

PLAN FOR MAINTENANCE AND PRODUCING THE NUCLEOLUS (BREEDER SEED) OF GIZA 83 EGYPTIAN COTTON VARIETY, DURING 2003-2006 SEASONS

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ABSTRACT

Field work and experiments were conducted at Mallowy Agricultural Experiment Station during 2003-2006 seasons. In 2003 sixty typical plants were selected from a breeding nursery of Giza 83 variety, and furnished sixty progenies in 2004. From the latter, the lines in 2005 were descended. Five elite lines were selected and massed to form the nucleolus (Breeder's seed) in 2006 season. The results obtained here 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.

Key words: *Maintenance, Nucleolus (Breeder seed), Giza 83 variety, Gossypium barbadens L., Cotton.*

INTRODUCTION

Supplying planting seed to farmers involves three separate activities: varietal development, seed multiplication, and varietal 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 is the principle merit of the Egyptian cotton will deteriorate unless an effort is made to maintain it. In Egypt, after cotton variety is developed by the breeders (Cot. Breed. Res. Sec., C.R.I.), it 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 in 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 yield 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

many workers, Ware (1959) in his report on Egyptian cotton, discussed the maintenance of established varieties in Egypt. He recommended annual releases 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.

The present method of maintaining Egyptian cotton varieties is 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 Malloway Agric. Exp. Res. Station in 2002 season.

In 2003 season, the selfed seeds of the 60 selected elite plants of Giza 83 variety were grown at Malloway 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 through field evaluation and laboratory testing for determinations of:

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

- kantar per feddan.
- 3 - Boll weight (B.W.) 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.) 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.) the weight of 100 seeds in grams.
- 7 - Maturity in percent.
- 8 - Fiber length (S.I.) 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.) is the product of lea strength in pounds x yarn strength (60's carded) least yarn count the 60 brand tester.

In 2004 season, the selfed seeds of 60 selected type plants from the first maintenance cycle of 2003 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, 17 better progenies were saved, and from these descended the 17 families in the 3rd year.

In 2005 season, the selfed seeds of 17 selected families from increase A were grown in increase B plots. A yield trail comprising the 17 selected lines (natural seeds) and three strains of Giza 83 namely, G. 83/2002, G. 83/2003 and G. 83/2004 as controls were conducted at Mallawy Farm. The trail was based on randomized complete blocks design with four replications. The families were measured for yield, agronomic and fiber properties, according, 5 type families scored by these measurements were selected.

In 2006 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 2003 season are shown in Table (1). It was cleared 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. The finding might due to environmental factors as temperature, insects, soil etc. on such trait. These results were in agreement with those obtained by Abo-Arab *et al* (1995) and El-Disouqi (2001) for boll weight and yarn strength.

Table 1. Means of agronomic characters and fiber properties of the 60 Giza 83 families in 2003 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
1/2003	2.3	38.8	6.8	10.7	92	31.0	85.2	162	4.4	7.3	35.1	68.9	10.8	2290
2/2003	2.6	39.4	7.2	11.1	96	31.6	85.8	162	4.3	8.0	36.1	69.4	11.4	2390
3/2003	2.7	37.9	6.9	11.3	93	33.2	86.3	166	4.0	7.5	33.8	69.2	11.0	2290
4/2003	2.2	41.5	7.4	10.4	91	33.2	86.1	168	4.4	7.5	33.4	70.4	10.4	2260
5/2003	2.5	40.7	7.2	10.5	92	31.6	84.6	171	4.6	7.2	33.6	68.2	10.3	2300
6/2003	2.5	40.4	7.1	10.5	94	29.9	85.3	179	4.5	8.2	37.2	70.0	10.5	2240
7/2003	2.5	36.8	6.3	10.8	96	32.9	87.0	179	4.7	8.0	38.7	68.5	11.5	2380
8/2003	2.6	38.9	7.1	11.2	94	31.5	86.0	181	4.7	7.5	35.8	68.5	11.2	2155
9/2003	2.4	39.3	6.9	10.7	91	32.5	85.8	179	4.7	8.0	33.4	69.0	11.2	2325
10/2003	2.2	37.0	6.5	11.0	94	32.2	86.5	180	4.7	7.7	35.0	67.1	11.4	2350
11/2003	2.5	37.6	6.6	10.9	95	32.5	87.0	179	4.8	7.8	35.9	68.2	11.3	2360
12/2003	2.5	41.7	7.7	10.7	93	32.0	87.5	180	4.5	7.0	36.4	68.7	11.2	2260
13/2003	2.3	38.6	6.4	10.2	94	31.4	87.9	184	4.6	8.3	36.0	69.1	11.0	2235
14/2003	2.4	40.7	7.0	10.2	90	30.7	87.3	180	4.7	8.0	34.5	68.4	11.4	2255
15/2003	2.4	38.8	7.2	11.3	95	30.6	87.5	173	4.7	7.8	37.8	66.7	10.9	2150
16/2003	2.6	41.5	8.0	11.3	95	33.1	85.7	183	4.7	7.2	36.4	67.0	11.4	2230
17/2003	2.1	37.7	6.2	10.3	95	33.2	88.0	181	4.5	8.1	39.0	69.9	11.4	2280
18/2003	2.5	38.9	6.7	10.5	91	30.5	85.0	174	4.5	8.4	35.8	69.1	10.7	2190
19/2003	2.5	38.7	7.1	11.3	96	32.3	85.4	178	4.6	8.0	38.1	68.1	11.3	2260
20/2003	2.4	39.4	6.7	10.3	94	33.2	87.0	184	4.6	7.9	37.3	70.3	11.5	2205
21/2003	2.4	40.2	6.7	10.0	92	31.0	87.0	181	4.5	8.0	38.0	68.1	11.2	2225
22/2003	2.4	39.4	6.8	10.4	93	31.7	87.5	189	4.5	8.3	37.8	69.3	11.3	2230
23/2003	2.3	40.1	6.5	9.7	95	32.0	86.6	179	4.4	8.4	41.5	68.7	10.6	2285
24/2003	2.5	38.6	6.9	10.9	95	32.5	86.3	174	4.4	8.3	37.5	66.0	11.2	2250
25/2003	2.4	38.2	6.9	11.2	93	31.1	85.9	167	4.1	7.4	36.8	68.9	11.2	2210
26/2003	2.6	39.4	7.3	11.2	95	30.6	86.4	182	4.6	7.4	36.4	70.3	11.1	2385
27/2003	2.3	38.5	6.7	10.7	94	30.7	85.2	177	4.4	8.6	37.0	69.2	11.5	2365
28/2003	2.3	37.8	6.7	11.1	94	31.3	86.8	173	4.4	7.2	38.0	67.6	10.7	2290
29/2003	2.7	39.0	7.2	11.3	92	31.1	85.8	171	4.5	7.3	36.8	69.8	11.6	2320
30/2003	2.5	37.3	6.9	11.6	94	31.6	87.1	176	4.0	7.8	36.0	68.7	11.7	2320

Table 1. Cont.

Families	Bolt Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Span Length 2.5 %	Uniformities %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Refractance %	Yellowness	Yara strength 60's carded
31/2003	2.1	39.3	7.4	11.4	98	30.8	84.6	169	4.3	7.3	37.3	68.6	11.7	2350
32/2003	2.6	39.5	7.5	11.5	94	31.5	85.3	170	4.2	7.3	38.2	69.4	10.6	2375
33/2003	2.4	39.1	7.1	11.0	94	31.4	85.8	174	4.2	7.3	39.4	70.4	11.0	2380
34/2003	2.4	38.2	6.6	10.6	98	31.6	84.7	173	4.3	7.3	35.5	68.6	11.2	2275
35/2003	2.1	38.0	7.2	11.8	95	31.8	85.7	172	4.3	8.6	36.7	68.8	11.1	2185
36/2003	2.5	39.2	6.9	10.7	91	30.7	85.5	170	4.3	8.4	35.0	69.5	10.8	2330
37/2003	2.3	38.6	6.7	10.6	95	30.5	82.6	172	4.4	8.4	34.5	67.8	11.1	2380
38/2003	2.4	39.4	6.8	10.5	86	31.3	84.2	182	4.5	8.2	37.8	70.0	10.5	2300
39/2003	2.5	37.8	6.9	11.4	95	31.9	86.9	173	4.4	8.1	37.0	69.6	11.1	2355
40/2003	2.6	38.7	7.1	11.2	95	31.7	86.0	171	4.4	8.0	37.0	69.8	10.9	2305
41/2003	2.5	40.3	7.0	10.3	95	31.8	85.3	172	4.3	7.9	36.0	72.0	11.0	2325
42/2003	2.6	42.6	8.1	10.9	95	31.5	86.9	180	4.5	7.6	35.5	71.3	10.8	2260
43/2003	2.6	39.9	6.8	10.2	100	31.3	88.3	175	4.4	8.0	38.5	70.0	10.9	2220
44/2003	2.4	39.4	6.8	10.5	95	31.3	86.4	178	4.5	8.3	37.0	70.3	10.8	2210
45/2003	2.4	41.5	7.9	11.2	95	31.9	84.4	167	4.3	8.7	37.4	70.3	10.8	2130
46/2003	2.4	40.2	7.5	11.2	92	31.2	85.1	173	4.4	8.0	36.4	68.9	11.2	2200
47/2003	2.8	39.1	7.3	11.3	92	31.5	87.1	169	4.5	8.4	38.0	68.9	10.8	2240
48/2003	2.5	38.2	6.7	10.8	93	31.8	86.8	171	4.5	7.7	35.5	68.7	11.6	2150
49/2003	2.4	38.5	7.0	11.2	93	30.5	84.8	168	4.2	8.0	37.4	67.7	11.1	2130
50/2003	2.4	44.7	9.0	11.2	95	31.5	87.0	166	4.2	8.3	39.3	67.1	11.5	2180
51/2003	2.9	39.0	6.8	10.7	94	30.8	86.2	173	4.4	8.0	37.3	68.1	12.3	2260
52/2003	2.8	39.0	7.1	11.1	97	31.5	86.2	167	4.4	8.0	38.8	67.1	12.1	2180
53/2003	2.8	37.7	6.8	11.3	97	31.9	87.8	177	4.5	8.2	37.5	68.9	11.0	2270
54/2003	2.7	38.2	7.2	11.6	94	31.5	87.2	175	4.5	8.0	38.5	70.8	10.6	2130
55/2003	2.7	38.1	7.0	11.4	93	31.5	85.0	173	4.4	7.5	36.0	69.4	10.9	2310
56/2003	2.8	38.0	7.0	11.5	93	31.4	86.2	175	4.4	7.5	37.3	68.9	11.2	2325
57/2003	2.5	39.1	7.1	11.0	97	31.1	86.4	173	4.5	7.8	38.5	71.0	10.5	2230
58/2003	2.7	40.5	7.2	10.6	90	31.8	85.4	166	4.4	7.5	34.2	71.0	10.8	2340
59/2003	2.8	39.7	7.8	11.8	94	32.7	83.7	157	4.1	7.2	38.0	69.7	10.8	2160
60/2003	2.6	39.7	7.7	11.7	96	31.2	86.4	163	4.2	8.0	37.1	69.0	10.9	2260
X families	2.5	39.2	7.1	10.9	94	31.6	86.2	174	4.4	7.9	36.8	69.1	11.1	2270
X comparisons	2.7	38.4	6.9	11.0	93	31.2	86.0	166	4.3	7.5	35.7	70.6	10.9	2261
S.E.	0.022	0.100	0.007	0.001	0.204	0.097	0.133	0.825	0.023	0.055	0.203	0.144	0.051	9.397
C.V. %	7.25	3.56	6.63	4.35	2.34	2.39	1.20	3.63	4.02	5.30	4.28	1.61	3.56	3.21

Results in Table (2) showed no differences in agronomic and quality traits between the selected 60 increase A families and the controls while micronaire value and strength G. tex exhibited by selection had better values than the controls. Coefficients of variability decreased for the most studied traits after selection indicating more uniformity beside improvement.

Table (3) showed that means of yield, yield components and fiber properties for the 17 selected families (increase B) compared with the three lasted strains (G. 83/2004, G. 83/2003 and G. 83/2002) of Giza 83. The results showed no significant differences between the families and comparisons for most studied traits except for boll weight and seed index. Which 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 17 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. 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. 83/2006, 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 are 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 2006 season. The data show no significant differences between the nuclei for all traits. However, the recent nucleolus (G. 83/2006) gave the highest mean of seed cotton yield and lint cotton yield. 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 2. Means of agronomic characters and fiber properties of the 60 Giza 83 selected increase a families in 2004 growing season.

Families	Boll Weight (g)	Lint Percentage %	Lint Index (g)	Seed Index (g)	Maturity %	Open Length 2.5 %	Uniformity %	Hair weight M. tex	Micronaire	Elongation %	Strength G. tex	Reflexance %	Yellowness	Yarn strength 60's carded
1/2003-2	2.7	39.5	7.1	10.9	91	29.3	83.7	145	4.0	7.3	33.7	65.5	11.3	1840
2/2003-11	2.6	40.7	6.9	10.1	88	29.0	83.8	144	4.0	7.7	33.0	67.3	10.6	1900
3/2003-17	2.7	39.5	7.1	10.9	91	30.8	87.0	140	4.1	7.6	35.1	67.3	10.8	1900
4/2003-8	2.5	40.1	6.8	9.0	89	30.9	85.8	140	4.3	7.1	36.4	65.0	11.6	2065
12/2003-15	2.6	40.0	7.0	10.5	90	30.7	84.9	140	4.1	7.5	36.1	67.8	10.9	2045
13/2003-8	2.3	40.5	6.9	10.1	88	29.2	85.0	140	3.8	7.5	35.9	66.3	11.1	2005
14/2003-8	2.4	39.3	6.7	10.3	89	30.3	84.7	142	3.9	7.3	37.2	68.7	10.9	2100
21/2003-9	2.3	40.9	7.7	11.1	88	29.2	84.3	140	3.9	7.2	32.4	67.7	10.4	1890
22/2003-3	2.5	38.3	6.6	10.7	88	30.1	85.5	144	3.8	7.2	35.3	68.4	11.1	2030
23/2003-9	2.5	39.8	6.9	10.7	89	29.5	84.7	143	3.8	7.1	34.5	64.4	10.4	1895
24/2003-3	2.8	38.6	6.4	10.1	85	29.5	83.6	140	3.5	7.2	33.4	65.6	11.2	1915
24/2003-8	2.8	39.6	7.0	10.6	90	29.4	84.5	143	3.8	8.2	35.2	68.8	11.1	1970
24/2003-9	2.6	38.4	6.2	9.9	96	30.3	85.3	145	3.9	8.3	38.5	68.1	11.6	2030
24/2003-11	3.1	41.5	7.5	10.6	94	30.1	85.3	142	3.9	8.3	37.2	66.5	11.7	2010
24/2003-12	2.3	40.0	6.3	9.5	93	29.2	83.2	148	3.9	8.9	37.0	65.9	11.4	2010
25/2003-8	2.6	38.4	6.8	9.6	91	30.7	84.3	152	4.1	7.6	37.2	66.8	11.2	2040
25/2003-9	2.4	39.9	6.6	10.0	94	31.7	86.9	147	4.0	7.9	38.5	67.0	10.4	2150
25/2003-10	2.5	40.2	6.9	10.3	91	30.3	84.2	145	3.9	8.1	34.0	67.9	10.9	2010
25/2003-12	2.3	39.3	7.2	11.1	94	29.8	85.0	144	3.9	8.3	36.3	65.6	11.3	2070
25/2003-14	2.2	40.6	6.6	9.7	91	30.0	83.5	142	3.8	8.1	36.1	69.0	11.3	2030
25/2003-15	2.4	39.6	6.4	9.8	89	30.2	84.4	145	3.9	6.3	37.5	66.3	11.0	2100
26/2003-1	2.3	39.6	6.7	10.2	89	30.5	84.8	142	3.9	6.9	37.0	66.8	11.3	2065
26/2003-11	2.3	40.0	6.4	9.6	92	28.8	81.7	145	4.1	8.0	34.5	66.5	10.9	1920
26/2003-22	2.3	39.5	6.9	10.5	88	30.8	84.5	139	3.9	6.6	36.2	68.5	10.5	2000
29/2003-8	2.3	39.8	6.3	9.5	89	31.6	82.4	146	3.9	6.9	34.5	68.0	10.6	1910
32/2003-9	2.5	39.0	7.2	11.3	90	30.1	82.5	140	4.1	7.8	36.0	67.1	10.9	1900
32/2003-14	2.3	39.3	6.5	10.0	88	29.3	82.9	148	4.0	7.3	32.0	68.9	11.1	1800
32/2003-15	2.7	39.5	6.7	10.2	91	30.2	84.9	143	4.0	6.7	37.5	68.4	10.8	2035
32/2003-17	2.5	39.6	6.7	10.2	92	30.4	85.3	142	3.9	6.3	39.0	69.7	10.7	2110
32/2003-18	2.5	39.6	7.1	10.8	90	30.3	84.8	147	4.0	7.7	35.9	67.9	10.5	2020

Table 2. Cont.

Families	Ball Weight (g)	List Percentage %	List Index (g)	Seed Index (g)	Maturity %	Spun Length 2.5 %	Uniformity %	Hair weight M. tex	Micronaire	Elongation %	Strength C. tex	Reflectance %	Yellowness	Yarn strength 60's carded
33/2003-9	2.7	39.5	6.7	10.3	91	29.5	83.5	149	3.9	7.3	38.3	67.9	11.6	2090
33/2003-15	2.6	40.6	7.1	10.4	92	29.9	85.1	144	4.0	7.7	36.3	67.8	11.1	2000
36/2003-13	2.2	40.4	6.4	9.4	95	30.0	84.2	146	4.0	8.8	36.8	67.0	11.2	1970
38/2003-11	2.4	39.5	6.4	9.8	90	29.5	84.7	145	4.1	7.8	36.1	67.8	11.5	2000
39/2003-10	2.4	40.0	6.7	10.0	92	30.0	82.4	142	4.0	7.4	34.7	67.0	11.6	1900
40/2003-8	2.5	41.7	7.4	10.3	94	29.1	84.2	139	3.8	8.1	32.8	69.4	10.8	1850
40/2003-12	2.2	40.0	6.7	10.0	92	30.6	83.9	145	4.1	7.9	35.0	68.0	11.1	1900
40/2003-14	2.5	40.6	7.0	10.3	90	28.8	84.0	146	4.0	8.3	33.0	68.7	11.1	1780
40/2003-15	2.5	40.0	6.7	10.0	90	29.3	84.0	142	3.9	8.1	34.0	67.5	10.4	1900
41/2003-8	2.7	39.4	6.4	9.8	89	31.1	83.6	145	4.0	7.3	34.1	68.0	10.7	1960
44/2003-1	2.5	42.2	7.5	10.2	92	30.5	85.2	148	4.1	8.8	37.8	67.8	10.6	2020
44/2003-3	2.5	40.0	7.0	10.5	90	31.0	84.2	145	4.0	7.3	37.0	67.9	11.5	2020
46/2003-3	2.5	41.4	6.9	9.8	91	31.1	84.3	147	3.8	7.4	39.8	70.0	11.4	2230
47/2003-5	2.6	38.7	6.4	10.2	92	30.7	84.3	139	3.7	7.5	36.8	68.8	10.6	2070
50/2003-1	2.3	42.0	7.6	10.5	90	31.0	85.3	151	4.1	7.6	37.9	66.4	11.1	2130
50/2003-5	2.6	39.1	7.4	11.5	92	30.4	84.7	150	4.1	7.3	37.5	65.2	11.0	2090
50/2003-6	2.4	39.6	6.4	9.7	92	30.7	84.0	146	3.9	8.2	39.2	67.6	11.4	2130
50/2003-8	2.6	39.7	7.2	10.9	90	30.4	83.9	137	3.8	7.5	35.5	67.5	11.1	1915
50/2003-10	2.7	39.3	7.0	10.8	89	31.2	84.3	139	4.0	7.2	35.9	66.4	11.4	2000
50/2003-11	2.9	40.4	7.1	10.5	92	30.9	84.5	144	3.9	7.9	36.0	66.8	10.9	2040
50/2003-13	2.7	40.2	7.2	10.7	90	29.7	82.9	143	3.8	7.8	36.9	66.5	11.3	2075
50/2003-17	2.5	39.2	7.3	11.3	89	29.4	83.3	141	3.8	7.7	36.5	66.9	11.4	2050
52/2003-2	2.6	39.4	7.1	10.9	90	29.3	85.5	141	3.9	7.8	37.4	64.3	11.9	2020
52/2003-8	3.0	39.3	6.5	10.1	93	30.7	84.9	140	3.8	8.1	37.5	65.9	11.4	2090
55/2003-10	2.5	39.2	6.5	10.1	92	30.8	85.4	143	4.0	7.7	39.3	64.8	11.8	2070
56/2003-8	2.6	39.2	6.9	10.7	94	30.8	85.8	140	4.2	8.0	37.0	67.3	11.1	2000
56/2003-9	2.5	39.3	6.6	10.2	91	29.8	84.9	144	4.3	8.2	34.0	70.0	9.9	1910
56/2003-10	2.8	39.1	7.3	11.3	92	29.4	82.8	147	4.3	7.5	35.0	68.5	10.3	1905
57/2003-10	2.6	39.4	6.8	10.4	94	28.8	84.5	147	4.3	8.0	35.0	67.8	10.4	1990
57/2003-11	2.8	40.2	7.1	10.5	90	28.9	84.0	138	3.7	8.2	35.0	67.9	10.6	1910
X Families	2.5	39.8	6.8	10.3	91	30.1	84.4	144	4.0	7.6	36.1	67.4	11.0	2000
X comparisons	2.5	40.0	6.9	10.4	92	31.3	84.5	154	4.2	7.9	35.9	68.7	10.9	2037
S.E.	0.025	0.106	0.051	0.067	0.267	0.094	0.131	0.508	0.020	0.072	0.227	0.168	0.055	11.532
C.V. %	7.73	2.07	5.76	5.07	2.27	2.42	1.20	2.73	3.89	7.36	4.87	1.93	3.86	4.47

Table 3. Mean yield, yield components and fiber properties for the 17 selected increases B families in 2005 growing season.

Selected families	Yield and yield components						Maturity %	Fiber properties								
	Seed Cotton Yield K/F	Lint Yield K/F	Roll Weight (g)	Lint Percent (%)	Lint Index (g)	Seed Index (g)		Span Length 2.5 %	Uniformity %	Hair Weight	Microaire	Elongation	Strength G. tex	Reflectance %	Yellowness 60°scanned	Yarn-strength
12/2003-18	9.30	12.36	2.4 a-c	42.2	7.0	9.6 ab	90	29.8	83.2	141	3.8	8.4	32.8	67.1	11.2	1800
14/2003-8	8.00	10.38	2.4 a-c	41.2	6.8	9.7 ab	92	30.7	85.6	143	3.6	8.8	39.6	66.5	10.8	2265
24/2003-12	9.33	12.17	2.4 a-c	41.4	6.9	9.8 ab	90	29.9	82.2	140	3.5	8.2	31.0	68.2	10.7	1710
28/2003-10	9.25	12.00	2.3 bc	41.2	6.7	9.6 ab	90	30.5	84.7	133	3.9	7.5	38.0	69.5	10.6	2140
28/2003-12	9.68	12.74	2.4 a-c	41.9	6.9	9.5 ab	87	28.7	82.2	137	3.6	7.4	31.6	68.3	10.9	1980
28/2003-18	8.50	11.65	2.4 a-c	41.7	6.5	9.1 b	85	29.3	82.2	136	3.7	7.1	39.1	70.2	10.5	1830
26/2003-1	9.10	12.01	2.4 a-c	41.9	7.1	9.9 ab	90	29.0	83.0	134	3.4	7.8	36.9	69.4	11.3	1920
32/2003-18	7.35	9.72	2.4 a-c	42.0	6.7	9.3 b	89	30.2	82.5	133	3.4	9.3	38.3	68.0	11.6	2140
33/2003-9	9.00	11.45	2.3 bc	40.4	6.7	9.9 ab	87	30.1	82.8	138	3.6	7.8	33.2	67.8	9.9	1860
33/2003-18	9.72	12.37	2.3 bc	41.4	6.5	9.2 b	83	29.0	81.3	136	3.4	7.0	38.9	66.4	10.8	1980
36/2003-13	8.64	11.24	2.3 bc	41.3	6.2	8.8 b	85	28.7	85.1	135	3.6	6.9	32.1	67.8	11.1	1800
38/2003-11	9.46	12.82	2.2 c	42.0	6.2	8.6 b	89	30.8	83.8	141	3.6	6.9	35.0	67.1	10.9	2030
44/2003-3	10.52	14.05	2.4 a-c	42.4	6.9	9.4 ab	91	30.0	86.3	148	3.8	7.8	39.5	67.9	10.8	2200
50/2003-1	9.40	12.05	2.6 a	40.7	6.9	10.1 a	88	30.0	84.8	139	3.7	7.8	37.2	68.8	11.9	2100
50/2003-8	9.32	11.95	2.6 a	40.7	6.7	9.7 ab	90	30.0	85.3	137	3.5	7.8	38.1	66.2	11.8	2130
50/2003-6	9.83	12.88	2.6 a	41.6	7.3	10.2 a	90	28.9	83.1	137	3.7	8.4	36.5	67.5	10.9	1900
50/2003-11	10.20	13.17	2.5 ab	41.0	6.8	9.8 ab	86	29.2	86.0	135	3.7	7.8	34.9	67.5	11.7	1960
\bar{X} selected fam.	9.21	12.04	2.4	41.5	6.8	9.5	88	29.7	83.8	138	3.6	7.8	35.5	67.8	11.0	1990
\bar{X} comparisons	9.55	12.24	2.5	40.7	6.8	9.9	89	30.0	85.5	142	3.6	7.8	34.3	68.0	10.8	1950
F-test	N.S.	N.S.	**	N.S.	N.S.	**	-	-	-	-	-	-	-	-	-	-
S.E.	0.187	0.244	0.028	0.137	0.070	0.105	0.600	0.167	0.373	0.958	0.036	0.165	0.782	0.277	0.125	37.437
C.V. %	8.36	8.37	4.77	1.37	4.24	4.57	2.81	2.32	1.84	2.86	4.11	8.72	9.09	1.68	4.83	7.76

Table 4. Mean of studied characters for 5 types selected increases B families in 2005 growing season which are massed to form the new nucleolus (Breeder seed) of Giza 83 in 2006 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	Microaire	Elongation	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
14/2003-8	8.00	10.38	2.4	41.2	6.8	9.7	92	30.7	85.6	143	3.6	8.8	39.6	66.5	10.8	2265
38/2003-11	9.46	12.52	2.2	42.0	6.2	8.6	89	30.8	83.8	141	3.6	6.9	38.0	67.1	10.9	2030
44/2003-3	10.52	14.05	2.4	42.4	6.9	9.4	91	30.0	86.3	148	3.8	7.8	39.5	67.0	10.8	2200
80/2003-1	9.48	12.05	2.6	40.7	6.9	10.1	88	30.0	84.8	139	3.7	7.8	37.2	68.8	11.9	2100
80/2003-8	9.32	11.95	2.6	40.7	6.7	9.7	90	30.0	85.3	137	3.5	7.8	38.1	66.2	11.8	2130
\bar{X} selected families	9.40	12.20	2.5	41.4	6.7	9.5	90	30.3	85.2	142	3.7	7.9	37.9	67.1	11.2	2140
\bar{X} comparisons	9.55	12.24	2.5	40.7	6.8	9.9	89	30.0	85.5	142	3.6	7.8	34.3	68.0	10.8	1950

K = Kentar = B.C.Y. = 187.5 kg

Lint of the Kentar = 60.0 kg.

Table 5. Mean yield, yield components and fiber properties for the seven successive Giza 83 nuclei in 2006 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 %	Uniformity %	Hair Weight	Microaire	Elongation	Strength G. tex	Reflectance %	Yellowness	Yarn strength 60's carded
G. 83/2000	9.82	11.82	2.8	39.4	10.5	88	31.0	85.3	132	3.4	7.7	40.8	67.1	11.4	2320
G. 83/2001	10.15	11.69	2.7	38.9	9.6	91	30.7	84.5	140	3.8	8.3	35.4	70.0	11.4	1990
G. 83/2002	10.00	11.43	2.7	38.9	10.1	91	30.0	84.3	147	3.9	7.9	34.2	68.6	10.4	1950
G. 83/2003	9.12	11.37	2.5	41.1	10.1	92	30.4	85.7	142	3.7	9.4	38.5	68.5	10.8	2140
G. 83/2004	9.27	11.31	2.5	39.9	9.6	90	30.8	85.4	139	3.6	7.9	37.7	67.5	10.6	2115
G. 83/2005	9.86	11.31	2.6	39.2	10.0	90	30.8	84.3	147	3.9	9.9	37.4	68.0	11.3	2140
G. 83/2006	10.97	13.05	2.7	39.7	10.1	88	32.0	85.6	145	3.8	8.2	35.7	67.8	10.5	2130
F-test	N.S	N.S	N.S	N.S	N.S										

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خطة إنتاج البذور (بذرة المربي) والمحافظة على النقاوة الوراثية لصنف القطن المصري جيزه 83 خلال المواسم من 2003 إلى 2006

جمال حسين عبد الظاهر

معيد بحوث القطن - مركز البحوث الزراعية

يوضح هذا البحث كيفية إنتاج بذرة المربي والمحافظة على صنف جيزه 83. أجرى برنامج هذا البحث بمسلة البحوث الزراعية بطريقى فى الفترة من 2003-2006 حيث تم زراعة 60 نبات منتخب من حقل التربية لصنف موسم 2003 مكونة 60 حفلة. وفى نهاية الموسم تم انتخب 60 نبات زرعت موسم 2004 مكونة خطوط وتسمى الحفلات 1-17. ثم انتخب منها 17 حفلة طراز الصنف أنتجت مع ثلاث مقارنات فى تجربة مقارنات كلغة الطولية فى أربعة مكورات موسم 2005 لتكوينها للمصنول والتجانس وصفات جودة البذرة والقرن.

وفى نهاية الموسم وحسب الاستمارات التى أجريت تم انتخب خمسة حفلات نموذجية بناء على الصفات الرئيسية للصنف والتي تم حفظ بذرتها لتكوين البذرة الجديدة للصنف (بذرة المربي) والتي زرعت موسم

2006 في مساحة قدرها 6 فدان في نفس المساحة المخصصة للصنف ، والتي بالتالي ستزرع في موسم 2007 إن شاء الله بالمزرعة البحثية والمزرعة الحقلية بماوى لتكون السلالة الجديدة للصنف والتي تنتج سنوياً تحت مسمى نواة وهي تمثل تقاوى الأساس للصنف والذي بدوره سيدخل في مراحل إنتاج عدد المزارعين المتعاقبين بمرتب الصنف بالزراعة العامة لتكون درجتي التقاوى المسجلة والمعتمدة بالإنتاج الذى يكفى تغطية مساحة الصنف جميعها بتقاوى نقية معتمدة .

وتشير للنتائج المتحصل عليها أن السلالة الناتجة بهذه الطريقة تمثل المصدر الجيد للبذرة النقية وراثياً والمنتجة بواسطة المربي والتي يمكن بواسطتها المحافظة على التقاوة الوراثية للصنف جيزه 83 ، وإذا أصنعت عملياً تداول التقاوى واحتياطات منع الخلط سواء ميكانيكى أو وراثى فى حقول إنتاج التقاوى بالزراعة العامة .