02	38.94	39.02	1.47	1.92
SI	9.86	9.66	9.10	9.83	9.06	0.84	1.10
LI	6.56	6.42	6.08	6.27	5.80	0.63	0.83
Mic	4.0	4.3	3.7	4.1	3.6	0.34	0.44
Y.st (gm/tex)	1970	1995	1960	1960	2055	115.65	151.99
UHM	30.8	30.4	30.4	30.7	30.8	1.24	1.63

Effect of seasons on the traits studied.

Results in Table (1) and Table (4) revealed that the values of yield components and fiber properties traits were affected by growing season. The data in Table (1) showed that years had significant effects on all the traits studied. Results in Table (4) cleared that boll weight (BW), lint percentage (L%), seed index (SI) and lint index (LI) gave the highest values in 2014 season, while the traits of seed cotton yield (SCY), lint yield (LY), yarn strength (Y.St) and Upper half mean (UHM) were the highest in 2015 season.

The variation between traits from season to another may be due to the differences in climatic conditions from season to another. The obtained results are in agreement with those, Hassan *et al*. (2005), El-Akhedar and El-Sayed (2006) and Dewdar (2013).

Interaction effect between growing location and growing seasons on all traits studied.

Concerning to the locations x seasons interaction, is given in Table (5), The highest values of cotton genotypes for boll weight (BW) were obtained at Beni-Souef and Sohag environments during 2014 and 2015 seasons, it was (3.3 and 3.0 gm), respectively. The lowest value for boll weight (BW) was recorded at El-Fayuoum (2.75 gm) and luxor (2.79 gm) environments in 2014 and 2015 seasons, respectively.

The highest value of seed cotton yield (SCY) was recorded at EL-Fayuoum (14.01 K/f) and Assuit (12.97 K/f) locations in 2014 and 2015 seasons, respectively. While, Assuit and luxor locations gave the lowest production of seed cotton yield (4.15 and 4.45 K/f) in 2014 and 2015 seasons, respectively.

Concerning to lint yield (LY K/f), the results in Table (5) it could be noticed that, the highest value of cotton genotypes for lint yield (LY) was (18.00 and 16.55 K/f) at El- Fayuoum and Assuit locations in 2014 and 2015 seasons, respectively. On the other hand, Beni-Souef and Luxor locations in 2014 and 2015 seasons gave the lowest one for this trait.

Table (4): Average of traits studied as affected by different growing environments.

Traits	Seasons		LSD 0.05	
	2014	2015	2014	2015
BW gm	3.0	2.9	0.0524	0.0706
SCY (k/f)	7.65	9.47	0.6698	0.902
LY (k/f)	9.65	11.76	0.8562	1.1531
L%	39.7	39.4	0.271	NS
SI (gm)	9.52	9.47	NS	NS
LI (gm)	6.28	6.16	NS	NS
Mic	4.0	4.0	NS	NS
Y.st (gm/tex)	1975	1995	NS	NS
UHM	30.2	31.0	0.1942	0.2615

Table (5): interaction effects between seasons and locations on the studied traits.

Traits	Seasons	Locations				
		Beni souef	El-Fayuom	Assuit	Sohag	Luxor
BW (gm)	2014	3.31	2.75	2.85	3.13	2.81
	2015	2.81	2.91	2.83	3.00	2.79
SCY (k/f)	2014	5.71	14.01	4.15	9.17	5.23
	2015	8.88	10.85	12.97	10.17	4.45
LY (k/f)	2014	7.14	18.00	5.18	11.41	9.61
	2015	11.29	13.25	16.55	12.26	5.45
L%	2014	39.32	40.74	39.61	39.60	39.36
	2015	40.36	39.15	40.42	38.27	38.67
SI (gm)	2014	10.44	9.51	8.80	9.89	8.97
	2015	9.28	9.80	9.39	9.76	9.14
LI (gm)	2014	6.83	6.55	5.77	6.47	5.80
	2015	6.29	6.29	6.39	6.06	5.80
Mic	2014	4.2	4.4	3.5	4.0	3.6
	2015	3.7	4.2	3.9	4.1	3.7
Y.st (gm/tex)	2014	1890	2020	1840	1975	2160
	2015	2045	1970	2075	1940	1950
UHM	2014	30.3	29.9	30.1	30.4	30.5
	2015	31.2	31.0	30.7	31.0	31.0

With respect to lint percentage (L %), Table (5) showed that, the highest value of lint percentage (L %) was (40.74%) of the cotton genotypes grown at El-Fayuom environment, while the lowest value of lint percentage (L %) was recorded of the cotton genotypes which grown at Beni- Souef location it was (38.32%) in 2014 season. In 2015 season, the highest values for lint percentage (L %) was recorded of the genotypes which grown at Assuit location (40.42%), the lowest lint percentage (L %) value was observed at Sohage environment (38.27%).

The highest values of seed index (SI) of the cotton genotypes were (10.44 gm) at Beni-Souef location, the lowest seed index (SI) value was noticed at Assuit location (8.80 gm) in 2014 season. The cotton genotypes grown at El-Fayuom and Luxor environments recorded the highest and lowest values of seed index (SI) (9.80 and 9.14 gm), respectively in 2015 season.

Regarding lint index (LI gm), it can be seen from Table (5) that The highest value of lint index (LI) was produced at Beni-Souef location (6.83 gm), but the lowest value was produced at Assuit environment (5.77 gm) in 2014 season. On the other hand, the genotypes grown under different locations in 2015 season showed the highest and the lowest values of seed index (SI) at Assuit (6.39 gm) and Luxor (5.80 gm) locations, respectively.

With regard to Micronaire reading (Mic), Table (5) it could be seen that all the cotton genotypes which grown under different environments ranged from 3.5 to 4.4 at Assuit and El-Fayuom locations in 2014 season. In 2015 season, El-Fayuom location gave the highest values of micronair reading (Mic) it was (4.2), while the lowest values for micronair reading (Mic) was recorded at Beni-Souef and Luxor locations with value (3.7 units).

Table (5) showed that the highest value of Yarn strength (Y.St) of the cotton genotypes was observed at Luxor and Assuit (2160 and 2075 g/tex) in 2014 and 2015 seasons, respectively. On the other hand, the lowest values of Yarn strength (Y.St) in the first and second seasons were recorded at Assuit and Sohag locations.

Upper half mean length (UHM mm) results in Table (5) it could be indicated that all cotton genotypes grown at all environments nearly gave the same range for Upper half mean length (UHM mm) it was ranged from (29.9 to 30.5mm) at El-Fayuom and Luxor environments in 2014 season and ranged from (30.7 to 31.2mm) at Assuit an Beni- Souef environments in 2015 season.

It could be concluded that the mean values of different traits varied from environment to another; therefore it should be evaluating cotton genotypes under different environments to present the potential traits. Several works studied the traits performance of cotton genotypes under different environments i,e Killi and Haren (2006) Satish *et al*. (2009), Dewdar (2013) and Navdeep. *et al*. (2016).

Interaction between cotton genotypes and locations over two seasons.

Results in Table (6) showed that the average values of yield, yield components and fiber properties for the ten cotton genotypes grown at five locations during the two growing seasons.

The data in Table (6) showed that, The average values of boll weight (BW gm) ranged from 2.46 gm of the genotype G6 at Assuit locations to 3.39 gm of the genotype G7 at Beni-Souef location. The

highest grand mean value of boll weight (BW) for all genotypes was recorded at Beni- Souef and Sohag locations, mean averag was (3.06 gm).

Regarding for seed cotton yield (SCY k/f) trait, Table (6) presented that The average value of seed cotton yield (SCY) was highest at EL- Fayuom location of all cotton genotypes, it was ranged from (10.43 to 15.12 k/f) of the genotypes G10 and G6, respectively. Sohage location was the second producing highest value for seed cotton yield (SCY) of all cotton genotypes, and it was ranged from (8.58 to 11.66 k/f) of the genotypes G7 and G2, respectively. On the other hand, the cotton genotypes grown at Luxor location gave the lowest value for seed cotton yield (SCY) compared with the other locations. Significant genotypes × location interaction (G xL) for seed cotton yield (SCY) trait, indicated that genotypes considerably varied a cross different location and other were detected as effected on seed cotton yield (SCY).

With respect to lint yield (LY k/f) trait, it could be observed that EL- Fayuom location gave the highest value of lint yield (LY) of all cotton genotypes, it ranged from (13.07 to 19.07 k/f) for the genotypes G10 and G6, respectively. The differences between five locations for lint yield (LY) were found to be significant. It could be noticed that the variation in these locations were detected as effected on lint yield (LY).

The grand mean of five locations was insignificant differences for lint percentage (L %).

Concerning to seed index (SI gm) character, it can be seen from Table (6) that the grand means of this trait ranged from (9.10 to 9.86 gm) at Luxor and Beni-Souef locations. The differences between five locations for seed index (SI) trait were found to be insignificant.

With regard to lint index (LI gm) trait (Table 6), the grand mean performance of this trait ranged from (5.80 gm to 6.56 gm) at Luxor and Beni-Souef location, respectively. Lint index (LI) grand means revealed insignificant difference between Beni-Souef, Al-Fayuom, Assuit and Sohag locations.While (LI) trait, at Beni-Souef location was significant differences with genotypes grand mean at Loxur location. Meanwhile, the best genotype for lint index (LI) trait was Giza 80 at Beni-Souef location which had heavy lint index (7.69 gm) compared with all genotypes under study.

With respect to Micronaire reading (Mic), the lowest (Mic) grand mean value was observed at Luxor environment (3.62 units), while EL- Fayoum environment recorded micronaire (Mic) value above (4.0) of all cotton genotypes. On the other hand, the lowest Micronaire reading (Mic) value less than (4.0) of all cotton genotypes was observed at Assuit and Luxor locations.

Regarding to fiber yarn strength (Y.St g/tex), the results in Table (6) indicated that the grand mean performance of genotypes did not show significant difference between environments.

Results in Table (6) showed mean performance of Upper half mean length (UHM) trait for all cotton genotypes. The differences between environments for this trait were insignificant.

These results are in a harmony with those obtained by Rahouma *et al*. (2008) Hassan *et al*. (2012), Shaker (2013) and Gibely *et al*. (2015).They found that the effect of genotypes, environmental conditions were different from environment to another.

Table (6): Mean effect of the interaction between cotton genotypes and locations over two seasons

Trait	genotypes	Beni Souef	El - Fayuom	Assuit	Sohag	Luxor
Bw	G1	3.05	2.73	3.04	3.05	2.91
	G2	3.00	2.85	2.71	3.09	2.79
	G3	3.05	2.75	2.95	2.89	2.68
	G4	3.04	2.79	2.83	2.96	2.56
	G5	2.70	2.93	2.56	2.90	2.71
	G6	2.86	2.78	2.46	3.09	2.48
	G7	3.39	2.88	2.89	3.16	2.89
	G8	3.26	2.73	3.10	3.04	2.98
	G9	3.05	2.95	2.96	3.16	3.03
	G10	3.20	2.95	2.90	3.28	2.99
	Mean	3.06	2.83	2.84	3.06	2.80
LSD 5%	0.279					
LSD 1%	0.367					
SCY (K/f)	G1	7.98	10.79	8.66	10.80	5.34
	G2	8.17	11.76	8.98	11.66	5.32
	G3	8.44	12.30	8.94	9.61	5.33
	G4	7.63	13.27	8.53	9.95	5.38
	G5	8.06	14.42	8.53	9.04	4.35
	G6	9.16	15.12	8.94	9.41	5.14
	G7	7.41	12.12	9.12	8.58	4.91
	G8	6.00	11.30	9.10	9.11	4.94
	G9	4.81	12.81	8.08	9.30	4.90
	G10	5.35	10.43	6.78	9.42	2.82
	Mean	7.30	12.43	8.56	9.67	4.84
LSD 5%	2.417					
LSD 1%	3.176					
LY (K/f)	G1	10.06	13.63	10.92	13.54	6.53
	G2	10.50	15.02	11.62	14.17	6.52
	G3	10.64	15.57	11.51	11.76	6.68
	G4	9.53	16.69	10.78	12.07	6.51
	G5	10.15	18.02	10.77	10.99	5.41
	G6	11.49	19.07	11.35	11.60	6.34
	G7	9.50	15.39	11.65	10.28	6.08
	G8	7.65	13.87	11.66	11.25	6.11
	G9	5.81	15.97	9.97	10.98	5.95
	G10	6.82	13.07	8.45	11.72	3.46
	Mean	9.29	15.63	10.87	11.85	7.54
LSD 5%	3.251					
LSD 1%	4.272					

Table (6): Cont.

Trait	genotypes	Beni Souef	El - Fayuom	Assuit	Sohag	Luxor
L%	G1	39.82	40.01	40.04	39.83	38.90
	G2	40.69	40.52	40.80	38.65	38.92
	G3	40.03	40.01	40.53	38.89	39.58
	G4	39.64	40.05	39.83	38.68	38.52
	G5	39.80	39.63	39.59	38.89	39.49
	G6	39.78	40.06	40.14	39.33	39.21
	G7	40.67	40.21	40.14	38.87	39.28
	G8	40.10	39.99	40.64	39.22	39.11
	G9	37.68	39.57	39.06	37.49	38.45
	G10	40.22	39.46	39.42	39.52	38.77
	Mean	39.84	39.95	40.02	38.94	39.02
LSD 5%	1.464					
LSD 1%	1.924					
SI (gm)	G1	10.05	9.62	8.97	10.17	9.08
	G2	9.66	9.49	8.79	9.98	8.44
	G3	9.26	9.16	9.18	9.55	8.96
	G4	9.58	9.13	8.83	9.65	9.02
	G5	9.38	9.49	8.94	9.59	9.21
	G6	9.42	9.57	8.72	9.83	8.13
	G7	10.25	10.23	9.07	10.02	9.12
	G8	9.39	9.33	8.97	9.14	9.33
	G9	10.73	10.07	9.77	9.95	9.99
	G10	10.94	10.53	9.79	10.38	9.32
	Mean	9.86	9.66	9.10	9.83	9.06
LSD 5%	0.838					
LSD 1%	1.101					
LI (gm)	G1	6.64	6.44	6.00	6.73	5.78
	G2	6.64	6.48	6.08	6.28	5.39
	G3	6.18	6.10	6.28	6.05	5.88
	G4	6.30	6.09	5.84	6.10	5.79
	G5	6.22	6.15	5.88	6.12	5.90
	G6	6.23	6.41	5.84	6.39	5.23
	G7	6.94	6.88	6.12	6.36	5.92
	G8	6.28	6.24	6.17	5.88	5.99
	G9	6.51	6.60	6.29	5.98	6.27
	G10	7.69	6.87	6.37	6.80	5.87
	Mean	6.56	6.42	6.08	6.27	5.80
LSD 5%	0.631					
LSD 1%	0.829					
Mic	G1	3.92	4.29	3.79	4.21	3.63
	G2	4.02	4.41	3.90	4.16	3.69
	G3	3.98	4.30	3.69	4.02	3.78
	G4	3.82	4.23	3.78	4.01	3.36

Table (6): Cont.

Trait	genotypes	Beni Souef	El - Fayuom	Assuit	Sohag	Luxor
	G5	3.72	4.22	3.47	4.11	3.49
	G6	3.96	4.33	3.72	4.10	3.50
	G7	4.15	4.40	3.66	4.04	3.81
	G8	4.19	4.39	3.77	4.14	3.83
	G9	3.88	4.27	3.59	3.92	3.60
	G10	4.31	4.38	3.73	3.98	3.51
	Mean	3.99	4.32	3.71	4.07	3.62
LSD 5%	0.336					
LSD 1%	0.441					
Y.St (g/tex)	G1	1880	2023	1919	1943	1962
	G2	1937	2076	2035	2023	2087
	G3	1926	2015	1835	1853	2037
	G4	1973	2004	1928	2052	1962
	G5	2098	2002	1976	2076	2092
	G6	1974	1981	1880	1887	2062
	G7	1995	1937	1972	1977	2078
	G8	2077	1977	2067	1836	2153
	G9	1869	2036	1985	1885	2061
	G10	1956	1899	1989	2061	2059
	Mean	1968	1995	1958	1959	2055
LSD 5%	115.652					
LSD 1%	151.688					
UHM (mm)	G1	30.55	30.85	30.50	30.15	31.05
	G2	30.80	30.30	30.85	30.85	30.55
	G3	30.50	30.35	29.35	30.25	30.40
	G4	32.00	30.60	30.70	30.90	31.00
	G5	30.80	30.45	30.25	30.75	30.90
	G6	31.35	30.05	30.85	31.20	30.35
	G7	29.85	30.35	29.60	31.40	30.90
	G8	30.50	30.35	30.30	30.20	30.20
	G9	29.95	30.45	30.45	30.30	31.05
	G10	31.50	30.60	30.95	31.45	31.15
	Mean	30.75	30.40	30.40	30.70	30.75
LSD 5%	1.243					
LSD 1%	1.634					

CONCLUSION

From the obtained results in this investigation, it could be concluded that the differences between cotton genotypes performance under differ locations over seasons for some agronomic traits, back to the interaction between genotypes with environments. Therefore it is necessary to continue evaluating cotton genotypes by growing them under several environments for number of seasons and locations before recommending any cotton genotype for certain location.

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تقييم بعض التراكيب الوراثيه من القطن المصرى تحت بيئات مختلفه

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الملخص العربى

أجرى هذا البحث بغرض تقييم عدد ثمانيه تراكيب وراثيه من القطن مقارنة مع الأصناف التجاريه المنزرعة جيزة ٩٠ وجيزة ٨٠ فى خمس بيئات تمثل وسط وجنوب مصر (بنى سويف – الفيوم – اسيوط – سوهاج – الأقصر) وذلك فى مواسم ٢٠١٤ و ٢٠١٥ فى تجربة تصميم قطاعات كاملة العشوائيه لدراسة مدى تأثير المواقع وموسم الزراعه على التراكيب الوراثية من حيث المحصول ومكوناته وصفات تيلة القطن. وكانت الصفات المدروسة: كما يلى

أولا: الصفات المحصوليه: متوسط وزن اللوزة (BW) – محصول القطن الزهر (SCY) – محصول القطن الشعر (LY) تصافى الحليج (L%) – معامل البذرة (SI) – معامل الشعر (LI).

ثانيا: صفات التيلة: قراءة الميكرونير – متانة الغزل – طول التيلة

وكانت أهم النتائج المتحصل عليها كما يلى:

١- كان تأثير التفاعل بين التراكيب الوراثية والمواقع عالى المعنويه لجميع الصفات المدروسه عدا صفة طول التيلة حيث أظهرت اختلافات معنويه فى المواقع المختلفه.

٢- كان تأثير التفاعل لمواسم الزراعة معنوياً لجميع الصفات المدروسة عدا صفة معامل البذرة ومعامل الشعر وقراءة الميكرونير ومتانة الغزل حيث أظهرت عدم المعنوية.

٣- أوضحت النتائج أن التفاعل الاولى لتأثير التداخل بين التراكيب الوراثية والمواقع معنويا لجميع التراكيب الوراثية عدا صفة تصافى الحليج بينما كان التفاعل الثانوى للتداخل بين التراكيب الوراثيه والمواقع وسنوات الزراعة عالى المعنويه لجيع الصفات المدروسه عدا صفة قراءة الميكرونير.

٤- أوضحت النتائج تفوق التراكيب الوراثية تحت الدراسة فى انتاجية محصول القطن الزهر والشعر على الاصناف التجارية المنزرعة.

٥- أوضحت النتائج أن هناك أختلافات بين الصفات المدروسه فى البيئات المختلفة وهذا راجع الى التأثير البيئى وتأثير موسم الزراعه لذلك لابد من تقييم التراكيب الوراثيه المستنبطه فى عدة بيئات ولعدة سنوات قبل اطلاقها فى الزراعه لتحديد أفضل بيئه زراعية لهذا التركيب.

٦- من خلال الدراسة يمكن التوصيه بأن اداء التراكيب الوراثيه يختلف من بيئه الى اخرى وكذلك من موسم الى موسم اخر وهذا راجع الى التفاعل بين البيئه والتراكيب الوراثى لذلك فأن من الضرورى وقبل الحكم على ثبات أداء أى تركيب وراثى فى اظهار الصفات المحصوليه والتكنولوجيه لابد من زراعته فى عدة بيئات ولعدد من السنوات .

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