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The Relationship Between Seed Cotton Production Locations and Their Lint Cotton Grade on Fiber Quality and Yarn Strength of The Egyptian Cotton Cultivar Giza 86

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ABSTRACT

This research was conducted in Plant Production Department, The Faculty of Agriculture (Saba Basha), Alexandria University, Egypt, during the two consecutive seasons of 2017 and 2018 to study the effect of seed cotton production locations (Kafr El- Dawar, Kafr El-Sheikh and Basion), lint cotton grade and their combinations on fiber and yarn Strength of Egyptian cotton cultivar Giza 86. Therefore, four lint grades of the given cotton cultivar (long staple) as Good to fully good (G/FG), Good + 1/4, Good and Good - 1/4 were investigated. The obtained results indicated that the highest mean values of spinning consistency index (186.50 and 183.50), fiber bundle strength (41.45 and 40.20 g\tex) and single yarn strength (21.80 and 21.05 g/tex), respectively during both seasons, and the lowest mean value of fiber elongation (5.60%) in the first season, in addition to the highest mean value of upper half mean length (31.17mm) in the second season were recorded by the cotton produced from the location of Kafr El-Sheikh. The best averages were obtained from classer grade Good to Fully Good for all parameter traits of fiber and yarn. The highest lint grade (Good to Fully Good) of Giza 86 cotton cultivar recorded the highest mean values of spinning consistency index (201.88 and 198.88), fiber upper half mean length (32.63 and 31.98mm), length uniformity index (86.94 and 84.38%), fiber bundle strength (44.18 and 43.63g/tex), maturity index (0.88 and 0.84), micronaire reading (4.57 and 4.50), reflectance degree (Rd, 75.33 and 75.77 %), single yarn strength (23.20 and 22.31 g/tex) and the lowest mean values of short fiber index (5.80 and 5.16 %), fiber elongation (5.37 and 4.68%), degree of yellowness (+b, 8.67 and 8.61), trash area (0.59 and 0.68%), trash count (37.77 and 40.88), yarn elongation (4.88 and 4.33%) in the two seasons, respectively. The highest mean values of spinning consistency index (209.00 and 206.00) were recorded from the lint grade (Good to Fully Good) of the cotton cultivated in Kafr El-Sheikh in the two seasons, respectively.

Key words: Seed cotton grade; fiber properties; yarn strength; location

INTRODUCTION

Cotton is grown in different locations in Egypt, and environmental conditions may vary from one location to another and from year to year in the same area (El-Banna, 2009). Thus, the evaluation of commercial cotton varieties, and the newly released or promising varieties in yield trails in different locations and in different years is of great importance for the cotton quality (El-Banna, 2009). Both cotton genotype and location had significant effects on cotton fiber length and maturity characters (Beheary and Badr, 1995). The same authors reported that the ability of the cotton variety to react with the environmental conditions of the growing location reflects positively or negatively on yield and fiber quality. Also, there is a highly significant effect for interaction (the growing season × location) on all studied traits. Only the length uniformity ratio was significantly affected, while the micronaire reading was insignificantly affected by this interaction. Location exhibited significant effect on micronaire reading. Meanwhile Pressely index, fiber length (2.5%) span length and length uniformity ratio attributes were insignificant affected by the planting location (Badr and Hassan, 2003), (El-Oraby, 2003), (Al-Hibbiny, 2004), (Hassan *et al*., 2006), (Hassan *et al*., 2012), (Shaker, 2009) and (Younis, 2015). Hassan and Sanad (2006) explained the effect of genotypes, location, years and the first order interactions, i.e. (location × years), which exerted highly significant effect on all fiber and yarn properties except (genotype × years) for micronaire reading trait. The gained results suggest that comparisons among cotton genotypes for the studied traits should be independently estimated at each sub-

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region over several years. Fiber bundle strength, elongation and maturity index were highly significant as affected by the cotton variety or genome (Yehia, 2003), (Batisha, 2005) and(Etman, 2010). The highest values of these traits were recorded by high lint cotton grade (Good to fully Good), except the short fiber index, trash count and trash area, which were proportionally decreased as the cotton grade increased (El-Banna, 2019).

The present research was conducted aiming to investigate the effect of production location and lint cotton grade on fiber properties and yarn strength of the Egyptian long staple cotton variety Giza 86.

MATERIALS AND METHODS

Production location and seed cotton grades are among the most limiting factors affecting fiber and yarn properties. This study was carried out at Plant Production Department, the Faculty of Agriculture (Saba Basha), Alexandria University, Egypt, during the two successive summer seasons of 2017 and 2018 using the Egyptian cotton cultivar. Giza 86 which was introduced by Cotton Research Institute in 1995. Four seed cotton grades; namely, Good + ¼ (G + ¼), Good (G), Good - ¼ (G - ¼) and Fully Good Fair to Good (FGF/G) were considered as an independent variable. Three random samples of 5 kilograms each were drawn from each seed cotton grade per location. The samples of cotton variety (Giza 86) were taken from El-Beherah Governorate (Kafr El- Dawar), Kafr El-Sheikh Governorate (Kafr El-Sheikh) and Gharbiya Governorate (Basion) for the two studied seasons. These samples were obtained from Modern Nile Cotton Company. Every cotton sample was thoroughly blended for more homogeneity and ginned, then classified by a committee of three expert classers belong to the International Cotton Training Center (ICTC), Cotton Arbitration and Testing General Organization (CATGO), Alexandria, Egypt. The studied samples were ginned using the conventional single roller gin stand [a roll covered with natural leather (McCarthy roller gin)] in the ginning mill assigned for studied cotton cultivar. The resulted lint grades from the seed cotton grades for studied variety were: Good to Fully Good (G/FG), Good + ¼ (G + ¼), Good (G) and Good - ¼ (G - ¼). Four sub samples representing replicates for each grade was drawn from the ginned. The dependent variable was represented by fiber and yarn propertiy and expressed as follows:

1. Fiber properties as determined by High Volume Instrument (HVI) Spectrum II:

Representative sample of lint cotton (about 200 grams) was drawn for determining the fiber properties. The fiber properties were estimated at the Laboratories of Cotton Arbitration for Testing General Organization (CATGO), Alexandria, Egypt.

All samples were opened and left for 24 hours at least under the standard conditions of (65 ± 2%) relative humidity and (20 ± 2°C) temperature before being tested and following properties were determined:

- Spinning consistency index (SCI).
- Fiber upper half mean length (UHML; mm.).
- Length uniformity index (UI, %).
- Short fiber index (SFI, %).
- Fiber bundle strength (Str., g/tex).
- Fiber elongation (Elog., %).
- Maturity index (Mat., %).
- Micronaire reading (Mic.).
- Fiber brightness or reflectance degree (Rd %).
- Chroma or degree of yellowness (+b).
- Trash area (%).
- Trash count.

2. Studied samples were spun at 60'S carded yarn with 3.6 twist multiplier using compact-spinning machine and yarn properties were determined at the Egyptian Spinning and Weaving Co., El-Sadat City, Al-Mnofeyah Governorate, Egypt, according to ASTM (1982)

- Single yarn strength (g/tex) and elongation (%) were measured using Tenso-lab Tensile Strength Tester according to the ASTM (D-2256-80).

- Statistical procedures

This investigation was conducted in a completely randomized design with three replicates and analyzed as a factorial experiment according the procedure of Snedecor and Cochran (1967). The data was computed using the CoStat 6.311 (1998-2005) as statistical program**,** to test differences among studied mean values of treatments, the least significant difference (L.S.D.) at 0.05 level of probability was used.

RESULTS AND DISCUSSION

The attained results could be presented and discussed in two main categories as follows:

1. The effect of seed cotton production location on HVI fiber properties and yarn strength for the cotton cultivar Giza 86:

Considering results in Tables (1, 2 and 3), it is obvious that the studied cotton cultivating locations had a significant ($p \leq 0.05$) effect on spinning consistency index (SCI), fiber bundle strength (Str.), fiber elongation (Elong.), reflectance degree (Rd %), degree of yellowness (+b), trash area, Trash count and single yarn strength in the first season. On the other hand, spinning

consistency index (SCI), upper half mean length (UHML), short fiber index (SFI), fiber bundle strength (Str.), trash count and yarn property (single yarn strength) were significantly affected by the studied cotton cultivating locations in the second season. Fiber length parameters (length uniformity index), maturity index (Mat.), micronaire reading (Mic.) and single yarn elongation were insignificantly ($p > 0.05$) affected by the same factor in the two seasons.

It is obvious that the cotton produced from the location of Kafr El- Dawar declared the lowest mean values of spinning consistency index (176.83 and 173.83), fiber bundle strength (37.35 and 36.01 g\tex) and the highest mean values of trash count (111.25 and 117.25), respectively, in both seasons and the highest mean values of degree of yellowness (+b, 10.11), trash area (1.57%) and the lowest mean value of reflectance degree (Rd, 69.70 %) in the first season, in addition to the highest mean value of short fiber index (5.85%) in the second season.

The highest mean values of spinning consistency index (186.50 and 183.50), fiber bundle strength (41.45 and 40.20 g\tex) in both seasons, respectively, and the lowest mean value of fiber elongation (5.60%) in the first season, in addition, the highest mean value of upper half mean length (31.17mm) in the second season were recorded by the cotton of Kafr El-Sheikh location.

The cotton produced from the location of Basion, exhibited the highest mean values of reflectance degree (Rd, 72.38 %) and the lowest mean value of degree of yellowness (+b, 9.37) in the first season, but the lowest mean values of trash count (71.66 and 77.75) in the second season, respectively.

Regarding single yarn strength, the highest mean values (21.80 and 21.05 g/tex) were possessed by cotton of Kafr El-Sheikh production location of both seasons, consecutively. On the other side, the lowest mean values (20.89 and 19.89) of the same trait were recorded from the cotton of Kafr El- Dawar location in both seasons, respectively.

The best average values were obtained from cotton cultivar ‹Giza 86 grown in Kafr El-Sheikh location for spinning consistency index and fiber bundle strength as well as single yarn strength of both seasons it could be concluded that the single yarn strength correspondingly increased by increasing strength of fiber and lint cotton grade. These results are in line with those obtained by Shaker (2009) and Younis (2015) who stated that different locations had a significant effect on fiber strength, reflectance degree, degree of yellowness and yarn strength.

2. The effect of lint cotton grade on HVI fiber properties and yarn for the cotton cultivar Giza 86:

Means presented in Tables (1, 2 and 3) indicated that lint cotton grade treatments affected significantly ($p \leq 0.05$) on all studied HVI fiber properties and yarn properties (strength and elongation of single yarn) in both seasons.

It is clear that the highest lint cotton grade (Good to Fully Good) of Giza 86 cotton cultivar; recorded the highest mean values of spinning consistency index (201.88 and 198.88), fiber upper half mean length (32.63 and 31.98mm), length uniformity index (86.94 and 84.38%), fiber bundle strength (44.18 and 43.63g/tex), maturity index (0.88 and 0.84), micronaire reading (4.63 and 4. 53), reflectance degree (Rd, 75.33 and 75.77 %), single yarn strength (23.20 and 22.31 g/tex), respectively, as well as the same lint cotton grade recorded the lowest mean values of short fiber index (5.80 and 5.16 %), fiber elongation (5.37 and 4.68%), degree of yellowness (+b, 8.67 and 8.61), trash area (0.59 and 0.68%), trash count (37.77 and 40.88), yarn elongation (4.88 and 4.33%), consecutively, in the two seasons. The best values averages were obtained from classer grade Good to Fully Good for all parameters traits of fiber and yarn. These results were in line with those obtained by El-Banna (2019).

The lowest mean values of spinning consistency index (157.88 and 154.88), fiber upper half mean length (30.41 and 29.77 mm), length uniformity index (84.61 and 81.60 %), fiber bundle strength (34.88 and 32.55 g/tex), maturity index (0.85 and 0.80), micronaire reading (3.79 and 3.69), reflectance degree (Rd, 64.75 and 62.42 %), single yarn strength (19.61and 18.94 g/tex), also it recorded the highest mean values of short fiber index (7.01and 6.27 %), fiber elongation (6.20 and 5.46 %), degree of yellowness (+b, 10.72 and 10.88), trash area (2.45 and 3.29 %), trash count (154.22 and 163.77), yarn elongation (5.76 and 6.32 %),consecutively, compared to the other studied lint cotton grades in the two seasons were possessed by the lint cotton grade (Good - ¼), consecutively. It is obvious that the best grade of lint had high fibers properties. Beheary and Badr (1995) reported that the fiber elongation is largely depend on the amorphous cellulose and negatively corresponding with the strength and this may explain these differences. These results could be explained on the basis that the high grades have high percentage of mature fibers and the low grade which have high percentage of dead or immature fibers. These results were in line with those obtained by El-Banna (2019).

Table1. Mean values of the HVI fiber properties of Giza 86 as affected by the seed cotton production location, lint cotton grade and their interaction during the first season (2017)

Characters / Treatments	SCI	UHML (mm)	Uniformity index (%)	Short fiber index (%)	Fiber strength (g/tex)	Fiber elongation (%)	Maturity index (%)	Micronaire reading	Reflectance degree Rd (%)	Degree of yellowness + b	Trash area (%)	Trash count
Seed cotton production location (A)												
Kafr El- Dawar	176.83 b	31.14 a	85.17 a	6.55 a	37.35 c	6.08 a	0.86 a	4.03 a	69.70 b	10.11 a	1.57 a	111.25 a
Kafr El-Sheikh	186.50 a	31.66 a	86.02 a	6.30 a	41.45 a	5.60 b	0.86 a	4.10 a	71.85 a	9.72 b	1.13 b	74.41 b
Basion	181.25 ab	31.79 a	86.00 a	6.29 a	39.43 b	5.74 b	0.86 a	4.08 a	72.38 a	9.37 c	1.18 b	71.66 b
L.S.D. 0.05	**6.89**	**ns**	**ns**	**ns**	**1.65**	**0.23**	**ns**	**ns**	**0.78**	**0.25**	**0.25**	**14.17**
Lint cotton grade (B)												
G/FG	201.88 **a**	32.63 a	86.94 a	5.80 c	44.18 a	5.37 b	0.88 a	4.57 a	75.33 a	8.67 d	0.59 c	37.77 c
G +¼	195.22 **a**	32.42 a	86.41 a	6.13 c	41.12 b	5.64 b	0.86 b	4.06 b	74.48 a	9.58 c	1.02 b	68.77 b
G	171.11 **b**	30.67 b	84.96 b	6.57 b	37.44 c	6.01 a	0.86 b	3.93 b	70.66 b	9.96 b	1.12 b	82.33 b
G -¼	157.88 **c**	30.41 b	84.61 b	7.01 a	34.88 d	6.20 a	0.85 c	3.73 c	64.75 c	10.72 a	2.45 a	154.22 a
L.S.D. 0.05	**7.95**	**0.85**	**0.88**	**0.36**	**1.90**	**0.26**	**0.01**	**0.13**	**0.90**	**0.28**	**0.29**	**16.36**
Interaction												
A × B	*****	**ns**	*	**ns**	**ns**	**	**ns**	**	**	**	**ns**	****

Means designated by the same letters within each column are not significantly different at 0.05 level of probability.
*, ** : Significant and highly significant at 0.05 and 0.01 levels of probability.
ns: Not significant.
UHML: Upper Half Mean Length.
SCI : Spinning consistency index.

Table 2. Mean values of the HVI fiber properties of Giza 86 as affected by the seed cotton production location, lint cotton grade and their interaction during the second season (2018)

Characters / Treatments	SCI	UHML (mm)	Uniformity index (%)	Short fiber index (%)	Fiber strength (g/tex)	Fiber elongation (%)	Maturity index (%)	Micronaire reading	Reflectance degree Rd (%)	Degree of yellowness + b	Trash area (%)	Trash count
Seed cotton production location (A)												
Kafr El- Dawar	173.83 b	30.56 b	82.30 a	5.85 a	36.01 c	5.35 a	0.81 a	3.99 a	68.86 a	9.96 a	1.80 a	117.25 a
Kafr El-Sheikh	183.50 a	31.17 a	83.35 a	5.50 b	40.20 a	4.89 a	0.82 a	4.00 a	70.43 a	9.85 a	1.43 a	82.33 b
Basion	178.33 ab	31.10 a	83.15 a	5.55 b	38.18 b	5.01 a	0.82 a	4.02 a	70.71 a	9.65 a	1.51 a	77.75 b
L.S.D. $_{0.05}$	**6.85**	**0.43**	**ns**	**0.28**	**1.62**	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**8.88**
Lint cotton grade (B)												
G/FG	198.88 **a**	31.98 a	84.38 a	5.16 c	43.63 a	4.68 b	0.84 a	4.50 a	75.77 a	8.61 c	0.68 b	40.88 d
G +¼	192.33 a	31.80 a	83.52 a	5.38 bc	40.56 b	4.91ab	0.82 b	4.02 b	72.82 b	9.72 b	1.08 b	76.44 c
G	168.11 b	30.24 b	82.24 b	5.71 b	35.77 c	5.27 a	0.81 c	3.83 c	69.00 c	10.06 b	1.27 b	88.66 b
G -¼	154.88 **c**	29.77 b	81.60 b	6.27 a	32.55 d	5.46 a	0.80 d	3.66 d	62.42 d	10.88 a	3.29 a	163.77 a
L.S.D. $_{0.05}$	**7.91**	**0.50**	**1.14**	**0.33**	**1.87**	**0.46**	**0.010**	**0.12**	**2.06**	**0.47**	**0.49**	**10.26**
Interaction												
A × B	*	**ns**	**ns**	**ns**	**ns**	**ns**	**ns**	**	**ns**	**ns**	**ns**	**

Means designated by the same letters within each column are not significantly different at 0.05 level of probability.
*, ** : Significant and highly significant at 0.05 and 0.01 levels of probability.
ns: Not significant.
UHML: Upper Half Mean Length.
SCI : Spinning consistency index.

Table 3.Mean values of single yarn properties of Giza 86 as affected by the seed cotton production location, lint cotton grade and their interaction dring the two seasens

Characters / Treatments	Single yarn			
	Strength (g/tex)	Elongation (%)	Strength (g/tex)	Elongation (%)
	The first season 2017		The second season 2018	
	Seed cotton production location (A)			
Kafr El- Dawar	20.89 b	5.33 a	19.89 b	5.33 a
Kafr El-Sheikh	21.80 a	5.14 a	21.05 a	5.17 a
Basion	21.02 b	5.17 a	20.52 ab	5.31 a
L.S.D. 0.05	**0.59**	**ns**	**0.86**	**ns**
	Lint cotton grade (B)			
G/FG	23.20 a	4.88 b	22.31 a	4.33 b
G +¼	22.09 b	4.98 b	21.31 b	4.76 b
Good	20.06 c	5.23 b	19.39 c	5.68 a
G -¼	19.61 c	5.76 a	18.94 c	6.32 a
L.S.D. 0.05	**0.68**	**0.47**	**0.99**	**0.65**
	Interaction			
A × B	**ns**	**ns**	**ns**	**ns**

Means designated by the same letters within each column are not significantly different at 0.05 level of probability.
ns: Not significant.

3. The Interactions

Likewise, results tabulated in Tables (1, 2 and 3) declared that the first order interaction between the seed cotton production location and lint cotton grade (A x B) had highly significant ($p \leq 0.01$) for fiber properties tested by HVI Spectrum II (length uniformity index (UI), fiber elongation (Elong.), micronaire reading (Mic.), reflectance degree (Rd %), degree of yellowness (+b), trash count) and significant for spinning consistency index (SCI) in the first season of studied cotton cultivar Giza 86. On the other hand, it had highly significant for spinning consistency index (SCI), micronaire reading (Mic.) and trash count in the second season.

Concerning (A × B) interaction, it could be concluded that the highest mean values for spinning consistency index (209.00 and 206.00) were recorded from high lint cotton grade (Good to Fully Good) for the cotton of Kafr El-Sheikh location, micronaire reading (4.82and 4.72) were attained from the lint grade (Good + ¼) for the cotton of Kafr El- Dawar location, also the highest trash count (214.66 and 223.33) were possessed by the lint cotton grade (Good - ¼) for the cotton of Kafr El- Dawar location in the two seasons, respectively. In the same context the highest values for uniformity index (87.96%) was recorded by high lint cotton grade (Good to Fully Good) for the cotton of Basion location, fiber elongation (6.66%) was realized from the lint grade (Good - ¼) for the cotton of Kafr El-Dawar location, reflectance degree (Rd, 79.00%) was resulted from lint cotton grade (Good to Fully Good) for the cotton of Basion location, degree of yellowness (+b, 11.40) was reached from the lint grade (Good - ¼) for the cotton of Kafr El- Dawar location in the first season, respectively. On the other hand, the lowest mean values of spinning consistency index (153.66 and 150.66) were recorded by the lint cotton grade (Good - ¼) for the cotton of Kafr El-Sheikh location, micronaire reading (3.77and 3.67) were attained from the lint cotton grade (Good - ¼) for the cotton of Kafr El-Sheikh location, trash count (20.00 and 23.00) were recorded by high lint cotton grade (Good / Fully Good) produced in the Basion location during both season, respectively. The lowest uniformity index (84.13%) was recorded from the lowest lint cotton grade (Good - ¼) for the cotton of Kafr El-Sheikh location, the lowest fiber elongation (5.10%) was recorded from high lint cotton grade (Good to Fully Good) for the cotton of Kafr El-Sheikh location, the lowest reflectance degree (Rd, 63.83%) was gained from the lowest lint cotton grade (Good - ¼) for the cotton of Kafr El-Sheikh location and the lowest degree of yellowness (+b, 8.50) was recorded from high lint cotton grade (Good to Fully Good) for the cotton of Kafr El- Dawar location in the first season, respectively, as shown in Tables (4 and 5).

Table 4. The interaction between seed cotton production location and lint cotton grade (A × B) for the HVI fiber properties of Giza 86 during the first season (2017)

Variables		SCI	Uniformity index (%)	Micronaire reading	Fiber elongation (%)	Reflectance degree Rd (%)	Degree of yellowness + b	Trash count
Seed cotton production location (A)	**Lint cotton grade (B)**							
Kafr El-Dawar	**G/FG**	195.00	85.30	4.35	5.80	70.03	8.50	67.66
	G+¼	184.00	85.90	4.21	5.36	73.90	10.16	71.66
	Good	163.33	84.33	3.96	6.50	68.70	10.40	91.00
	G-¼	165.00	85.16	3.61	6.66	66.16	11.40	214.66
Kafr El-Sheikh	**G/FG**	209.00	87.56	4.74	5.10	76.96	8.86	25.66
	G+¼	202.33	86.63	4.01	5.66	74.96	9.50	64.66
	Good	181.00	85.76	3.90	5.80	71.63	10.06	82.33
	G-¼	153.66	84.13	3.77	5.83	63.83	10.46	125.00
Basion	**G/FG**	201.66	87.96	4.63	5.23	79.00	8.66	20.00
	G+¼	199.33	86.70	3.97	5.90	74.60	9.10	70.00
	Good	169.00	84.80	3.92	5.73	71.66	9.43	73.66
	G-¼	155.00	84.53	3.81	6.10	64.26	10.30	123.00
L.S.D. $_{0.05}$		**13.78**	**1.53**	**0.58**	**0.46**	**1.57**	**0.50**	**28.34**

SCI : Spinning consistency index.

Table 5. The interaction between seed cotton production location and lint cotton grade (A × B) for the HVI fiber properties of Giza 86 during the second season (2018)

Variables		SCI	Micronaire reading	Trash count
Seed cotton production locations (A)	Lint cotton grade (B)			
Kafr El-Dawar	**G/FG**	192.00	4.32	71.33
	G+¼	181.00	4.28	78.00
	Good	160.33	4.74	96.33
	G-¼	162.00	3.61	223.33
Kafr El-Sheikh	**G/FG**	206.00	4.64	28.33
	G+¼	199.33	3.91	74.66
	Good	178.00	3.80	90.66
	G-¼	150.66	3.67	135.66
Basion	**G/FG**	198.66	4.53	23.00
	G+¼	196.33	3.87	76.66
	Good	166.00	3.95	79.00
	G-¼	152.00	3.71	132.33
L.S.D. 0.05		**13.70**	**0.21**	**17.77**

SCI : Spinning consistency index.

CONCLUSION

In brief, seed cotton production locations and their derived lint grade affected significantly the fiber properties and single yarn strength of 60'S as well as the best values averages were obtained from classer grade Good to Fully Good for all traits of fiber and yarn.

REFERENCES

Al-Hibbiny, Y.I.M. 2004. Relation between the factors affecting boll opening and cotton yield and quality in Egyptian cotton. M.Sc. Thesis, Fac. of Agric., Al-Azhar Univ., Egypt.

ASTM., Standard. 1982. American Society for Testing and Materials. Standards of Textile Testing and Materials, part 32 and 33, Philadelphia, Pa. USA., D-2256-80.

Badr, S.S.M. and I.S.M. Hassan. 2003. Evaluation of some Egyptian cotton genotypes at new location at Kafr El-Sheikh. Proc. 10th conf. Agro. Suez Canal Univ. Fac. Environ. Agric. Sci. El-Arish, Egypt, 7-10 .

Batisha, E.I. Z. 2005. Seed cotton levels and lint grades analyses of some Egyptian cotton cultivars. Ph. D. Thesis, Fac. Agric., Saba Basha, Alex. Univ., Egypt.

Beheary, M.G.I. and S.S. Badr. 1995. Cotton yield and fiber maturity parameters as affected by cultivar and location. In Sci. and Dev. Res. 52(779): 59-72.

CoStat 6.311, C. C. W. 1998-2005. Cohort software798light house Ave. PMB320, Monterey, CA93940, andUSA. http://www.cohort.com/DownloadCoStatPart2.html

El-Banna, A.A.A. 2009. Effect of number of pickings and pre-ginning period on the ginning efficiency and fiber properties of some extra-long cotton varieties. M.Sc. Thesis, Fac. Agric., Saba Basha, Alex. Univ., Egypt.

El-Banna, A.A.A. 2019. Ginning efficiency and fiber quality properties of cotton as affected by roller gin stand feeding methods and seed cotton grade. J. Experi. Agric. Inter. 32(3): 1-9.

El-Oraby, S.H.M. 2003. Comparative study between some newly released Egyptian cotton crosses and some commercial cultivars grown in different locations Ph. D. Fac. Agric., Kafr El-Sheikh. Tanta Univ., Egypt.

Etman, H. A. 2010. Impact of color and length distributions on the fiber mechanical properties of some Egyptian cotton hybrids. M.Sc. Thesis, Fac. Agric., Saba Basha, Alex. Univ. Egypt.

Hassan, I. S. M., S. S. M. Badr, and I. S. M. Hassan.2012. Study of phenotypic stability of some Egyptian cotton genotypes under different environment. Egypt, J. Appl. Sci. 27 (6): 298-315.

Hassan, I.S.M. and S.H. Sanad.2006. Effect of different environments on yield, yield components, fiber and open-end yarn quality properties of some Egyptian long staple cotton genotypes. Egypt. J. Agric. Res. 85(6): 1887-1905.

Hassan, I.S.M., H. B. Abou Tour and S.S.M. Badr. 2006. Evaluation of two new extra-long staple cotton varieties with commercial cultivars grown in North Delta. Egypt. J. Agric. Res. 84 (5): 1561-1576.

Shaker,S. 2009. Genotypic stability and evaluation of some Egyptian cotton genotypes. Ph. D. Thesis, fac. of Agric. Kafr El-Sheikh Univ., Egypt.

Snedecor, G.W. and W.G. Cochran. 1967. Statistical method, 6*th* ed. Iowa Stat Univ. Press, 593p.

Yehia, K.A.M. 2003. Studies on cotton fiber maturity. M.Sc. Thesis, Fac. Agric., (Saba-Basha), Alex Univ., Egypt.

Younis, S.A.S .2015. Effect of climatic changes on yield and quality properties of some Egyptian cotton genotypes. Ph.D. Thesis, Fac. Agric, Cairo. Univ., Egypt.

الملخص العربي

العلاقة بين أماكن انتاج القطن الزهر ورتبة القطن الشعر الناتجة منها على جودة الالياف ومتانة الغزل لصنف القطن المصرى جيزة ٨٦

على أحمد على البنا

أجرى هذا البحث بقسم الانتاج النباتى – كلية الزراعة (سابا باشا) – جامعة الاسكندرية – مصر خلال موسمى صيف ٢٠١٧ ، و٢٠١٨ لدراسة تأثير مكان إنتاج القطن الزهر ورتبة القطن الشعر والتفاعل بينهما على جودة الألياف ومتانة خيط الغزل المفرد للصنف القطن المصرى جيزة ٨٦. استخدمت أربعة رتب من القطن الشعر لصنف القطن الطويل جيزة ٨٦ هى جود/ فولى جود ، وجود + ¼، وجود ، وجود – ¼ ، وثلاث أماكن انتاج هى محافظة البحيرة (كفرالدوار) ، ومحافظة كفر الشيخ (كفر الشيخ) ، ومحافظة الغربية (بسيون).

أوضحت النتائج المتحصل عليها أن أعلى القيم المتوسطة لكلا من ثابت الغزل (186.50 ، 183.50) ، ومتانة خصلة الالياف (41.45 ، 40.20 جرام / تكس) على التوالى فى الموسمين ، وأقل قيمة متوسطة للاستطالة الالياف (5.60%) فى الموسم الاول بالاضافة لأعلى قيمة متوسطة لطول النصف العلوى للشعيرات (31.17 مم) فى الموسم الثانى سجلت من القطن المنتج فى كفرالشيخ.

أفضل القيم المتحصل عليها لكل صفات الالياف ومتانة خيط الغزل المفرد من الرتبة العالية للقطن الشعر جود / فولى جود للصنف القطن المصرى جيزة ٨٦ حيث سجلت أعلى القيم المتوسطة لكلا من ثابت الغزل (201.88 ، 198.88) ، ومتوسط طول النصف العلوى للشعيرات (32.63 ، 31.98 مم) ، ومعامل الانتظامية (86.94 ، 84.38%) ، ومتانة خصلة الالياف (44.18 ، 43.63 جرام / تكس) ، ومعامل النضج (0.88، 0.84%) ، قراءة الميكرونير (4.57، 4.50) ، نسبة الانعكاس (75.33، 75.77%) ، ومتانة الخيط المفرد (23.20 ، 22.31 جرام / تكس) بالاضافية الى أقل القيم المتوسطة لكلا من معامل الشعيرات القصيرة (5.80، 5.16%) ، واستطالة الالياف (5.37 ، 4.68 %)، ودرجة الاصفرار (8.67 ، 8.61) ومساحة الشوائب (0.59 ، 0.68 %) ، وعدد الشوائب (37.77 ، 40.88)، واستطالة خيط الغزل المفرد (4.88 ، 4.33 %) على التوالى فى موسمي الدراسة. أعلى القيم المتوسطة لثابت الغزل(209.00 ، 206.00) سجلت من رتبة القطن الشعر جود / فولى جود مع القطن الناتج فى كفر الشيخ على التوالى فى موسمى الدراسة.