



MAINTENANCE AND PRODUCTION OF THE NUCLEOLUS (BREEDER SEED) OF GIZA 83 EGYPTIAN COTTON VARIETY, DURING 2004-2007 SEASONS

G.H. Abdel-Zaher

Res. Inst. Agric. Res. Center, Doki, Giza, Egypt.

Cotton Res. Inst, Agric Res. Center, Doki, Giza, Egypt.

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ABSTRACT

Field work and experiments were conducted at Malloway Agricultural Experimental Station during 2004-2007 seasons. In 2004 sixty typical plants were selected from a breeding nursery of Giza 83 variety, and furnished sixty progenies in 2005. From the latter, the lines in 2006 were descended. Five elite lines were selected and massed to form the nucleolus (Breeder's seed) in 2007 season. The obtained results indicated that pure line method pedigree selection for renewing Giza 83 breeder's seed could mean that an attempt have been made to prevent genetic loss and not necessarily imply a genetic gain. The selection technique for producing breeder's seed of Giza 83 cultivar was valid and proved to be effective in holding the variety true to type with slight improvement in yield and its component variables.

INTRODUCTION

Supplying planting seed to farmers involves three separate activities: variety development, seed multiplication, and variety maintenance (Lewis, 1970).

Maintenance of Egyptian cotton *Gossypium barbadens L.*, varieties plays a major role in the breeding program with the fact that high quality of the Egyptian cotton will deteriorate unless an effort is

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made to maintain it. In Egypt, after cotton variety is developed by the breeders (Cot. Breed. Res. Sec., C.R.I.), undergoes a scientific system for its propagation. The scheme is based on pure line method. Pedigree selection is used for renewing and producing the breeder seed of the cotton cultivars for commercial use (Cot. Maint. Res. Sec., C.R.I.). The research scheme of such maintenance programs, generally includes :

- 1-Breeding plot.
- 2-Progeny increase lines (increases A).
- 3-Progeny increase blocks (increases B).
- 4-Yield trial B.
- 5-Breeder's seed (Nucleolus, in Egypt term).

The main objective of the present study was to follow the procedures for renewing of new breeder seed to maintain the long staple cotton cultivar Giza 83, the commercial cotton variety at Middle Egypt region, which is characterized by high yielding ability, high ginning out turn of more than 120 pounds and early maturity with staple length of about 31 mm.

Maintenance of the Egyptian cotton varieties have been reported by several workers. Ware (1959) in his report on Egyptian cotton, discussed the maintenance of established varieties in Egypt. He recommended annual release of fresh seed instead of every three or four years needed by purity chequer method. Turner (1963) reported another method of the pedigree system, where the variety Acala 4-42 was maintained by blending seed of several component strains. Walker (1964) and Riggs (1967) described a model bulk system designed to stabilize a variety. They concluded that this system could be considered as a good maintenance procedure for a variety already released. Al-Didi (1974) stated that it was advantageous to mix the seed of chosen progenies, whereas, the component progenies of seed mixture may respond differently to environmental variation. He added that if genotype x environment effects were significant, mixtures of seed might show less fluctuation in yield and quality than individual progenies.

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The present investigation describe the method of maintaining Egyptian cotton varieties using a pedigree method based on mixing progenies of several plants instead of progeny increase of one selected plant.

MATERIALS AND METHODS

The system used by the Cotton Maintenance Section, Cotton Research Institute, to maintain the Egyptian cotton varieties was described by Al-Didi (1974) and Abd El-Al (1976).

The base population used in the present study was 60 elite plants selected through the visual field evaluation and further screening at the laboratory determinations for both agronomic and fiber properties from the pure line method-pedigree selection for renewing the breeder's stock seed of Giza 83 cultivar, at Mallawy Agric. Exp. Res. Station in 2003 season.

In 2004 season, the selfed seeds of the 60 selected elite plants of Giza 83 variety were grown at Mallawy Farm, Minia Governorate, in the "Breeding plot" forming a family in four ridges (7.5 m long and 65 cm apart), one row was left without planting between each two consecutive cultivated rows to facilitate plant screening and selfing. Each ridge contained 10 single plants spaced 75 cm apart. The open-pollinated seeds of the same 60 selected elite plants were grown in adjacent rows, representing the 60 bulked families. At flowering stage, artificial self-pollination was practiced for all individual plants of the breeding plot.

The best families, which meet the standards of the breeder on the basis of vegetative growth and earliness, were selected in the field. At harvest, each individual plant in the breeding plot was picked separately. Data were recorded on a single plant basis as well as plot mean basis though field evaluation and laboratory testing for the determinations of :

- 1 - Seed cotton yield per feddan (S.C.Y./fed.) was estimated as the weight of seed cotton yield in kentar per feddan.
- 2 - Lint yield per feddan (L.Y./fed.) was estimated as the weight of lint yield in kentar per feddan.

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- 3 - Boll weight (B.W.) as the average boll weight in grams of 25 sound boll picked at random from each plot.
- 4 - Lint percentage (L. %) as the weight of lint obtained from a seed cotton sample:

$$L \% = \frac{\text{Weight of lint in the sample}}{\text{Weight of seed cotton in the sample}} \times 100$$

- 5 - Lint index (L.I.) as the weight of lint produced by 100 seeds in grams:

$$\frac{\text{Lint percentage} \times \text{seed index}}{100 - \text{Lint percentage}}$$

- 6 - Seed index (S.I.) as the weight of 100 seeds in grams.
- 7 - Maturity in percent.
- 8 - Fiber length (S.I.) as the length parameters 2.5% span length was measured by the fibrograph.
- 9 - Uniformity (Uni.)
- 10- Hair weight (H.W.)
- 11- Fiber fineness (F.F.) was carried out using micronaire reading.
- 12- Elongation
- 13- Strength G. tex.
- 14- Reflectance (RD)
- 15- Yellowness (+b)
- 16- Yarn strength (Y.St.) as the product of lea strength in pounds x yarn strength (60's carded) least yarn count the 60 brand tester.

In 2005 season, the selfed seeds of 60 selected plants from the first maintenance cycle of 2004 were grown in plant rows conveniently named increase lines A, as well as, open-pollinated seeds of the 60 same type plants were grown in adjacent progeny rows to be increased for use in yield trail in the next year. According to the phenotypic superiority, agronomic and fiber properties for the 60 progenies, 13 better progenies were saved, and from these descended the 13 families in the 3rd year.

In 2006 season, the selfed seeds of 13 selected families from increase A were grown in increase B plots. A yield trail comprising the 13 selected lines (natural seeds) and three strains of Giza 83

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namely, G. 83/2003, G. 83/2004 and G. 83/2005 as controls were conducted at Mallawy Farm. The trial was based on randomized complete blocks design with four replications. The families were measured for yield, agronomic and fiber properties, accordingly, 5 type families scored by these measurements were selected.

In 2007 season, the pure selfed seeds of the 5 type selected families were massed to form the new nucleolus (Breeder's seed) of Giza 83 variety. The massed seeds were cultivated in about 6 feddans at the same area of the propagated fields of Giza 83 variety.

RESULTS AND DISCUSSION

Means of agronomic and fiber properties for the 60 bulked families of Giza 83 variety in 2004 season are shown in Table 1. It is clear that no substantial differences for all studied traits were found showing low coefficients of variability in magnitude for the studied traits except for boll weight. This finding might be due to environmental factors as temperature, insects, soil etc. on such trait. These results are in agreement with those obtained by Abo-Arab *et al* (1995) and El-Disouqi (2001) for boll weight and yarn strength.

Results in Table 2 show no differences in agronomic and quality traits between the selected 60 increase A families and the controls .

Table 3 shows that means of yield, yield components and fiber properties for the 13 selected families (increase B) compared with the three lasted strains (G. 83/2005, G. 83/2004 and G. 83/2003) of Giza 83. The results showed no significant differences between the families and comparisons for most studied traits except for lint percent, lint index and seed index. These results could be due to environment affected such traits. These results are in agreement with those obtained by Abd El-Al (1976), Younis *et al* (1993), Lasheen and Abbas (2003), Abdel-Zaher (2004) and Nagib *et al* (2006).

Regarding the results of the yield trial, 5 increased B progenies out of 13 ones were selected according to their superiority in growth and flowering behaviour, yield and agronomic characters, fiber and spinning properties as well as seed quality.

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Table 1. Means of agronomic characters and fiber properties of the 60 Giza 83 families in 2004 season.

Families	Boll Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Span Length 2.5 %	Uniformation %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
1/2004	2.2	42.8	7.0	9.4	91	30.6	84.7	160	4.1	7.3	36.0	67.5	10.5	2030
2/2004	2.6	42.7	7.6	10.2	91	30.7	85.6	148	3.8	7.8	36.4	68.5	10.7	2020
3/2004	2.2	42.8	6.9	9.2	92	31.6	85.2	149	3.9	7.5	38.0	68.3	10.7	2140
4/2004	2.0	42.4	6.2	9.4	87	29.2	82.2	140	3.7	7.5	34.0	68.2	11.0	1870
5/2004	2.4	42.9	7.4	9.8	86	30.2	84.3	140	3.7	7.3	34.0	68.5	11.3	2040
6/2004	2.2	42.1	6.4	8.8	89	28.3	81.2	150	3.8	8.1	33.5	66.8	10.6	1745
7/2004	2.5	42.1	7.1	9.7	91	31.4	86.4	141	3.8	9.7	37.0	69.3	11.0	2100
8/2004	2.3	41.2	7.1	10.1	85	30.2	83.8	143	3.3	7.1	34.3	69.2	10.5	2020
9/2004	2.5	43.8	7.5	9.6	91	29.9	85.5	145	3.7	7.8	36.0	70.6	10.7	2070
10/2004	2.2	42.7	6.8	9.1	85	30.0	83.6	142	3.8	7.3	36.0	67.7	10.3	2130
11/2004	2.7	42.7	7.2	9.7	88	30.2	84.2	144	3.8	7.7	35.1	67.5	11.8	2000
12/2004	2.4	41.2	6.9	9.9	89	29.6	82.8	145	3.8	8.0	33.0	68.0	10.8	1980
13/2004	2.6	43.1	7.4	9.8	90	29.8	84.6	147	3.9	7.2	34.0	67.8	11.7	2080
14/2004	2.8	40.2	7.1	10.6	89	30.1	83.8	149	3.9	7.5	34.3	67.6	11.5	2060
15/2004	2.6	43.4	8.0	10.4	90	30.3	84.9	148	4.0	7.8	35.0	67.8	11.7	2045
16/2004	2.2	42.0	6.3	8.7	91	30.2	84.1	144	3.9	8.2	34.3	67.2	11.4	2060
17/2004	2.5	42.1	7.1	9.8	91	30.4	84.8	147	3.9	7.7	35.0	69.1	11.4	2095
18/2004	2.6	42.9	7.7	10.3	91	30.8	85.4	151	3.9	7.8	35.0	69.0	11.3	2165
19/2004	2.3	42.7	6.8	9.1	89	31.3	83.8	149	3.9	7.7	34.8	67.3	11.3	2120
20/2004	2.4	42.6	7.3	9.8	89	30.8	85.3	148	3.9	7.4	34.5	67.5	11.7	2000
21/2004	2.3	40.9	6.6	9.6	88	29.9	84.8	147	3.9	7.6	37.3	68.2	11.2	2105
22/2004	2.4	42.9	7.4	9.9	89	30.4	85.5	145	3.8	7.2	35.0	68.1	11.6	2065
23/2004	2.4	42.6	7.1	9.5	91	29.3	84.8	160	4.2	7.4	35.6	67.2	11.5	2000
24/2004	2.3	41.5	7.0	9.8	90	30.4	85.3	145	3.8	7.7	36.5	68.6	10.6	2105
25/2004	2.3	41.9	6.4	8.9	91	30.0	86.2	147	3.8	7.3	38.5	67.2	11.2	2150
26/2004	2.5	40.3	7.1	10.5	88	29.4	83.3	158	4.1	7.0	31.3	65.1	10.6	1905
27/2004	2.3	42.3	6.7	9.2	90	29.3	85.3	149	4.0	7.0	36.1	67.4	10.4	2010
28/2004	2.3	40.3	6.5	9.6	89	29.8	84.3	148	4.0	8.1	36.6	68.0	11.2	2010
29/2004	2.2	40.7	6.6	9.6	90	31.2	84.3	145	4.0	7.0	35.0	69.7	11.3	2045
30/2004	2.2	41.9	7.3	10.1	94	30.5	84.8	149	4.1	7.6	38.0	67.8	11.1	2117

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Table 1. Cont.

Families	Boll Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Span Length 2.5 %	Uniformation %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
31/2004	2.5	41.2	6.7	9.5	93	30.9	84.8	145	3.9	7.9	36.2	66.7	11.8	2070
32/2004	2.3	41.4	6.9	9.8	93	30.8	82.5	149	4.0	8.0	35.9	67.8	10.6	2070
33/2004	2.4	41.0	6.8	9.8	92	29.9	85.0	142	3.8	8.2	36.3	66.9	10.8	2010
34/2004	2.4	39.3	6.0	9.3	91	29.9	82.7	145	4.0	8.2	34.1	67.7	11.3	1940
35/2004	2.4	40.4	6.4	9.5	95	28.9	83.2	147	3.9	8.4	32.8	65.3	11.3	1850
36/2004	2.4	42.8	7.6	10.2	93	31.8	82.8	148	3.8	8.2	35.4	69.1	10.2	2045
37/2004	2.2	41.1	6.2	8.9	91	30.4	84.7	143	3.6	8.1	36.1	67.1	11.4	2055
38/2004	2.3	42.3	6.9	9.4	91	29.5	83.8	140	3.7	8.0	34.0	66.8	11.3	1955
39/2004	2.2	43.4	6.3	8.2	93	30.6	85.2	141	3.9	8.0	37.0	68.0	11.4	2070
40/2004	2.1	43.4	6.5	8.5	91	30.2	84.2	142	3.9	7.5	34.0	67.8	11.1	1970
41/2004	2.3	43.7	7.7	9.9	91	29.2	83.0	148	3.6	8.4	32.2	68.8	10.1	1900
42/2004	2.2	42.5	6.6	8.9	91	29.1	83.1	141	3.7	8.0	34.5	67.4	10.8	1885
43/2004	2.4	42.4	6.8	9.2	92	29.2	84.4	142	4.0	8.8	33.8	66.8	10.9	1880
44/2004	2.1	42.1	7.1	9.7	93	31.2	84.5	146	4.0	8.1	37.0	67.7	11.1	2065
45/2004	2.4	42.5	7.8	10.6	92	31.5	85.5	145	4.0	7.6	35.4	68.2	10.8	2230
46/2004	2.3	43.2	7.4	9.7	94	29.5	84.0	147	4.1	7.8	35.5	69.0	11.2	2070
47/2004	2.3	43.0	7.4	9.8	94	28.5	84.9	144	4.1	8.9	36.6	67.7	10.6	1930
48/2004	2.1	42.8	7.3	9.8	93	29.9	84.0	141	4.0	8.0	37.8	67.3	10.4	2160
49/2004	2.5	42.5	7.3	9.9	94	29.6	83.7	141	3.8	8.7	37.8	67.7	10.1	2160
50/2004	2.4	41.6	7.1	9.9	93	29.0	83.6	144	3.8	8.3	34.8	66.8	11.8	1900
51/2004	2.1	43.2	6.5	8.6	89	30.0	82.2	153	4.1	7.7	32.2	69.6	10.5	1930
52/2004	2.7	41.8	7.3	10.2	91	29.3	83.2	147	4.0	8.2	32.0	67.8	10.6	1890
53/2004	2.7	43.4	6.9	9.0	92	29.8	84.0	148	4.0	7.2	36.3	68.1	11.4	2065
54/2004	2.5	43.7	7.5	9.8	92	30.2	84.0	149	4.0	8.2	32.7	67.9	10.8	2020
55/2004	2.5	42.4	8.0	10.9	93	30.7	86.9	155	4.2	7.3	38.1	65.9	11.4	2190
56/2004	2.7	41.3	7.3	10.4	90	30.2	83.3	152	4.1	7.6	34.5	67.7	10.2	1990
57/2004	2.5	41.7	7.6	10.6	93	31.1	84.4	147	3.9	8.1	36.0	67.7	10.3	1955
58/2004	2.5	41.9	7.6	10.5	94	30.7	84.5	149	3.9	7.8	36.0	67.8	11.1	2005
59/2004	2.3	39.9	6.4	9.7	92	30.5	84.9	146	4.0	7.1	37.0	67.0	11.2	2105
60/2004	2.4	41.7	6.9	9.7	92	29.3	84.8	144	3.9	7.2	36.0	67.4	10.6	2090
X families	2.4	42.1	7.0	9.7	91	30.1	84.3	147	3.9	7.8	35.3	67.8	11.0	2029
X comparisons	2.3	41.1	6.7	9.6	90	30.0	85.0	153	4.0	7.6	35.3	66.8	11.3	2053
S.E.	0.023	0.131	0.061	0.073	0.282	0.099	0.140	0.576	0.020	0.067	0.213	0.124	0.061	12.12
C.V. %	7.26	2.42	6.79	5.85	2.40	2.55	1.28	3.04	4.05	6.66	4.66	1.42	4.27	4.63

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Table 2: Means of agronomic characters and fiber properties of the 60 Giza 83 selected increase a families in 2005 growing season.

Families	Boll Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Span Length 2.5 %	Uniformation %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
2/2004-36	2.5	40.0	6.3	9.5	85	28.5	83.8	138	3.4	8.2	35.1	69.1	10.3	1980
2/2004-8	2.5	40.6	7.0	10.3	90	31.2	85.8	136	3.9	7.2	37.4	67.7	10.1	2195
2/2004-12	2.0	38.5	5.9	9.5	85	28.8	83.3	123	3.9	7.7	37.2	67.1	9.7	2040
2/2004-14	2.6	41.3	6.9	9.8	89	30.0	84.5	131	3.5	7.8	37.3	69.0	9.9	2065
2/2004-2	2.7	40.7	6.9	10.0	89	29.9	84.9	137	3.6	8.6	36.2	69.8	10.6	1800
2/2004-28	2.4	41.2	6.7	9.5	88	30.8	87.8	138	3.5	7.7	37.3	69.6	10.6	2210
2/2004-1	2.3	41.7	6.1	8.5	83	28.8	83.8	131	3.4	7.5	35.3	70.2	10.7	1870
1/2004-28	2.8	41.3	6.8	9.6	81	27.6	81.4	134	3.8	7.3	30.7	69.8	10.7	1620
6/2004-32	2.5	39.7	6.0	9.1	89	30.4	84.5	135	3.5	7.5	36.4	69.2	10.4	1980
8/2004-9	2.5	39.8	6.7	10.1	93	28.8	84.8	135	3.5	8.0	38.0	67.7	9.6	2020
9/2004-18	2.3	38.5	5.2	8.3	83	27.8	82.3	136	3.6	6.3	31.4	67.3	10.6	1600
9/2004-37	2.4	41.2	7.7	11.0	89	29.6	83.6	150	4.0	7.5	35.7	68.0	10.6	1990
9/2004-40	2.4	40.7	8.1	11.8	85	28.3	83.1	148	3.7	7.3	33.5	68.0	11.4	1835
2/2004-16	2.5	38.6	7.2	11.5	94	30.4	85.2	157	4.1	7.8	40.5	66.5	10.4	2260
3/2004-10	2.3	40.7	8.1	9.8	92	30.0	85.7	159	4.4	8.0	33.1	66.5	10.8	1830
3/2004-20	2.5	41.5	6.7	9.5	90	29.5	86.2	150	4.2	7.9	37.8	67.5	10.6	2180
5/2004-34	2.5	41.7	7.2	10.0	89	29.5	86.0	149	4.0	7.2	35.0	67.7	10.4	1985
7/2004-15	2.2	40.0	6.2	9.6	89	29.6	83.3	148	4.0	7.3	35.5	67.7	11.1	1930
7/2004-20	2.6	40.9	6.9	9.9	89	29.5	84.1	141	4.0	7.5	35.8	68.3	10.7	2015
8/2004-1	2.6	38.6	6.4	10.3	89	30.3	85.8	141	3.7	7.5	37.4	70.0	10.1	2130
8/2004-9	2.5	41.7	7.4	10.4	86	28.9	83.2	135	3.8	6.8	33.1	68.9	11.6	1790
8/2004-21	2.5	41.2	7.1	10.2	90	32.2	86.4	158	4.1	7.2	37.4	68.6	10.9	2220
9/2004-5	2.5	40.0	6.5	9.8	91	30.6	84.5	149	4.0	7.4	37.3	68.3	10.9	2040
9/2004-14	2.5	40.2	6.3	9.3	90	29.2	82.2	147	3.9	8.0	35.5	70.5	11.1	1830
9/2004-32	2.3	41.2	5.8	8.3	88	30.0	84.0	147	3.8	7.5	36.0	66.8	10.8	1980
1/2004-5	2.5	39.1	6.6	10.3	84	30.9	82.9	141	3.9	7.4	36.1	69.0	10.1	1960
1/2004-32	2.4	39.3	6.3	9.8	91	30.0	84.6	149	3.8	8.1	38.4	68.7	10.5	2060
1/2004-34	2.7	40.3	7.0	10.4	94	30.6	86.4	144	3.9	8.6	39.2	70.8	10.5	2280
6/2004-14	2.5	40.0	6.5	9.8	92	31.0	83.3	143	4.1	8.2	37.8	68.0	10.3	2165
6/2004-22	2.9	40.4	7.0	10.3	91	31.4	83.8	144	3.8	8.0	38.8	69.6	10.1	2100

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Table 2. Cont.

Families	Boll Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Span Length 2.5 %	Uniformation %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
37/2004-34	2.7	40.1	6.8	10.1	91	30.6	83.8	145	3.7	8.9	38.1	70.0	10.1	2000
38/2004-24	2.3	40.6	6.3	9.2	89	29.4	83.6	140	3.8	8.3	31.3	67.0	10.9	1890
39/2004-19	2.3	41.4	6.6	9.4	91	28.1	83.2	149	4.1	8.0	31.1	70.0	10.6	1720
40/2004-20	2.5	41.6	6.8	9.6	90	29.6	84.5	148	3.7	9.3	38.2	68.3	9.6	1905
41/2004-6	2.3	40.5	6.1	9.0	94	31.2	84.8	145	3.8	8.6	41.3	66.7	9.9	2240
41/2004-15	2.4	41.6	6.6	9.3	89	30.3	83.4	144	3.6	9.4	39.5	70.5	9.9	2020
41/2004-33	2.3	41.9	6.5	9.0	91	29.6	84.1	147	3.8	8.8	36.7	71.2	9.6	1900
42/2004-16	2.2	41.3	6.0	8.5	90	29.5	83.7	149	3.6	8.9	36.9	69.7	10.1	1950
42/2004-20	2.6	42.1	7.0	9.6	89	28.3	82.4	142	3.5	8.8	32.1	69.8	10.8	1780
43/2004-11	2.2	42.3	6.3	8.6	90	29.6	83.9	150	3.7	8.3	35.5	71.4	10.1	1950
43/2004-16	2.3	41.2	6.4	9.2	93	29.7	84.8	148	3.7	8.6	39.2	69.3	9.8	2110
43/2004-39	2.4	41.1	7.3	10.4	91	28.6	83.0	144	3.8	8.6	34.5	66.8	9.6	1800
44/2004-11	2.5	41.9	6.8	9.4	90	29.9	82.8	143	3.8	8.1	36.9	68.4	10.1	1920
44/2004-15	2.3	41.8	6.5	9.1	94	28.9	82.4	144	4.1	8.4	35.0	72.0	9.8	1820
46/2004-7	2.3	40.6	6.4	9.4	83	27.3	81.8	132	3.7	7.8	33.4	67.8	11.3	1660
47/2004-11	2.5	39.0	6.3	9.9	81	30.1	84.3	135	3.7	6.8	33.4	69.2	10.6	1985
47/2004-16	2.3	41.3	6.9	9.8	82	29.5	82.2	132	3.7	8.5	37.8	67.6	11.1	1970
48/2004-32	2.4	40.4	5.8	8.6	85	30.1	84.3	136	3.4	6.9	36.4	67.4	10.6	1950
49/2004-6	2.2	40.7	7.5	10.9	88	30.1	85.7	131	3.8	7.8	36.8	67.8	11.4	2010
50/2004-38	2.5	39.2	6.1	9.5	85	30.1	84.3	135	3.4	7.2	35.9	70.2	11.1	1905
51/2004-15	2.3	41.4	6.6	9.3	84	27.8	83.7	135	3.4	6.9	32.9	65.6	10.5	1680
51/2004-30	2.6	40.7	6.5	9.4	82	29.4	83.8	136	3.6	8.5	39.0	67.2	11.0	2010
53/2004-11	2.5	40.8	6.8	9.8	84	30.3	85.7	136	3.6	8.7	38.8	67.5	11.1	2010
54/2004-16	2.5	41.0	6.6	9.5	86	29.4	85.0	132	3.7	7.2	35.5	66.0	11.6	1830
55/2004-28	2.8	38.7	6.2	9.8	88	29.3	85.0	134	3.7	7.5	37.3	67.7	11.4	1930
55/2004-31	2.5	41.2	6.5	9.3	91	29.9	84.0	140	3.6	9.4	38.7	66.7	11.8	2160
56/2004-13	2.3	40.1	6.9	10.3	94	30.1	85.3	142	3.7	8.4	38.9	67.8	10.6	2145
56/2004-33	2.3	41.1	6.8	9.8	93	29.9	83.3	153	4.2	8.7	35.3	68.3	10.0	1830
57/2004-7	2.4	39.3	6.4	9.9	90	30.3	82.3	139	3.6	8.3	35.7	70.0	10.2	1860
59/2004-23	2.8	40.3	6.1	9.1	83	29.3	84.2	125	3.9	7.8	35.8	67.5	10.9	1890
X families	2.4	40.6	6.6	9.7	88	29.7	84.1	141	3.8	7.9	36.2	68.5	10.5	1960
X comparisons	2.4	40.5	6.4	9.4	90	29.7	84.1	136	3.6	8.8	36.1	68.3	10.3	2000
S.E.	0.021	0.127	0.068	0.089	0.461	0.125	0.165	1.000	0.029	0.089	0.304	0.185	0.071	20.42
C.V. %	6.88	2.42	7.97	7.11	4.06	3.26	1.52	5.51	0.06	8.75	6.51	2.10	5.25	8.07

Table 3. Mean yield, yield components and fiber properties for the 13 selected increase B families in 2006 growing season.

Selected families	Yield and yield components						Maturity %	Fiber properties								
	Seed Cotton Yield K/F	Lint Yield K/F	Boll Weight (g)	Lint Percent (%)	Lint Index (g)	Seed Index (g)		Span Length 2.5 %	Uniformation %	Hair Weight	Micro-naire	Elongation	Strength G. tex	Reflectance %	Yellowness	Yarn-strength 60'scarded
7/2004-28	12.02	15.97	2.7	41.3 a	7.5 a-c	10.6 e	89	30.3	84.7	162	4.4	7.9	34.4	69.2	10.9	1980
19/2004-37	10.53	14.51	2.6	40.4 a-c	7.2 bc	11.0 b-e	92	30.8	86.8	171	4.6	8.3	36.8	68.8	11.9	2030
23/2004-20	11.77	14.81	2.7	41.1 a	7.8 a	11.2 a-e	93	29.5	81.8	171	4.6	8.0	30.9	68.9	12.1	1770
27/2004-20	11.76	13.80	2.8	39.9 bc	7.2 bc	10.8 de	93	31.4	86.3	180	5.0	7.9	36.5	69.7	11.7	2015
28/2004-21	10.34	13.62	2.8	40.8 ab	8.0 a	11.6 ab	85	30.4	84.8	160	4.3	7.6	35.8	69.4	11.6	1850
29/2004-5	10.86	14.03	2.8	40.5 a-c	7.7 ab	11.4 a-d	96	31.5	85.8	181	4.8	8.0	36.5	69.0	11.6	2050
29/2004-32	9.93	13.52	3.0	39.9 bc	7.0 c	10.6 e	94	30.5	84.4	174	4.7	8.0	35.4	71.5	11.1	1880
47/2004-16	11.35	14.47	2.9	40.2 a-c	7.6 ab	11.3 a-d	90	30.8	83.2	168	4.5	7.8	35.1	70.7	11.6	1880
48/2004-32	10.16	13.81	2.8	40.9 bc	7.5 a-c	10.8 de	89	30.7	84.7	161	4.3	8.4	34.4	69.3	11.3	1870
51/2004-30	11.48	14.97	2.9	40.4 a-c	7.4 a-c	10.9 c-e	90	31.8	83.7	168	4.5	7.7	35.2	67.0	11.5	1950
53/2004-11	11.04	14.10	2.9	40.7 ab	7.9 a	11.5 a-c	91	31.5	85.8	164	4.4	8.5	38.0	67.5	11.8	2070
55/2004-31	10.42	12.95	2.8	40.0 bc	7.6 ab	11.4 a-d	91	30.5	84.3	160	4.1	7.5	36.8	69.7	11.9	1970
56/2004-13	11.53	13.48	3.0	39.5 c	7.7 ab	11.8 a	90	29.7	85.2	164	4.4	7.7	37.1	70.6	11.1	1940
\bar{X} selected fam.	11.01	14.16	2.8	40.4	7.5	11.1	91	30.7	84.7	168	4.5	7.9	35.6	69.3	11.5	1940
\bar{X} comparisons	11.43	14.30	2.8	40.0	7.7	11.5	93	30.9	86.0	166	4.5	8.0	37.3	68.7	11.4	2095
F-test	N.S.	N.S.	N.S.	*	*	**	-	-	-	-	-	-	-	-	-	-
S.E.	0.191	0.219	0.032	0.146	0.081	0.108	0.760	0.192	0.372	1.98	0.065	0.084	0.493	0.338	0.099	24.59
C.V. %	6.26	5.57	4.16	1.30	3.87	3.52	3.01	2.26	1.58	4.25	5.25	3.85	5.00	1.76	3.11	4.57

Nucleolus of Egyptian cotton Giza 83

Pure seeds of these best 5 progenis, as the last step in such maintaining program, were massed to produce a new nucleolus (breeder seed) named G. 83/2007, data of which are presented in Table 4. Data proved that selection was effective in holding the cultivar true to type. Being then the breeder seeds they were further increased to produce the foundation seed as a new cultivar strain (wave) carrying the number of same year which they were propagated in.

Table 5 shows the means of yield, yield components and fiber properties for the seven successive G. 83 nuclei in 2007 season. The data showed no significant differences between the nuclei for all traits. These results provide a good evidence that the pure seed stock released by the cotton breeder could be maintained pure as long as the stocks were controlled and exclusively remained in the hands of the breeder. On the other hand, deterioration might occur in cotton belt in general use through contamination and variety mixing by mechanical mixing of seeds or out crossing with inferior foreign cultivars or off --types which could result in a genetic change of the variety. These results are in agreement with those obtained by Abdel --Al (1976), Younis et al (1993), Abo --Arab et al (1995), El --Disouqi (2001), Lasheen and Abbas (2003), Abdel --Zaher (2004) and Nagib et al (2006).

Table 4: Mean of studied characters for 5 types selected increases B families in 2006 growing season which are massed to form the new nucleolus (Breeder seed) of Giza 83 in 2007 season.

Selected families	Yield and yield components						Maturity %	Fiber properties								
	Seed Cotton Yield K/F	Lint Yield K/F	Boll Weight (g)	Lint Percent (%)	Lint Index (g)	Seed Index (g)		Span Length 2.5 %	Uniform- mation %	Hair Weight	Micro-naire	Elong- ation	Stre-ngth C. tex	Refle-ctance %	Yello-wness	Yarn stren-gh 60's carded
7/2004-28	12.02	15.97	2.7	41.3	7.5	10.6	89	30.3	84.7	162	4.4	7.9	34.4	69.2	10.9	1980
19/2004-37	10.53	14.51	2.6	40.4	7.2	11.0	92	30.8	86.8	171	4.6	8.3	36.8	68.8	11.9	2030
51/2004-30	11.48	14.97	2.9	40.4	7.4	10.9	90	31.8	83.7	168	4.5	7.7	35.2	67.0	11.5	1950
53/2004-11	11.04	14.10	2.9	40.7	7.9	11.5	91	31.5	85.8	164	4.4	8.5	38.0	67.5	11.8	2070
55/2004-31	10.42	12.95	2.8	40.0	7.6	11.4	91	30.5	84.3	160	4.1	7.5	36.8	69.7	11.9	1970
\bar{X} selected families	11.10	14.50	2.8	40.6	7.5	11.1	91	31.0	85.1	165	4.4	8.0	36.2	68.4	11.6	2000
\bar{X} comparisons	11.43	14.30	2.8	40.0	7.7	11.5	93	30.9	86.0	166	4.5	8.0	37.3	68.7	11.4	2095

K = Kentar = S.C.Y. = 157.5 kg

Lint of the Kentar = 50.0 kg .

Table 5. Mean yield, yield components and fiber properties for the seven successive Giza 83 nuclei in 2007 season.

Selected families	Yield and yield components					Maturity %	Fiber properties								
	Seed Cotton Yield K/F	Lint Yield K/F	Boll Weight (g)	Lint Percent (%)	Seed Index (g)		Span Length 2.5 %	Uniformation %	Hair Weight	Micro-naire	Elongation	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
G. 83/2001	10.45	12.92	2.9	40.2	11.2	89	31.0	82.8	158	4.0	7.7	36.0	67.5	12.1	2040
G. 83/2002	10.60	13.18	2.9	40.4	11.4	90	30.2	85.5	160	4.1	8.3	37.8	69.0	12.3	2040
G. 83/2003	10.62	13.57	2.8	40.4	11.1	89	29.3	84.9	167	4.5	7.9	37.0	66.9	12.0	1920
G. 83/2004	10.19	12.92	2.9	40.2	11.3	87	29.8	84.2	156	4.0	9.4	36.4	67.2	12.6	1900
G. 83/2005	10.56	13.24	2.7	40.2	10.9	86	29.5	85.2	168	4.5	7.9	34.5	67.1	11.9	1980
G. 83/2006	10.57	12.92	2.8	40.5	11.1	88	30.2	83.8	169	4.5	9.9	37.0	65.9	12.5	2005
G. 83/2007	10.46	13.31	2.8	40.3	11.0	86	29.5	83.3	161	4.2	8.2	37.2	67.2	12.3	1940
F-test	N.S	N.S	N.S	N.S	N.S										

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إنتاج والمحافظة على النوية (بذرة المربي) لـصنف القطن المصري

جيزه ٨٣ خلال المواسم من ٢٠٠٤ إلى ٢٠٠٧

جمال حسين عبد الظاهر

معهد بحوث القطن - مركز البحوث الزراعية - الدقى - الجيزة - مصر

يوضح هذا البحث كيفية إنتاج بذرة المربي والمحافظة على الصنف جيزه ٨٣ . أجرى برنامج هذا البحث بمحطة البحوث الزراعية بملوى فى الفترة من ٢٠٠٤-٢٠٠٧ حيث تم زراعة ٦٠ نبات منتخب من حقل التربية للصنف موسم ٢٠٠٤ مكونة ٦٠ عائلة . وفى نهاية الموسم تم انتخاب ٦٠ نبات زرعت موسم ٢٠٠٥ مكونة خطوط ونسل إكثار- أ . ثم أُنْتخِب منها ١٣ عائلة طراز الصنف أدخلت مع ثلاث مقارنات فى تجربة قطاعات كاملة العشوائية فى أربعة مكررات موسم ٢٠٠٦ لتقييمها للمحصول والتجاسس وصفات جودة التيلة والغزل .

وفى نهاية الموسم وحسب الاختبارات التى أجريت تم انتخاب خمسة عائلات نمونجية بناء على الصفات القياسية للصنف والتى تم خلط بذرتها لتكوين النوية الجديدة للصنف (بذرة المربي) والتى زرعت موسم ٢٠٠٧ فى مساحة قدرها ٦ فدان فى نفس المساحة المخصصة للصنف ، والتى بالتالى ستزرع فى موسم ٢٠٠٨ إن شاء الله بالمزرعة البحثية والمزرعة الحقلية بملوى لتكون السلالة الجديدة للصنف والتى تنتج سنوياً تحت مسمى نواة وهى تمثل تقاوى الأساس للصنف والذى بدوره سيدخل فى مراحل إكثار عند المزارعين المتعاقدين بمرتب الصنف بالزراعة العامة لتكون درجتى التقاوى المسجلة والمعتمدة بالقدر الذى يكفى تغطية مساحة الصنف جميعها بتقاوى نقيه معتمدة .

وتشير النتائج المتحصل عليها أن السلالة الناتجة بهذه الطريقة تمثل المصدر الجيد للبذرة النقيه وراثياً والمنتجة بواسطة المربي والتى يمكن بواسطتها المحافظة على النقاوة الوراثية للصنف جيزه ٨٣ ، وإذا أحسنت عملياً تداول التقاوى واحتياطات منع الخلط سواء ميكانيكى أو وراثى فى حقول إكثار التقاوى بالزراعة العامة .