EAJBS
EGYPTIAN ACADEMIC JOURNAL OF BIOLOGICAL SCIENCES

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EGYPTIAN ACADEMIC JOURNAL OF BIOLOGICAL SCIENCES
BOTANY

ISSN 2090-3812

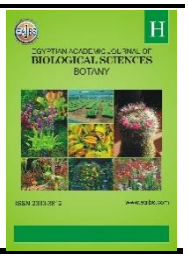
www.eajbs.com

Vol. 13 No.1 (2022)

Citation: Egypt. *Acad. J. Biolog. Sci.* (H. Botany) *Vol.13(1) pp25-32(2022)*
DOI: 10.21608/EAJBSH.2022.222220

Egypt. Acad. J. Biolog. Sci., 13(1): 25-32 (2022)

Egyptian Academic Journal of Biological Sciences
H. Botany
ISSN 2090-3812
www.eajbsh.journals.ekb.eg.



Technological Evaluation for Egyptian Cotton Advanced Strains

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ARTICLE INFO
Article History
Received:1/1/2022
Accepted:5/2/2022
Available:7/2/2022

***Keywords*:**
Commercial Egyptian cotton varieties, fiber quality parameters.

ABSTRACT

This study was carried out at the Plant Production Department, Faculty of Agriculture (Saba-Basha), Alexandria University, Egypt and the Cotton Research Institute, ARC, Giza, Egypt. Six commercial Egyptian cotton varieties were under study :Giza 87,Giza 96, Giza 94, Giza 86, Giza 95 and Giza 90. Additionally, three lint cotton grades were estimated for each variety, namely: Good /Fully Good (G/FG), Good +1/4(G+1/4) and Good (G) during the three consecutive seasons 2017, 2018 and 2019 while HVI 1000 (classing) was used for analyzing and measuring the fiber quality parameters. A highly significant difference for the mean squares of the quality parameters for the cotton varieties under study was observed. As well as the three cotton grades and the three growing seasons showed similar behavior for all the cotton fiber properties of the varieties understudy with an exception for the degree of yellowness (+b), fiber length (Upper Half Mean Length – UHML(mm)) and spinning consistency index (SCI) that revealed insignificant differences in the growing seasons. The mean squares of cotton varieties for all studied fiber properties were highly significant differences as well as the three cotton grades and the three growing seasons mannered the same trend for all studied fiber properties as cotton varieties except yellowness degree, fiber length (U.H.M.L) and spinning constant index (SCI) revealed insignificant differences in the growing seasons.Growing seasons (S) had a highly significant effect on all studied fiber properties i.e. the micronaire reading, maturity index, uniformity index, fiber strength, fiber elongation, short fiber index, reflectance degree and degree of yellowness.

INTRODUCTION

Egyptian cotton has an important status among the world's cotton varieties as its superior properties produce the finest yarn quality; where its fiber characteristics play an important role in the performance efficiency of spinning operations. Cotton quality assessment is an important component of the global cotton trade and the expectations of the spinners regarding the technological progress of textile production depend on the properties of quality fiber. The quality of the cotton yarn is highly dependable on the cotton fiber quality. (Gonca and Erhan 2006).

In Egypt, the cotton grading system highly depends on the skills and experience of the classer. Identifying the variety and estimating the grade and the quality of raw seed cotton according to official grade standards is one of the classer's main tasks. However, it was concluded that the grades were highly significant and correlated with the traits under study (direct or indirect) (Nassar *et al.,* 2019).

The quality parameters that were involved in the cotton industry act as a reference to the processing system. The Optimum operating systems depend on the working conditions and the characteristics of fibers such as are length, fineness, strength and elongation.

In addition to the fiber maturity and the number of convolutions of fibers that play vital roles in the cotton industry. Cotton fiber represents about 50% of the cost of yarn as there is a direct correlation between specific fiber quality characteristics and those of the yarn. Traditionally, the cotton price largely depends on key factors such as staple length, grade, color and micronaire. A higher price is usually settled for lint cotton with high-quality parameters and mature fibers (Gerald, 2008).

Aim of the study: Investigate the effect of cotton variety and lint grade on both the fiber properties measured by HVI and the different seasons (2017, 2018,2019); as well as evaluate the fiber properties for the Egyptian cotton advanced strains.

MATERIALS AND METHODS

This study was carried out at Plant Production Department Laboratories, Faculty of Agriculture (Saba-Basha), Alexandria University and Cotton Research Institute, Agricultural Research Center (ARC), Giza, on six Egyptian cotton varieties and three lint grades and some during 2017, 2018 and 2019 season.

Six commercial Egyptian cotton varieties represented the extra-long staple, (ELS) category there are Giza 87 and Giza 96 (over 1 3/8-inch fiber length = > 35 mm), long-staple (LS) category (1 1/4 -1 3/8-inch fiber length =30:34 mm) included long-staple white i.e., Giza 86, Giza 94 Long-staple creamy i.e., Giza 95 and Giza 90.

Each variety includes three lint grades as follows; Good to Fully Good (G/FG), Good (G) and Fully Good Fair to Good (FGF/G), during 2017,2018and 2019 seasons.

Table 1: The pedigree and origin of cotton genotypes: (Rasha, Amer,2019).

Cotton genotypes	Pedigree	Color	Category	Original	Year
Giza 87	G. 77 x G. 45 A	White	Extra-long	Egypt	2002
Giza 96	(G.84x G.70 x 51B) x S62	White	Extra-long	Egypt	2017
Giza 86	G. 75 x G. 81	White	long	Egypt	1996
Giza 94	G. 86 x 10229	White	long	Egypt	2016
Giza 95	G.83 x Dandara	Creamy	long	Egypt	2016
Giza 90	G. 83 (G.75 x 5844) x G. 80	Creamy	long	Egypt	2001

Fiber Properties:

Lint cotton samples were pre-conditioned for 24 hours, under the standard conditions of (65 ± 2 %) relative humidity and (20 ± 1 C°) temperature before testing. The treatments were arranged in a completely randomized design with three replications. The cotton samples contained approximately 50 kg of ginned lint, in order to perform both fiber and spinning tests.

A.1. High Volume Instrument (HVI): was used to determine the fiber physical properties according to the standard method of the ASTM (D 4605-86).

Studied Characteristics:

1- Fiber properties:

Table 2: Fiber cotton properties measured by HVI instrument.

Micronaire reading	Maturity index(%)
Upper Half Mean Length (mm)	Uniformity index(%)
Fiber strength (g/tex)	Fiber elongation(%)
Short Fiber index (%)	Reflectance degree (Rd)
Yellowness degree of (+b)	Spinning Consistency Index (SCI)

Statistical Procedures:

This investigation was conducted as a factorial experiment in a Completely Randomized Design (CRD) with three replicates and analyzed according to (Gomez and Gomez, 1984). The data was computed using the Co Stat program version 6.400, to test differences among the studied mean of treatments, the least significant difference (L.S.D.) was used at 0.05 level of probability.

RESULTS AND DISCUSSION

Fiber Properties as Influenced by the Egyptian Cotton Varieties (V), Cotton Grades (G), Seasons (S) and Their Interactions Measured by HVI Instrument During 2017,2018 and 2019 Seasons:

The measured fiber properties measured by the HVI for the Egyptian cotton varieties under study (V), cotton grades (G), seasons (S) and their interactions during 2017,2018 and 2019seasons were tabulated in Table (3) showed the mean square of fiber properties as influenced by the Egyptian cotton variety (V), cotton grade (G), seasons and their interactions during 2017, 2018 and 2019 seasons, respectively i.e. micronaire reading, maturity index, fiber length (U.H.M.L), fiber length uniformity, fiber strength, fiber elongation, short fiber index, reflectance degree, degree of yellowness and spinning consistency index. The cotton varieties under study (V) showed a high significance for all fiber properties understudy, as shown in Table (1).

However, the cotton grade (G) recorded a high significance for all properties under study except for the degree of yellowness that recorded an insignificant mean square. In terms of the growing seasons 2017, 2018 and 2019, a high significance was recorded for all fiber properties understudy with an exception for fiber length (U.H.M.L) and the spinning consistency index did not reach to significant level at 0.05 level of probability.

Both the first-order interaction cotton varieties (V) X cotton grade (G) (VxG), cotton varieties (V) X seasons (S) (VxS) and cotton grade (G) X growing seasons (S) (GxS), and second-order interaction cotton varieties (V) X cotton grade (G) X growing seasons (S) (VxGxS) showed similar behavior with a high significance for all fiber properties understudy with an exception of the spinning consistency index, degree of yellowness for (VxG), maturity index and fiber elongation and spinning constant index for (GxS) interaction and spinning consistency index for cotton varieties (V) X growing seasons (S) (VxS) interaction.

These results were compatible with Badr (2003), El-Oraby (2003), Abd El-Gawad (2006), Hassan and Sanad, (2006), Sharma (2014), Tesema and Hussein (2015) and Negm *et al.* (2016).

Table (4) showed the mean performance of fiber properties affected by the Egyptian cotton varieties under study (V), cotton grades (G) and seasons (S) and their interaction during 2017, 2018 and 2019. Table (3) illustrated the mean squares of fiber properties as

influenced by the Egyptian cotton varieties under study (V), cotton grades (G), seasons (S) and their interactions measured by the HVI during 2017,2018 and 2019seasons.

Table 3: Mean squares of fiber properties as influenced by the Egyptian cotton varieties (V), cotton grades (G), seasons (S) and their interactions measured by HVI instrument during 2017,2018 and 2019seasons

S.O.V	d.f	Micronaire reading	Maturity index	Fiber length		Mechanical properties		Short fiber index	color		Spinning constant index (SCI)
				Length (U.H.M.L)	Uniformity index	Fiber strength	Fiber elongation		Reflectance degree	Yellowness degree	
Cotton variety	5	6.06**	0.008**	244.8**	82.78**	532.08**	18.12**	76.83**	606.58**	57.09**	11690.58**
Cotton grade	2	1.19**	0.007**	17.8**	64.29**	132.62**	3.71**	11.60**	53.59**	0.31 ns	4502.11**
Seasons	2	0.21**	0.11**	0.33 n. s	9.46**	10.72**	38.69**	3.36**	57.51**	1.94**	742.82 n. s
Interaction (VxG)	10	0.27**	0.0018**	0.66**	5.19**	2.44**	0.30**	3.39**	42.50**	0.27 n. s	847.47 n. s
(VxS)	10	0.27**	0.005**	0.54**	1.88**	6.79**	3.71**	2.48**	52.22**	1.31**	534.79 n. s
(GxS)	4	0.47**	0.0005n.s	2.86**	3.21**	2.21**	0.024 n. s	0.37**	12.59**	0.47**	421.20 n. s
(VxGxS)	20	0.06**	0.0007**	0.29*	1.48**	1.04**	0.044*	0.62**	5.23**	0.31**	481.52 n. s
Error	108	0.005	0.0003	0.16	0.50	0.23	0.23	0.037	0.95	0.183	475.93
Total	161	—	—	—	—	—	—	—	—	—	—

n.s: Not significant difference at 0.05 level of probability.
*,** Significant and highly significant difference at 0.05 and 0.01 levels of probability,respectively

Table 4: Mean performance of fibers properties as affected by the Egyptian cotton varieties(V), cotton grades (G) and seasons (S) and their interactions during 2017, 2018 and 2019 seasons

Trait / Entries	Micronaire reading	Maturity index	Fiber length		Mechanical properties		Short fiber index (%)	COLOR		Spinning constant index (SCI)
			Length (U.H.M.L) (mm)	Uniformity index (%)	Fiber strength (g/tex)	Fiber elongation (%)		Reflectance degree (Rd)	Yellowness degree (+b)	
Cotton Variety										
Giza87	3.08f	0.88a	34.82a	87.7a	43.0c	6.1c	5.71d	76.57b	8.80d	210.2b
Giza96	3.65e	0.87b	34.80a	87.3b	43.5a	6.0d	5.78c	77.34a	8.74d	205.2ab
Giza86	4.16b	0.86d	33.73b	86.8c	43.1b	4.7f	5.40e	75.19c	9.38c	208.5a
Giza94	3.57d	0.85e	33.29c	86.9c	42.2d	5.2e	5.88c	75.07c	9.51c	204.4ab
Giza95	4.00c	0.86c	28.67d	84.3d	34.5e	6.6b	9.13a	64.73e	11.65b	166.8c
Giza90	4.29a	0.83f	28.57d	82.9e	34.7e	6.8a	8.74b	71.03d	12.05a	163.0c
L.S.D 0.05	0.04	0.003	0.21	0.38	0.26	0.08	0.1	0.52	0.23	11.7
Cotton Grade(G)										
G/FG	3.66c	0.87a	32.96a	86.8a	41.8a	6.2a	6.3 c	74.1 a	9.9	200 a
G+1/4	3.78b	0.86b	32.31b	85.9b	40.2b	6.9b	6.6 b	73.6 b	10.0	191 b
G	3.95a	0.85c	31.82c	84.5c	38.7c	5.6c	7.2 a	72.2 c	10.0	182 c
L.S.D 0.05	0.03	0.002	0.15	0.27	0.18	0.06	0.1	0.3	n.s	8
Seasons(S)										
2017	3.85a	0.86b	32.45	86.1a	39.8c	5.4c	6.89a	72.5b	10.05a	188.6
2018	3.73c	0.88a	32.32	85.2b	40.7a	6.9a	6.49b	74.5a	9.82b	189.5
2019	3.80b	0.85c	32.31	85.8a	40.2b	5.5b	6.93a	72.8b	10.20a	195.5
L.S.D 0.05	0.02	0.002	n. s	0.27	0.18	0.06	0.07	0.37	0.16	n. s
Interaction										
(VxG)	**	**	**	**	**	**	**	**	n.s	n. s
(VxS)	**	**	**	**	**	**	**	**	**	n. s
(GxS)	**	n. s	**	**	**	**	**	**	**	n. s
(VxGx)	**	**	**	**	**	**	**	**	**	n. s

n.s: Not significant difference at 0.05 level of probability.
*,** Significant and highly significant difference at 0.05 and 0.01 levels of probability, respectively.
Means within each column followed by the same letter are not a significant difference at 0.05 level of probability

Cotton Varieties (V):

Micronaire Reading And Maturity Index:

Recording the high mean value of micronaire reading (4.29) by cotton variety Giza 90, while the lowest mean value (3.08) was recorded from the cotton variety Giza 87.

With regard to the highest mean value (0.88) of the maturity, the index was recorded by the cotton variety Giza 87, while the lowest mean value (0.83) for the maturity index was obtained by the cotton variety Giza 90.

Fiber Length Measurements:

With concern for fiber length (Length-U.H.M.L- and fiber uniformity index) recording the highest mean value (34.82mm) of length (U.H.M.L) and (87.7%) of uniformity, the index was recorded by the cotton variety Giza 87, while the lowest mean value (28.57mm)of fiber length(U.H.M.L) and (82.9%) of uniformity index were recorded by the cotton variety Giza 90.

Mechanical Properties:

Concerning mechanical properties, the fiber strength was obtained the highest mean value (43.5 g/tex) for Giza 96, while the lowest mean value (34.5 g/tex) for Giza 95. The Fiber Elongation was obtained the highest mean value (6.8%) for the cotton variety Giza 90, while the lowest mean value (4.7%) was for the cotton variety Giza 86.

Short Fiber Index (SFI):

Regarding Table (4) the cotton variety Giza 95 was recorded the highest mean value (9.13%) for short fiber index, while the lowest mean value (5.40%) was for the cotton variety Giza 86.

Color Attributes:

Respecting the color attributes (Reflectance degree Rd and Yellowness degree +b), the Reflectance degree (Rd) was obtained the highest mean value (77.34) for the cotton variety Giza 96, while, the lowest mean value (64.73) for the cotton variety Giza95, whereas, Yellowness degree (+b) recorded the highest mean value (12.05) was given by the cotton variety Giza 90, and the lowest mean value (8.74) was given by the cotton variety Giza 96

Spinning Constant Index (SCI):

With respect to the Spinning constant index, the highest mean value (210.2) was estimated for the cotton variety Giza 87, whereas, the lowest mean value (163.0) of the Spinning constant index was obtained by the cotton variety Giza 90.

These results are compatible with El-Oraby (2003), Batisha, Z. Iman (2005), Osman (2007), Karademir *et al.* (2010), Jacquirine (2016) and Beheary *et al*. (2018).

Cotton Grades (G):

Concerning the cotton grades in Table (4), the highest cotton grade Good to Fully Good (G/FG) recorded the best values of all-fiber properties which as high value of maturity index (0.87%), fiber length (UHML)(32.96 mm), uniformity index(86.8%), fiber strength (41.8g/tex), fiber elongation (6.2%), spinning constant index (200) and less of micronaire reading(3.66), short fiber index(6.3%) and yellowness degree (9.9) vice versa were undesirable values recorded by cotton grade Good. These results are in harmony with Ibrahim (2013), Ibrahim and El-Banna (2018), and El-Banna (2019).

Growing Seasons (S) :

Growing season 2017 recorded the highest mean values of micronaire reading (3.85), the fiber length (U.H.M.L and uniformity index) (32.45mm) and uniformity index (86.1%), while the lowest mean values obtained in fiber strength, fiber elongation, the Reflectance degree (Rd)**,** and spinning constant index, these values were (39.8g/tex, 5.4%,72.5 and 188, respectively. On the other hand, the growing season 2018 recorded the lowest mean values of micronaire reading, uniformity index, short fiber index, and yellowness degree (3.73), (85.2%), (6.49%) and (9.82+b), respectively, while the highest mean values obtained by maturity index, fiber strength, fiber elongation, and reflectance degree 0.88%, 40.7 g/tex, 6.9% and 74.5 respectively**.** As well as, the growing season 2019 recorded the highest mean values of short fiber index, yellowness degree, and the spinning constant index 6.93%, 10.2, and 195, respectively, while the lowest mean values recorded with maturity index, the fiber length (U.H.M.L and uniformity index) and (0.85 and 32.31mm, respectively**.** These results manner the same trend with Abd El-Gelil , Huda (2001), Fouda (2004), Foulk *et al.*(2008), Bange *et al.*(2009), Etman, Hanan (2010), Grishanov (2011), Mahmoud *et al.*(2012), and Farooq *et al.*, (2015).

REFERENCES

Abd El-Gawad, N.S. (2006). Measuring cotton fiber perimeter and wall thickness of some Egyptian cotton cultivars using micromate tester. *Egyptian Journal of Agricultural Research,* 84 (1):12-19

Abdel-Gelil, E. Huda (2001). Studies on the Egyptian cotton grade by the High Volume Instrument (H.V.I). M.Sc. Thesis, Fac. Agric, Saba-Basha, Alex. Univ., Egypt

ASTM (2005). Standard Test Methods for Measurement of Physical Properties of Cotton Fibers by High Volume Instruments. Annual Book of ASTM Standards. ASTM International, United States. D 5867- 05

Badr, S.S.M. (2003). Evaluation of some Egyptian cotton varieties by the yield and seven methods of earliness of crop maturity measurements. *Journal of Agricultural Researches, Egypt,* 81 (2): 671-688

Bange , M. P., G.A. Constable, S.G. Gordon, R. L. Long, G.R.S. Naylor and M. H. J Sluijs (2009). Fiber (from seeds to good shirts). A guide to improving Australian cotton fiber quality. *The Cotton catchment communities Cooperative research center Australia,*2:23-31

Batisha, Z. Iman (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, Ibrahim, A.E.I., El-Akhdar, A.A., El-Bagoury, M.E. and Hanan, H.A.E. (2018). Relationships between fiber and yarn technological properties of some Egyptian cotton genotypes. *Journal of The Advances in Agricultural Researches, Faculty of Agriculture, Saba Basha. Alexandria University, Egypt,* 23(2) 302-315

El-Banna, A. A. A. (2019). The relationship between seed cotton grade and seed grid adjustment on ginning efficiency and fiber quality of the Egyptian cotton cultivar Giza 86. *Current Science International*, 8(1): 203-211

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

Etman, A. Hanan, (2010). Impact of color and length distribution on the fiber mechanical properties of some Egyptian cotton hyprids. M.Sc. Thesis, Fac. Agric., Saba Basha,Alex.Univ., Egypt .

Farooq, J.; A. Farooq; M. Rizwan; I. Valentin; M. A. Ali; K. Mahmood and A. Batool (2015). Cotton fibers: Attributes of specialized cells and factors affecting them. *Advances in Environmental Sciences,* 7 (3): 369-382

Fouda, H.S.A. (2004). A study on fiber quality index of some Egyptian cotton varieties. M.Sc. Thesis, Fac. Agric, Saba-Basha, Alex. Univ., Egypt

Foulk, J.A., G.R. Gamble, C. Price, H. Senter and W.R. Meredith Jr, (2008). Relationship of fiber properties to vortex yarn quality via partial least squares. *National Cotton Council Beltwide Cotton Conference, January 8-11,2008, Nashville*, Tennessee:1472-1485

Gérald, E. (2008). Quality and marketing of cotton lint in Africa. Africa Region Working Paper (121). Available at http://www. World bank. org/afr/WPS/WPS121_ Quality _and _Marketing Cotton_ Lint_ Africa. pdf. Available at, 15-2-2014

Gomez, K. A. and A. A. Gomez (1984). Statistical Procedures in Agricultural Research, New York, Chichester, 2nd edition, paperback,2: 680-700

Gonca Ozcelik and K.Erhan (2006). Examination of the influence of selected fiber properties on yarn nippiness. Fibres & textiles in Eastern Europe July / September 2006, 14

Grishanov, S. (2011). Handbook of textile and industrial dyeing principles, processes and types of dyes. *Woodhead publishing series in textile,* (116) 1: 28-63

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 Journal of Agricultural Researches,* 84(6): 1887-1905

Ibrahim, A. E. I. (2013). Effect of cotton variety and lint grade on some fiber and yarn properties. *Journal of Applied Sciences Research,* 6 (11):1589-1595

Ibrahim, A. E. I. and A. A. A. El-Banna (2018). Response of fiber quality to temperature degree and lint cotton grade in two long-staple varieties. *Alexandria Sciences. Exchange Journal,* 39(3):482-489

Jacquirine, M. (2016). The use of statistical techniques to study the relationship between cotton fibers and yarn properties –A case study of Uganda rotor spun yarn. (BSc. Textile and Clothing Tech (Hons) Kyambogo University, Kampala – Uganda

Karademir E., K. Cetin, E. Remzi E. and G. Oktay (2010). Relationship between yield, fiber length and other fiber-related traits in advanced cotton strains. *Notulae Botanicae Horti Agrobotanici Cluj-Napoca,* 38 (3): 2010, 111-116

Mahmoud, N.; M. Q. Tusief; D. Iqbal, M. A. Khan and W. Ishaque (2012). Effect of Different Locations, Varieties and Micronaire Values upon the Non-Cellulosic and Metal Contents of Cotton. *Journal of the Chemical Society of Pakistan,* Vol. 34, No. 1, 16-21

Nassar, M.A.A., I.A.E. Ibrahim, M.A.M. Negm, M.I. El Bagoury and Amer, Rasha S. M. (2019). Effect of some Egyptian cotton varieties and grades on fibers and yarn mechanical properties. *Journal of Advanced Agricultural Research, (Fac. agric. Saba Basha),* 24 (3):446-463

Negm, M.A.M, Sanad, Susan, H. and Z.E. Gahreeb, (2016). Relationships between HVI and CCS and tensile yarn strength, *World Cotton Research Conference-6. Brazil* 02-06 May 2016

Osman, N.A.A (2007). Arithmetic estimation of fiber maturity in Egyptian cotton. M.Sc. Thesis, (Saba-Basha), Alex. Univ. Egypt

Sharma, M.K. (2014), The history of roller ginning – weekly publication of cotton association of India – Cotton Statistics & News – No. 9

Tesema G.B. and K. Hussein (2015). Comparison of different quantification methods to define fiber quality of Ethiopian, Indian & Egyptian cottons. *International Journal of Fiber and Textile Research,* 5 (2): 9-15.

ARABIC SUMMARY

التقييم التكنولوجي لسلالات القطن المصري في مراحلها المتقدمة .

محمد أحمد عبدالجواد نصار[1] , علي أحمد علي الصاوي [1] , محمد عبدالرحمن محمد نجم[2] , محمود اسماعيل الباجورى [3] و رانيا صالح السيد أحمد [3]

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أجرى هذا البحث فى قسم الإنتاج النباتى بكلية زراعة - سابا باشا- جامعة الإسكندرية . ومعامل قسم بحوث الغزل – معهد بحوث القطن بمركز البحوث الزراعية بالجيزة .

لتقييم الصفات التكنولوجية لمجموعة من سلالات القطن المصري في مراحلها المتقدمة وذلك عن طريق قياس الصفات الطبيعية للألياف وتقييم بعض الصفات الغزلية لها. وذلك خلال مواسم 2017, 2018و 2019 علي التوالي وتم أستخدام ست أصناف من القطن المصرى والتي قسمت إلى قسمان :

1- القسم الاول الأقطان فائقة الطول والتي يندرج تحتها كل من القطن جيزة 87 وجيزة 96 ، والثاني الأقطان الطويلة والتي يندرج تحتها جيزة 94 , جيزة86 ,جيزة 90 وجيزة 95 . وكانت الصفات المدروسة هي قراءة الميكرونير ،نسبة نضج الشعيرات (Maturity index) ،الطول (طول الربيع الاعلي UHML) (مم) ، انتظامية الطول (Uniformity Index) (%) ، متانة الالياف (Fiber strength) (جرام /تكس) ،استطالة الالياف (Fiber elongation)(%)، نسبة الشعيرات القصيرة(%) ،درجة الانعكاس (Rd) ، درجة الاصفرار (b+) و معامل ثابت الغزل (SCI).

وجميع الأصناف ينتموا إلى (*Gossypium barbadense L.*) . بأستخدام ثلاث رتب هي جود /فولي جود, جود+4/1 و جود , بإستخدام جهاز HVI لتقييم الخواص الطبيعية والميكانيكية للألياف .وكان التصميم الإحصائي المتبع العشوائي التام وتم التحليل بالتجارب العاملية مع عدد 3 مكررات .

وأوضحت النتائج مايلى:

- أختلفت متوسطات أصناف القطن في جميع خواص الألياف المدروسة أختلاف عالي المعنوية خلال مواسم الدراسة الثلاثة
- أظهرت متوسطات رتب القطن لجميع خواص الألياف المدروسة فروق عالية المعنوية خلال مواسم الدراسة الثلاثة فيما عدا درجة الأصفرار(b+).
- كما أن متوسطات المواسم المختلفة لجميع خواص الألياف المدروسة سجلت فروق عالية المعنوية فيما عدا طول الشعيرات (U.H.M.L) و ثابت الغزل (CSI).
- التفاعل بين متوسطات الأصناف والرتب (VxG) سجل أختلاف عالي المعنوية في جميع الصفات المدروسة فيماعدا درجة الأصفرار(b+) و ثابت الغزل(CSI).
- التفاعل بين متوسطات الأصناف ومواسم الزراعة (VxS) أعطت أختلاف عالي المعنوية في جميع الصفات المدروسة فيما عدا ثابت الغزل(CSI).
- سجل التفاعل بين متوسطات الرتب خلال مواسم الزراعة المختلفة (GxS) في جميع الصفات المدروسة ماعدا معامل النضج (Mat)و ثابت الغزل (SCI) .
- أيضا وجد أن التفاعل بين متوسطات كل من الرتب والأصناف و مواسم الزراعة المختلفة (VxGxS) أعطي أختلاف عالي المعنوية في جميع الصفات المدروسة فيما عدا ثابت الغزل (SCI) .

1- سجل الصنف جيزة 87 أعلي وأفضل القيم لمعظم الصفات المدروسة.
2- سجلت رتبة جود/ فولي جود أعلي و أفضل القيم للصفات المذكورة سابقا
3- سجل الصنف جيزة 95 أقل القيم لمعظم الصفات المدروسة.
4- لوحظ أن موسم 2017 أعطي أعلي القيم لمتوسطات صفات كل من قراءة الميكرونير(3.85) ،طول الشعيرات (32.45مم) وأنتظامية الطول (86.1%) وأيضا أقل القيم لمتوسطات صفات كل من متانة الألياف (39.8 جم/ تكس) ، أستطالة الألياف (5.4%) ودرجة الأنعكاس (Rd72.5).