Intensity Heterosis Effect in Squash *Cucurbita Pepo* L.conv. *giromontia* Alef.

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Abstract

In order to establish heterosis the squash, advanced homozygous lines were created, on contrasting characters studied. The *Cucurbits* were among the first vegetable species whereat hybrid seed was commercially produced (Borghi, 1971). In *Cucurbits* it can be use the F_2 generation seed without recrossing to manual pollination with the condition that the genitors have similar characters that are important for the consumers. Five lines were obtained that were included in diallel crosses, a program to determine the specific combination ability. Through multiple comparisons method the 15 genotypes were grouped into six groups in which no significant differences. Studied hybrids exceeded both genitors and best genitor in terms of yeld capacity, surpassed by differences statistically very significant. Heterosis, complex biological phenomenon, was manifested in all hybrid combinations what was studied, consagvinizate used as genitors lines were different in terms of the characters analyzed, enabling the body assembly of a complex hybrid of useful traits. The significance of differences was determined by analysis of variance (Ceapoiu, 1968). It was calculate the limit differences and was applied the multiple comparison method (Duncan test). Analysis of variance for studied character it has showed that between the genotype are semnificative differences: F value (that has been calculate 44.86 it's bigger that theoretical F value.

Keywords: *Cucurbita pepo, hybrid, heterosis.*

Introduction

The *Cucurbits* were among the first vegetable species whereat hybrid seed was commercially produced (Borghi, 1971). This was due to the possibilities of obtaining enough vigorous maternal lines as a result of the weak inbreeding depression at these species, as well as to the easiness of doing the controlled pollination and to the high amount of seeds, obtained from a single cross (Grebenscicov, 1967). In *Cucurbits* it can be use the F_2 generation seed without recrossing to manual pollination with the condition that the genitors have similar characters that are important for the consumers.

Aims

The aim of paper is to highlight the behaviour of F_1 squash hybrids obtained in the RDIVFG our breeding program in order to identify possible hybrid combinations promoted on a large scale.

Materials and Methods

The research work began in 2004 by creating homozygous lines, contrasting on plant size, shape and colour of fruit. Five lines were obtained that were included in diallel crosses, a program to determine the specific combination ability. In 2009, the ten hybrids which were obtained was studied in three replicates CCO. The significance of differences was determined by analysis of variance (Ceapoiu, 1968). It was calculate the limit differences and was applied the multiple comparison method (Duncan test).

Results and Discussion

Analysis of the results show that the magnitude of heterosis ranged between 51.9 % (H4) and 1.5 % (H10). It is demonstrate that the line L174 has the highest capacity combination, yield hybrids with most highly significant heterosis effect. Through multiple comparisons method the 15

Tab.1. Analysis of variance for productivity in the system diallele squash, RDIVFG Vidra

Variation source	SPA	GL	S^2	F
Blocks	11.52	2	5.76	44.86**(1.97; 2.62)
Lines	4.239.65	14	302.83	
Error	189.15	28	6.75	
Total	4.440.32	44	100.91	

Tab.2. The behavior of F_1 hybrid forms and parents to squash, RDIVFG Vidra

Genotype	Yielding capacity(t/ha)	p	q	Rp-q x s (t/ha)	Significance of differences
H-2	83	-	-	-	a
H-4	79	2	2.89	4.306	ab
H-15	77	3	3.84	5.185	bc
H-5	73	4	3.84	5.72	cd
H-3	71	5	4.11	6.12	de
H-7	69	7	4.30	6.407	de
H-17	67	6	4.46	6.645	ef
H-12	67	8	4.60	6.854	ef
H-16	64	9	4.72	7.033	f
L-105	63	10	4.83	7.196	f
H-6	57	11	4.92	7.330	g
L-184	56	12	5.00	7.45	gh
L-161	55	13	5.08	7.569	gh
L-200	52	14	5.15	7.673	hi
L-174	51	15	5.21	7.762	i

*variants accompanied by the same letter are not significantly different for P = 5%

genotypes were grouped into six groups in which no significant differences. Sintesis of the obtained results regarding the intensity of heterosis effect, and the behaviour of some hybrid F_1 compared with the paternal forms are presented in the table 1 and 2. Analysis of variance (table 1) for studied character it has showed that between the genotype are semnificative differences: F value (that has been calculate 44.86 it's bigger that theoretical F value.

From table 2 were it is shown that multiple comparation between analized genotypes it can be concluded that the smallest limit difference for P=5% has a value of 4.306, very closed to the one obtained from regular T test (4.53). Because of this, it can be told that the number of cases where the differences are statistic assured, to be very similar.

Conclusion

Studied hybrids exceeded both genitors and best genitor in terms of yeld capacity, surpassed by differences statistically very significant. Consagvinizate lines were used as genitors lines were different in term of characters analysis, allowing the assembly of a complex hybrid organism with useful traits. Heterosis, complex biological phenomenon, was manifested in all hybrid combinations what was studied, consagvinizate used as genitors lines were different in terms of the characters analyzed, enabling the body assembly of a complex hybrid of useful traits.

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