DETERMINATION OF HETEROTIC EFFECTS OF SEED COTTON WEIGHT PER BOLL IN F_1 HYBRIDS OF DOUBLE CROSS IN COTTON

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İntroduction

It is an important raw material for textile field in the international market and agriculture, and the importance of cotton is rising everyday.

The Properties subject to researches were affected directly by genetics and environmental factors.

Therefore, it is important for a breeder to know the heredity of the variety to be improved.

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İntroduction

Properties such as fertility that is controlled by several genes can be selection efficient on next generations where as fiber technologic characteristics improvement studies can be selection effective in early generations.

Hybrid vigour or heterosis, is the converse of the deterioration that accompanies inbreeding.

Some Scientests, such as Turner (1953), Marani (1963), Khan et al. (1974) reported varying degree of heterosis in yield which was attributed to seed cotton weight per boll.

İntroduction

Double-crosses, single-crosses, compared with a wealth of genetically wider (diversity) have, where they are ecologically spans a wider, more consistent against environmental influences,

In other words, the general adaptation to the environment (adaptation) are the ability to cause a high productivity and high become, especially in cotton farming and the textile industry.

Aim of The Research

In this research, especially in terms of our country with great economic value of the cotton plant, in terms of important agricultural traits, four *Gossypium hirsutum* L. and one *Gossypium barbadense* L. of cotton in accordance with the crossed double-hybrid breeding method.

F_1 generation of hybrid progeny created 45 double cross population obtained in terms of the characteristics studied in order to develop, heterotic effects (heterosis, heterobeltiosis) to establish the breeding work done in the future to assist in this regard were made.

Material and Methods

The research carried out GAP International Agricultural Research and Training Center Research Areas in 2010.

This study was carried out in order to determine the heterotic effects of investigated properties in the population which created from 45 double cross F_1 generation, using the double cross breeding method. The trials are conducted as complete block design (RCBD) with three replications.

In the study seed cotton weight per boll was studied. Each plot contained two rows, of 12 m length at planting and 10 m length at harvest.

Material and Methods

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The distance between and within the rows spacing were 0.70 m and 0.15 m, respectively.

Material and Methods

In terms of Earliness, Fantom (*G. hirsutum* L.) and Paum 15 (*G. hirsutum* L.),

in terms of cottonseed yield, Stoneville 468 (*G. hirsutum* L.),

in terms of fiber length and fiber strength Giza 75 (*G. barbadense* L.) and Delcerro (*G. hirsutum* L.),

in terms of gin percentage, Nazilli-84 S (*G. hirsutum* L.) varieties were used as genetic material.

Material and Methods

Table 1. The meteorological Data of the Research Area

MONTHS	Average Temperature (ºC)		The Total Rainfall (mm)		Average Relative Humidity (%)	
	2010	Long Years	2010	Long Years	2010	Long Years
April	14.2	13.8	22.4	73.5	60.4	63.0
May	20.4	19.1	31.6	40.8	49.3	56.0
June	27.2	26.1	11.2	7.2	29.1	36.0
July	32.3	31.1	0.0	0.7	19.6	27.0
August	32.0	30.1	0.0	0.6	17.5	27.0
September	27.0	24.6	0.4	2.6	27.4	31.0

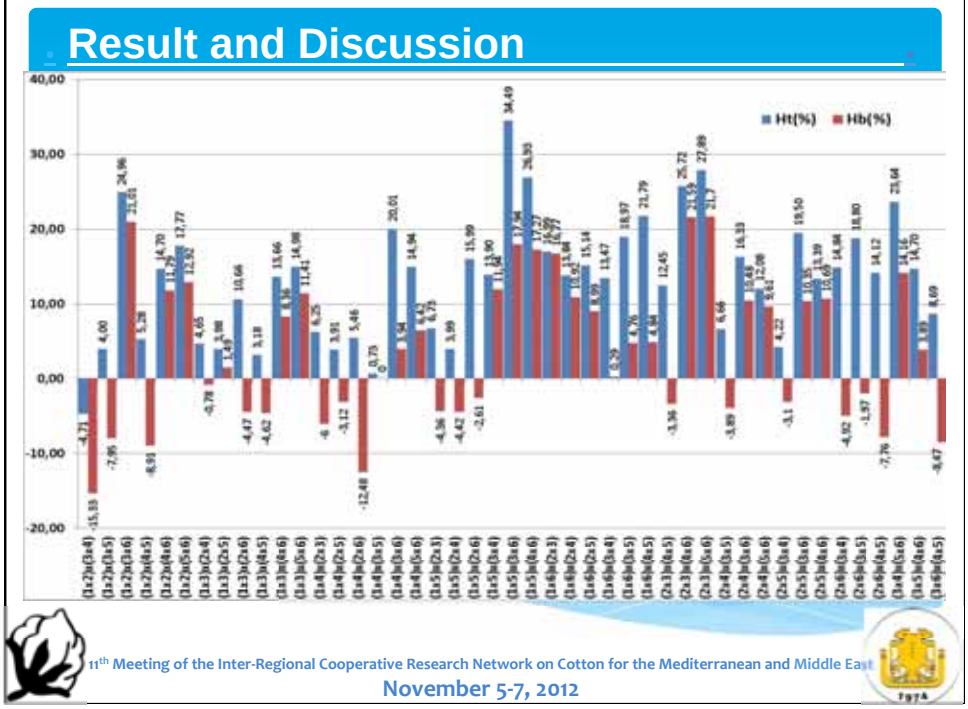
Material and Methods

The data thus obtained for each character was subjected to statistical analysis (Snedecor and Cochran, 1967). The heterosis of all F_1 hybrid was computed after Fehr (1987).

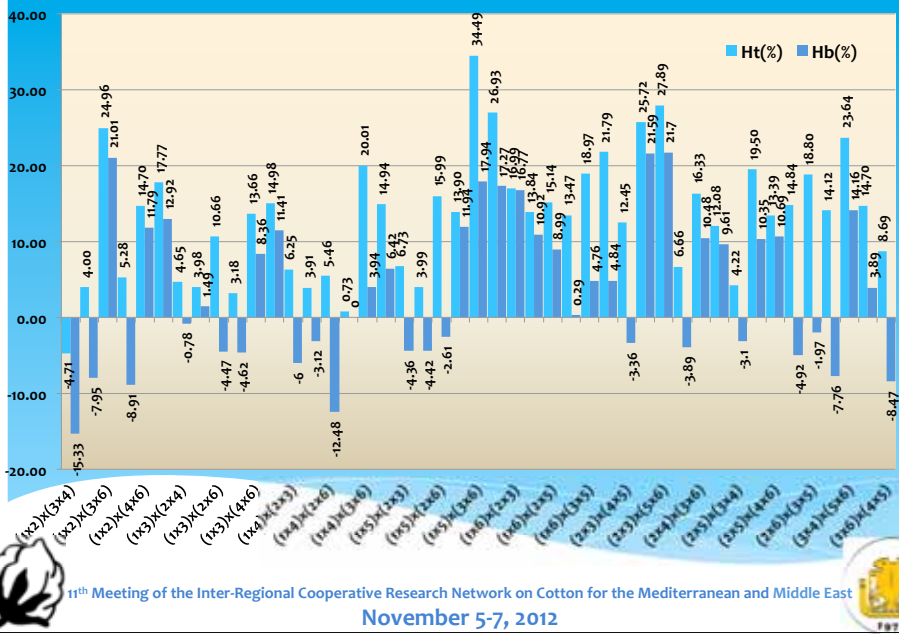
The observations was recorded for average boll weight (g) on five randomly selected plants per replicate from each genotype.

The data of all the genotypes were pooled and heterosis (Ht) and heterobeltiosis (Hb) was calculated for average boll weight (Hallauer and Miranda, 1981; Chaing and Smith1967; Fonseca ve Patterson,1968).

Result and Discussion



Result and Discussion



Result and Discussion

Heterosis of average boll weight ranged from 34.49% to -4.71%.

Heterobeltiosis of average boll weight ranged from 21.7% to -15.33%.

Double Cross Combinations	Boll Weight (g)	Ht (%)	Hb (%)	Double Cross Combinations	Boll Weight (g)	Ht (%)	Hb (%)
(1x2)x(3x4)	**4,82**	**-4,71**	**-15,33**	(1x5)x(4x6)	6,45	26,93	17,27
(1x2)x(3x5)	5,29	4,00	-7,95	(1x6)x(2x3)	5,11	16,99	16,77
(1x2)x(3x6)	5,36	24,96	21,01	(1x6)x(2x4)	5,11	13,84	10,92
(1x2)x(4x5)	5,52	5,28	-8,91	(1x6)x(2x5)	5,34	15,14	8,99
(1x2)x(4x6)	5,21	14,70	11,79	(1x6)x(3x4)	5,71	13,47	0,29
(1x2)x(5x6)	**5,45**	**17,77**	**12,92**	(1x6)x(3x5)	6,02	18,97	4,76
(1x3)x(2x4)	5,10	4,65	-0,78	(1x6)x(4x5)	6,35	21,79	4,84
(1x3)x(2x5)	5,22	3,98	1,49	(2x3)x(4x5)	5,86	12,45	-3,36
(1x3)x(2x6)	4,91	10,66	-4,47	(2x3)x(4x6)	5,67	25,72	21,59
(1x3)x(4x5)	5,78	3,18	-4,62	(2x3)x(5x6)	5,87	27,89	**21,70**
(1x3)x(4x6)	5,57	13,66	8,36	(2x4)x(3x5)	5,52	6,66	-3,89
(1x3)x(5x6)	5,73	14,98	11,41	(2x4)x(3x6)	5,09	16,33	10,48
(1x4)x(2x3)	5,32	6,25	-6,00	(2x4)x(5x6)	5,29	12,08	9,61
(1x4)x(2x5)	5,49	3,91	-3,12	(2x5)x(3x4)	5,52	4,22	-3,10
(1x4)x(2x6)	4,96	5,46	-12,48	(2x5)x(3x6)	5,40	19,50	10,35
(1x4)x(3x5)	5,75	0,73	0,00	(2x5)x(4x6)	5,42	13,39	10,69
(1x4)x(3x6)	5,89	20,01	3,94	(2x6)x(3x4)	5,42	14,84	-4,92
(1x4)x(5x6)	6,03	14,94	6,42	(2x6)x(3x5)	5,63	18,80	-1,97
(1x5)x(2x3)	5,26	6,73	-4,36	(2x6)x(4x5)	5,59	14,12	-7,76
(1x5)x(2x4)	5,26	3,99	-4,42	(3x4)x(5x6)	**6,50**	23,64	14,16
(1x5)x(2x6)	5,36	15,99	-2,61	(3x5)x(4x6)	5,97	14,70	3,89
(1x5)x(3x4)	6,38	13,90	11,94	(3x6)x(4x5)	5,55	8,69	-8,47
(1x5)x(3x6)	6,49	**34,49**	17,94				

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Result and Discussion

(1x2)x(5x6)	Ht> %15 and Hb> %12
(3x4)x(5x6)	
(1x6)x(2x3)	
(1x5)x(4x6)	
(1x5)x(3x6)	
(1x2)x(3x6)	
(2x3)x(4x6)	
(2x3)x(5x6)	

It can be concluded that boll weight was main components for yield productivity. Therefore, selection for boll weight might results in the improvement of cotton yield and the promising double crosses like may be further tested on large plots over different locations and seasons.

Thanks for Your Attentions

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