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Maintenance and Producing of the Nucleolus (Breeder's Seed) of Giza 90 Egyptian Cotton Cultivar (*Gossypium barbadense*. L).

Soliman, A. M.
Cotton Research Institute, Agricultural Research Center, Giza - Egypt

ABSTRACT

Field work and experiments were conducted at Shandaweel Experimental Station at Souhag Governorate, during 2015-2018 seasons. In 2015 season, sixty type plants were selected from the breeding nursery of Giza 90 cotton cultivar that produced sixty progenies (increase A) in 2016. From the latter, 17 families were selected to form (increase B) in 2017, nine elite families were selected and their seed were massed carefully together to form the nucleolus (Breeder's seed) in 2018 season. The results obtained here indicated that, the pure line method in the sense of pedigree selection for annually renewing Giza 90 breeder's seed could prevent genetic contamination. Meanwhile, the selection technique for producing breeder's seed of Giza 90 cultivar was valid and proved to be effective in holding the true type of the variety.

Keywords: cotton, Pedigree selection, Gossypium barbadense, Variety maintenance

INTRODUCTION

As an export crop, cotton is one of the most important crops produced in Egypt. It is vital to Egypt's national economy. It also provides raw material for the first local industry namely the spinning and textile. Also, its edible oil and cotton cakes are important. Other industries, such as ginning and pressing are based on cotton production.

Egyptian cotton is the leader of the world's extra long and long staple cottons. It possesses well known qualities that make it superior to almost other cottons in the world. It is particularly distinguished by higher fiber strength, fiber maturity and lower waste.

Breeding new cultivars of higher productivity and qualities over the already cultivated ones are important input to raise productivity per feddan. A cotton strain will deteriorate if the same strain within a given cultivar is used over a long period due to out crossing, mechanical mixing and/or genetic segregation. Therefore, the Ministry of Agriculture, through the research programs of Cotton Research Institute is working in two parallel lines.

A) Breeding new cotton cultivars to replace the older ones.
B) Annual renovation of the breeding entries which provides the producers with new strains (waves of seeds) which maintains productivity of a given cultivar and prevents it from deterioration.

A scheme based on pure line is using pedigree selection method to renew and maintain the breeder's seed of the cotton cultivars for commercial use (Cot. Var. Main. Res. Sec. CRI). Therefore, the main objective of the present study (which consider apart of Giza 90 maintaining programe) is to follow the steps of renewing and maintaining the breeder's seed of Giza 90 cultivar. Giza 90 is the commercial cotton cultivar which cultivated at Upper and Middle Egypt and characterized by high yielding ability, high lint percentage (38 - 39%), and early maturity with staple length of about 31 mm. Maintenance of the Egyptian cotton cultivars has been reported by several investigators (Al-Didi 1974, Abdel-Al 1976, Younis *et al*. 1993, Lasheen 1997, Nagib and Hemida 2001, Mohamed 2013, Al-Hibbiny 2015 and Hamed, Heba 2016).

MATERIALS AND METHODS

A base population of sixty selected elite plants (nursery) through field evaluation and laboratory determinations from a breeding plot of 2014 season was used in the present study. In 2015 season the seeds of the 60 selected plants were used to renew and maintain of Giza 90 at Shandaweel Experimental Farm, Souhag Governorate. At harvest; each individual plant was picked separately. The plants were screened for testing yield and its component characteristics (boll weight, seed index, lint percentage and lint index) as well as fiber properties (fiber length, fineness, fiber strength and uniformity ratio). Sixty plants which typically represent the plants type of Giza 90 were selected.

In 2016 season, the self-pollinated seeds of the 60 selected type plants were grown in plot rows conveniently named increase A progenies, as well as the open pollinated seeds of the same 60 selected type plants were grown in adjacent progeny rows to be used in yield evaluation trial in the next year. Accordingly the field and laboratory tests of phenotypic, yield, yield components and fiber properties were carried out, 17 families having the type performance were selected, at the end of season 2016.

In 2017 season, the sefled seeds of the 17 families were grown in increase plots B. The yield trial comprising the seventeen selected families (open pollinated seeds) and three strains of Giza 90 namely Giza 90/2015, Giza 90/2016 and Giza 90/2017 nuclei were used as controls which were conducted at Shandaweel experimental farm. The trial was carried out as a randomized complete block design with four replications. The entries were evaluated for yield and yield components and fiber properties.

At the end of 2017 season; 9 families were selected from increase plots B and their selfed seeds were massed together to form the new nucleolus (breeder's seed) of Giza 90 cultivar, which was propagated in 2018 season and grown in the same year in about 3 feddans at Shandaweel Experimental Farm, Souhag Governorate.

The studied traits were:

- Seed cotton yield per feddan was calculated from the mean plot size (SCY k/f).
- Lint cotton yield (LCY k/f)
- Boll weight (B.W g)
- Lint percentage (L.%)
- Seed index (S.I g)
- Lint index (L.I)
- Fiber length 2.5% (F. L. 2.5%)
- Elongation % (E.%)
- Pressily index (P.I.)
- Uniformity %(U. R. %)
- Sterngth g/tex (ST. g/tex)
- Fiber fineness (F.F)
- Yarn strength (Y.S.)
- Fiber reflection as percentage (RD).
- Degree of Yellowness on the lint color (+b).

RESULTS AND DISCUSSION

Means of agronomic and fiber properties for the 60 bulked families of Giza 90 cultivar in 2015 season were calculated, the results are presented in Table (1). With regard to the families compared, it was clear that no substantial differences for all studied traits were found. Whereas, coefficients of variability were low in magnitude for most studied traits except for boll weight, seed index, fiber fineness and pressily index. This could be due to environmental factors as temperature, insects, soil etc. on such traits. These results were in agreement with those obtained by Abdel-Zaher (2004), Mohamed (2013), Al-Hibbiny (2015) and Hamed, Heba (2016) and Mahrous (2017).

Table 1. Mean of agronomic and fiber properties for the 60 type plants selected from the nursery in 2015 to form increase A progenies in 2016 growing season.

Families No.	B. W. g	L.%	S. I. g	L. I. g	F. F.	P. I.	F. L. 2.5%	U. R. %
2/2015-4	3.10	38.70	10.40	6.57	4.10	10.60	31.00	83.40
2/2015-9	3.20	38.00	10.90	6.68	4.00	9.30	31.50	83.50
4/2015-16	2.90	38.70	10.00	6.31	4.30	9.30	31.60	89.00
5/2015-29	3.30	39.30	10.10	6.54	4.50	9.00	31.60	86.00
8/2015-11	3.40	38.10	11.10	6.83	4.50	9.40	31.60	88.30
9/2015-14	3.60	39.30	11.30	7.32	4.40	9.00	30.60	85.60
10/2015-2	3.60	37.90	11.70	7.14	4.50	9.50	32.90	86.40
11/2015-15	3.20	37.70	10.80	6.54	3.90	9.70	31.60	82.70
11/2015-27	3.30	39.10	10.60	6.81	4.30	10.20	31.10	82.50
12/2015-29	3.60	38.00	11.00	6.74	3.90	9.20	30.50	83.60
13/2015-9	3.20	37.00	10.70	6.28	4.50	9.50	30.60	83.90
14/2015-19	3.10	39.10	10.00	6.42	3.90	9.30	31.10	85.50
14/2015-28	3.30	38.20	10.50	6.49	4.20	10.10	31.00	83.40
15/2015-10	3.30	37.80	11.00	6.68	4.40	10.20	31.20	84.60
15/2015-20	3.30	38.40	10.70	6.67	4.40	9.60	31.10	83.20
16/2015-15	3.10	37.40	10.50	6.27	4.00	9.20	33.10	84.20
16/2015-23	3.10	38.90	10.90	6.94	4.50	9.10	30.60	84.70
17/2015-1	3.00	38.40	10.10	6.30	4.10	10.30	30.50	83.40
17/2015-3	3.20	37.30	10.50	6.25	4.00	9.60	32.30	85.50
18/2015-6	3.00	38.70	10.80	6.82	4.20	9.00	31.60	83.70
20/2015-30	2.90	37.70	11.00	6.66	4.20	10.30	31.60	83.60
21/2015-17	3.40	37.20	10.30	6.10	4.10	10.40	31.50	84.70
22/2015-16	3.10	37.70	11.00	6.66	4.40	9.30	30.70	86.70
23/2015-4	3.40	37.80	11.10	6.75	4.30	9.80	32.20	89.80
27/2015-13	3.10	37.70	10.20	6.17	3.90	10.30	30.10	87.20
28/2015-29	3.20	36.90	10.80	6.32	4.10	9.30	31.30	85.00
29/2015-8	3.00	36.50	11.90	6.84	3.80	9.40	32.60	84.20
29/2015-18	3.30	36.30	11.70	6.67	4.50	9.60	32.00	84.30
29/2015-25	3.30	36.90	11.90	6.96	4.40	9.60	31.60	82.80
30/2015-20	3.20	37.80	10.70	6.50	4.00	9.70	31.50	83.30
32/2015-6	3.50	37.40	10.80	6.45	4.20	9.70	32.00	84.30
33/2015-8	3.30	38.40	10.80	6.73	4.20	10.80	30.80	84.50
33/2015-10	3.30	37.80	11.60	7.05	4.20	9.40	31.10	84.30
34/2015-7	3.00	38.20	10.10	6.24	4.20	9.20	30.50	85.50
35/2015-18	3.40	37.50	10.70	6.42	4.50	9.00	31.10	85.10
36/2015-6	3.40	36.90	12.00	7.02	4.50	9.40	30.00	86.20
42/2015-2	3.20	37.70	10.40	6.29	4.50	10.00	30.30	85.70
44/2015-15	3.00	38.60	10.40	6.54	4.00	9.40	31.80	85.40
45/2015-22	3.70	39.00	10.80	6.90	4.00	9.10	31.10	85.20
46/2015-19	3.70	37.20	11.60	6.87	4.50	9.40	31.50	81.80
47/2015-28	3.50	37.70	10.80	6.54	4.20	10.00	30.80	83.40
48/2015-2	3.30	39.60	10.50	6.88	4.00	9.60	30.40	84.00
49/2015-20	3.60	37.90	11.10	6.77	4.00	9.70	31.20	84.00
50/2015-1	3.00	37.40	10.80	6.45	4.20	9.80	31.90	83.00
50/2015-4	3.60	37.50	11.20	6.72	4.20	9.40	31.40	85.20
51/2015-14	3.60	37.10	11.20	6.61	4.20	9.90	32.60	85.90
51/2015-16	3.10	38.40	10.90	6.79	4.20	9.20	31.60	87.10
52/2015-2	3.30	37.80	10.80	6.56	4.50	9.50	32.00	83.10
52/2015-8	3.40	37.70	10.90	6.60	4.50	9.40	31.80	85.80
53/2015-29	3.10	37.50	11.10	6.66	4.30	9.50	30.90	84.90
54/2015-5	3.10	37.90	10.60	6.47	4.40	9.40	30.60	81.20
54/2015-6	3.30	37.00	11.00	6.46	4.30	10.30	31.80	81.00
55/2015-6	3.00	37.20	11.80	6.99	4.40	9.20	30.60	81.70
55/2015-14	3.40	37.00	10.40	6.11	4.00	9.40	31.30	84.30
56/2015-19	3.40	38.10	10.10	6.22	4.20	9.40	31.30	83.10
57/2015-24	3.60	37.10	11.20	6.61	4.50	9.60	31.70	86.50
58/2015-23	3.40	38.10	10.90	6.71	4.20	9.90	31.30	85.30
59/2015-20	3.00	39.50	10.30	6.72	3.90	9.90	31.30	85.30
60/2015-2	3.30	38.30	10.80	6.70	4.50	9.50	31.30	83.10
60/2015-7	3.00	38.40	10.20	6.36	4.20	10.60	31.60	84.60
x families	3.27	37.91	10.83	6.61	4.23	9.62	31.33	84.59
x comp.	3.20	37.70	10.6	6.41	4.30	9.40	31.8	84.70
SE	0.03	0.10	0.06	0.03	0.03	0.06	0.08	0.22
CV%	6.45	1.98	4.59	3.99	4.89	4.56	2.10	2.04

S.E. = Standard error. C.V% = coefficient of variability.

Means of agronomic and fiber properties of the 60 selected type plant progenies (increase A) in 2016 season compared with three latest strains of G.90 are given in Table (2). It could be noticed that, no substantial differences for all studied traits were found between the means of (increase A) and the means of comparisons. Coefficient of variability as indicated by C.V % decreased for all the studied traits after selection except for boll weight, strength g/tex, fiber reflection as percentage and yarn strength, indicating gene fixation beside improvement.

Table (3) shows, the results of the means for yield, yield components and fiber properties of 17 selected families (increase B) compared with the latest strains of Giza 90 (controls). These results showed that no significant differences were detected among the families and control for all studied traits of yield and yield components. According to the yield superiority, desirable level of lint percentage and standard level of fiber properties, the seven strains following i.e. 9/2015-14, 11/2015-15, 14/2015-28, 16/2015-15, 29/2015-8, 52/2015-2 and 60/2015-7, were selected. The results are in agreement with those obtained by Abo-Arab *et al*., (1995), Lasheen (1997), Nagiub and Hemida (2001), Abdel-Zaher (2004), Mohamed (2013) and Al-Hibbiny (2015).

The results in Table 3 showed that the 7 selected families were not significantly different from the control in yield and other agronomic characters and fiber properties. Pure seeds of the aforementioned 7 selected families in increase B in such maintaining program, were massed

together to form the breeder seed stock of Giza 90 cultivar in 2018 season. The breeder seed was named (Giza 90 nucleolus /2018). Table (4) presented the characters of the selected families comparing to the latest nucleus of Giza 90.

The breeder's seed (nucleolus) was planted in 2018 season in about 3 feddan at Shandaweel Experimental Farm.

These results provide good evidence that the pure seed stock released by the cotton breeder would be maintained pure as the stocks and exclusively remained in the hands of the breeder. Being then the breeder's seed (nucleolus) is further increased to produce the foundation seed (nucleus) as a new seed wave of the cultivar carrying the year number of its propagation Giza 90/2018 nucleus. Unfortunately contamination through outcrossing with inferior foreign varieties/ cultivars or off-types cause undesirable genetic change of the cultivar. Also, mechanical mixing of varietal seeds in general cultivation and for handling provides enormous deterioration of cotton cultivars. The results are in agreement with those obtained by Younis *et al*. (1993), Abo-Arab *et al*. (1995), Lasheen (1997), Nagib and Hemida (2001), Abdel-Zaher (2004), Mohamed (2013), Al-Hibbiny (2015) and Mahrous (2017).

Table 2. Mean of yield characters and fiber properties for the 60 Giza 90 selected increases A type families in final of 2016 growing season.

Families No.	B.W. gm.	L.%	S.I. gm.	L.I. gm.	F.F.	F. L. 2.5%	U.R.%	ST. g./tex	E. %	+ b	RD %	Y. S.
2/2015-4	3.30	35.80	10.40	5.80	4.00	30.30	85.0085	37.00	8.80	11.10	64.70	2000
2/2015-9	2.80	35.20	10.60	5.76	4.00	30.30	84.80	38.00	8.00	11.40	64.40	1960
4/2015-16	3.00	36.10	11.50	6.50	4.00	30.20	84.60	34.20	8.30	11.30	66.50	2200
5/2015-29	3.00	38.30	10.90	6.77	4.10	29.00	83.20	36.80	8.10	11.00	62.10	1920
8/2015-11	3.30	36.50	11.50	6.61	4.20	30.30	79.30	36.30	8.60	11.10	63.40	1960
9/2015-14	3.40	37.10	12.10	7.14	4.00	31.50	84.20	38.70	8.60	11.80	63.80	1840
10/2015-2	3.40	35.60	11.80	6.52	4.00	31.60	81.60	37.30	8.30	11.70	61.30	2120
11/2015-15	3.10	36.20	11.10	6.30	4.10	30.30	84.50	38.20	8.90	11.90	61.00	2000
11/2015-27	3.00	35.60	11.20	6.19	4.00	30.90	80.10	38.60	8.70	11.50	61.60	1800
12/2015-29	3.20	35.10	12.10	6.54	4.20	31.30	83.30	39.30	8.40	11.80	64.40	1920
13/2015-9	3.10	36.50	11.70	6.73	4.00	28.80	82.20	33.00	8.10	11.20	65.70	1880
14/2015-19	3.30	37.20	11.40	6.75	4.10	31.40	80.50	34.80	8.10	11.30	66.10	1880
14/2015-28	3.30	38.20	11.10	6.86	4.20	30.60	87.90	39.50	8.30	11.40	60.00	1900
15/2015-10	3.20	38.00	11.30	6.93	4.20	30.10	82.20	34.30	8.40	11.00	63.70	1885
15/2015-20	3.40	36.40	10.80	6.18	4.00	30.10	81.40	35.20	8.20	11.20	64.20	1880
16/2015-15	3.20	36.60	11.40	6.58	4.10	30.30	85.50	35.80	8.90	11.60	64.40	1885
16/2015-23	3.10	37.20	10.90	6.46	4.20	32.10	83.60	34.40	8.40	11.30	62.00	1870
17/2015-1	3.10	35.80	11.50	6.41	4.00	28.70	83.30	35.00	8.10	11.10	63.30	1940
17/2015-3	3.00	35.90	11.80	6.61	4.10	30.90	82.20	35.30	8.50	11.20	64.30	1840
18/2015-6	3.50	36.00	11.80	6.64	4.10	29.60	81.70	34.20	8.20	11.90	63.50	1795
20/2015-30	2.90	36.40	11.30	6.47	4.10	30.60	84.70	39.40	8.20	11.00	61.80	2080
21/2015-17	3.30	36.30	11.50	6.55	4.40	31.30	79.10	33.20	8.80	11.30	66.40	2230
22/2015-16	3.20	35.60	11.20	6.19	4.10	30.30	82.30	35.30	8.90	11.40	60.00	2280
23/2015-4	3.30	36.10	11.00	6.21	4.50	29.70	83.80	36.70	8.70	11.00	63.70	1920
27/2015-13	3.20	36.20	11.70	6.64	4.00	30.80	81.80	34.80	8.70	11.20	64.20	1720
28/2015-29	3.20	36.90	11.10	6.49	4.50	29.50	79.50	33.30	8.50	11.60	64.80	1800
29/2015-8	3.10	36.50	11.50	6.61	4.30	31.20	81.80	38.20	8.90	11.30	62.00	1840
29/2015-18	3.30	37.00	11.50	6.75	3.70	28.80	80.40	34.30	8.10	11.10	63.30	1880
29/2015-25	3.10	36.80	11.60	6.75	4.20	29.40	84.30	38.70	8.40	11.20	64.30	2120
30/2015-20	3.30	36.40	11.60	6.64	4.50	31.30	84.90	36.00	8.80	11.90	83.50	2040
32/2015-6	3.20	35.80	11.60	6.47	3.90	30.60	80.30	37.60	8.20	11.00	61.80	1910
33/2015-8	3.20	36.00	11.80	6.64	4.40	30.10	83.80	35.10	8.70	11.10	60.50	1680
33/2015-10	3.20	35.80	11.40	6.36	4.40	29.50	83.60	35.30	8.10	12.40	64.60	1600
34/2015-7	3.10	35.30	11.50	6.27	4.10	30.80	84.10	38.90	8.40	11.60	63.80	1690
35/2015-18	3.00	37.30	11.20	6.66	4.00	29.20	82.10	33.90	8.40	11.00	63.80	1740
36/2015-6	3.30	36.60	11.60	6.70	3.80	32.10	84.50	33.50	8.80	11.60	62.50	1725
42/2015-2	3.10	39.70	11.40	7.51	4.20	31.50	83.80	36.40	8.90	11.00	67.00	1790
44/2015-15	3.20	37.30	10.80	6.42	4.20	31.50	83.80	36.40	8.90	11.00	67.00	1850
45/2015-22	3.20	35.70	11.40	6.33	4.40	32.60	83.30	33.70	8.80	11.00	67.00	1830
46/2015-19	3.20	35.80	11.70	6.52	4.20	31.10	84.30	39.20	8.70	11.70	64.00	1850
47/2015-28	3.20	35.30	11.40	6.22	4.70	30.30	82.40	33.20	8.60	12.60	61.70	1930
48/2015-2	3.30	36.00	12.50	7.03	4.20	29.60	82.20	37.60	8.30	11.10	64.60	1910
49/2015-20	3.40	36.10	12.10	6.84	4.30	30.70	85.70	38.30	8.20	12.30	63.20	1860
50/2015-1	3.20	35.90	11.20	6.27	4.20	30.10	84.90	36.30	8.30	12.10	63.80	1880
50/2015-4	3.00	36.10	11.50	6.50	4.20	30.70	85.50	37.30	8.10	10.60	64.80	1740
51/2015-14	3.20	36.70	10.90	6.32	4.30	31.00	85.50	34.50	8.20	11.80	59.90	1805
51/2015-16	3.40	36.20	11.40	6.47	4.20	32.30	85.00	38.30	8.10	11.40	66.00	1920
52/2015-2	3.40	37.40	11.50	6.87	4.20	31.50	84.00	38.80	8.40	10.80	65.10	1865
52/2015-8	3.30	37.30	11.20	6.66	4.20	30.80	85.10	39.60	8.10	11.70	66.70	2020
53/2015-29	3.40	37.00	12.00	7.05	4.40	29.70	83.00	35.30	8.60	11.40	66.30	1930
54/2015-5	3.10	36.80	11.00	6.41	4.40	29.80	84.60	34.00	8.60	11.50	63.40	1855
54/2015-6	3.20	35.50	11.50	6.33	4.00	32.00	80.20	33.90	8.80	11.00	61.20	1860
55/2015-6	3.20	36.90	11.50	6.73	4.20	30.10	85.30	35.50	8.90	11.70	61.80	1920
55/2015-14	3.10	36.50	11.60	6.67	4.40	31.40	85.20	35.60	8.90	10.60	61.40	2075
56/2015-19	3.30	35.30	12.10	6.60	4.30	31.20	83.40	36.40	8.20	11.50	63.60	1920
57/2015-24	3.30	36.30	11.90	6.78	4.20	30.40	85.00	39.10	8.30	10.90	64.00	2040
58/2015-23	3.10	37.50	10.80	6.48	4.20	29.70	85.60	36.50	8.70	11.40	62.30	2070
59/2015-20	3.30	35.40	12.10	6.63	4.20	31.10	85.80	35.00	8.90	11.30	63.80	1920
60/2015-2	3.00	36.00	11.20	6.30	4.20	30.00	83.20	34.70	8.50	11.60	61.90	2160
60/2015-7	2.70	37.20	11.40	6.75	4.20	31.20	84.90	37.80	8.80	10.60	62.00	2120
$\bar{x}$ families	3.20	36.50	11.40	6.55	4.20	30.50	83.40	36.20	8.50	11.40	63.50	1914
$\bar{x}$ comparisons	2.90	36.60	11.10	6.41	4.30	31.10	84.70	37.40	8.70	11.00	60.50	1960
SE	0.02	0.11	0.05	0.04	0.02	0.12	0.24	0.25	0.04	0.05	0.41	17.65
CV%	4.82	2.35	3.55	4.43	4.27	2.96	2.26	5.39	3.42	3.70	4.96	7.14

S.E. = Standard error. C.V% = coefficient of variability.

Table 3. Means of yield, yield components and fiber prosperities for the 17 selected families (increase B) in 2017 season.

Selected families	SCY K/F	LCY K/F	B.W g.	L. %	S.I g.	L.I	F. L. 2.5%	E. %	U.R. %	ST. g./tex	Mic.	Y. S.	+b	Rd
2/2015-6	7.11	8.44	3.10	37.70	10.90	6.60	30.70	8.00	81.60	37.50	3.90	1720	10.90	64.70
9/2015-14*	7.20	8.71	3.10	38.40	10.70	6.67	30.20	8.00	85.00	38.10	4.00	2040	11.30	63.90
11/2015-15*	8.26	9.86	3.10	37.90	10.90	6.65	30.70	8.00	83.10	36.60	4.10	1840	11.60	62.90
14/2015-28*	8.15	10.17	3.00	39.60	10.70	7.02	32.10	8.00	85.00	38.70	4.20	1880	10.90	65.00
15/2015-10	7.64	9.27	2.90	38.50	10.50	6.57	30.80	8.00	84.30	39.00	4.10	1800	10.60	65.30
16/2015-15*	6.99	8.50	2.90	38.60	10.60	6.66	31.80	8.20	83.60	39.00	4.40	1935	10.70	66.70
20/2015-30	8.19	9.80	3.00	38.00	10.50	6.44	30.80	8.30	83.80	34.20	4.50	1800	11.00	64.90
29/2015-8*	7.94	9.60	3.10	38.40	10.70	6.67	30.90	8.00	82.80	38.20	4.00	1880	11.00	65.70
30/2015-20	8.14	10.03	3.10	39.10	10.50	6.74	31.70	8.40	83.70	38.00	4.00	1720	10.10	61.90
48/2015-20	8.43	10.46	3.10	39.40	11.10	7.22	29.60	8.00	83.70	34.90	4.20	1720	11.70	63.50
49/2015-20	8.19	9.96	3.20	38.60	10.60	6.66	29.20	8.40	82.30	35.80	4.10	1960	11.70	65.60
51/2015-16	8.02	9.75	3.30	38.60	10.70	6.73	28.90	8.00	83.80	34.00	4.10	1880	11.50	63.10
52/2015-2*	7.88	9.48	3.10	38.20	10.50	6.49	30.50	8.40	84.30	37.30	4.20	1840	11.00	64.00
52/2015-8	7.79	9.35	3.30	38.10	10.00	6.16	29.20	8.30	84.50	35.70	4.10	1720	11.80	63.20
57/2015-24	8.28	9.94	3.40	38.10	10.80	6.65	30.70	8.50	86.50	35.90	4.10	1720	11.00	62.10
58/2015-23	8.22	9.84	3.30	38.00	10.20	6.25	30.00	8.00	85.70	37.70	4.20	1680	11.40	61.30
60/2015-7*	7.13	8.58	3.30	38.20	10.50	6.49	30.70	8.00	83.10	36.50	4.20	1760	11.10	62.20
$\bar{x}$ families	7.86	9.51	3.14	38.44	10.61	6.63	30.50	8.15	83.93	36.89	4.14	1817	11.14	63.88
$\bar{x}$ comp.	7.96	9.60	3.00	38.27	10.47	6.49	30.37	8.20	84.40	37.90	4.20	1800	11.40	64.30
S.E	0.11	0.15	0.04	0.13	0.06	0.08	0.22	0.05	0.29	0.39	0.04	24.76	0.11	0.37
C.V%	5.99	6.51	4.64	1.36	2.45	4.81	2.99	2.34	1.45	4.35	3.53	5.62	4.05	2.41
F-test	N.S	N.S	N.S	N.S	N.S	N.S								

$\bar{x}$ **comp= control mean** **S.E. = Standard error.** **C.V% = coefficient of variability.** *** Families selected**

Table 4 . Mean of studied characters for 7 families selected from increases B families in 2017 growing season which are massed to form new nucleolus (Breeder's seed) of *G.*90 in 2018 season.

Selected families	SCY K/F	LCY K/F	B.W g.	L .%	S.I g.	L.I	F. L. 2.5%	E. %	U.R . %	ST. g./tex	Mic.	Y. S.	+b	Rd
9/2015-14*	7.20	8.71	3.10	38.40	10.70	6.67	30.20	8.00	85.00	38.10	4.00	2040	11.30	63.90
11/2015-15*	8.26	9.86	3.10	37.90	10.90	6.65	30.70	8.00	83.10	36.60	4.10	1840	11.60	62.90
14/2015-28*	8.15	10.17	3.00	39.60	10.70	7.02	32.10	8.00	85.00	38.70	4.20	1880	10.90	65.00
16/2015-15*	6.99	8.50	2.90	38.60	10.60	6.66	31.80	8.20	83.60	39.00	4.40	1935	10.70	66.70
29/2015-8*	7.94	9.60	3.10	38.40	10.70	6.67	30.90	8.00	82.80	38.20	4.00	1880	11.00	65.70
52/2015-2*	7.88	9.48	3.10	38.20	10.50	6.49	30.50	8.40	84.30	37.30	4.20	1840	11.00	64.00
60/2015-7*	7.13	8.58	3.30	38.20	10.50	6.49	30.70	8.00	83.10	36.50	4.20	1760	11.10	62.20
$\bar{x}$ selected families	7.65	9.27	3.10	38.50	10.70	6.66	31.00	8.10	83.80	37.80	4.20	1882	11.10	64.30
$\bar{x}$ comparison	7.96	9.60	3.00	38.27	10.47	6.49	30.37	8.20	84.40	37.90	4.20	1800	11.40	64.30

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المحافظة وانتاج النوية (بذرة المربي) لصنف القطن المصري جيزة ٩٠

احمد مصطفي سليمان

معهد بحوث القطن - مركز البحوث الزراعية – الجيزة – مصر

يوضح هذا البحث كيفية إنتاج بذرة المربى وكيفية المحافظة على صنف جيزة ٩٠ وهو من طبقة الأقطان الطويلة للوجه القبلى وهذا الصنف ناتج بطريقة الانتخاب المنسب من التهجين بين صنف القطن جيزة ٨٣ والصنف دندرة. أجرى هذا البحث فى محطة البحوث الزراعية بشندويل محافظة سوهاج خلال الفترة من ٢٠١٥-٢٠١٨ م حيث تم فى موسم ٢٠١٥ زراعة ٦٠ نبات منتخب متفوق من حقل تربية الصنف عام ٢٠١٤ مكونة ٦٠ عائلة زرعت على هيئة نباتات فردية (الوعاء الأساسي الوراثي للصنف). تم انتخاب ٦٠ نبات تمثل نموذج الصنف زرعت عام ٢٠١٦ مكونة إكثارات (أ). ثم انتخب منها ١٧ عائلة أدخلت مع ثلاث مقارنات من أحدث نواهات الصنف فى تجربة قطاعات كاملة العشوائية من أربع مكررات عام ٢٠١٧. فى نهاية الموسم وحسب الاختبارات التى أجريت تم انتخاب ٧ عائلات نموذجية متفوقة فى صفاتها المحصولية والتكنولوجية وجودة البذرة ثم مزجت بذرتها الذاتية لتكوين النوية الجديدة (بذرة المربى) والتى زرعت فى موسم ٢٠١٨ فى مساحة ٣ فدان فى المزرعة البحثية بشندويل. وتدل النتائج المتحصل عليها على كفاءة الطريقة المستخدمة فى المحافظة على النقاوة الوراثية للصنف جيزة ٩٠ وذلك باستعمال تجميع النباتات المنتخبة بدلا من نسل نبات واحد. وكذلك تشير النتائج الى ان السلالة الناتجة بهذه الطريقة تمثل المصدر الجيد للبذرة النقية وراثيا والمنتخبة بواسطة المربى والتى يمكن بواسطتها المحافظة على النقاوة الوراثية للصنف جيزة ٩٠.