RESULTS AND DISCUSSION

3. MATERIALS AND METHODS

To achieve the goals of this study, two field experiments were conducted at the experimental Research Center, Faculty of Agriculture , Moshtohor, Zagazig University (Benha Branch), Kalubia Governorate during 1999 and 2000 summer seasons. Ten new maize hybrids along with three check varieties were evaluated for some important agronomic characters in both seasons.

The tested new hybrids included six single crosses and four three- way crosses as follows :

a- Single crosses:

1- Moshtohor-8 (M 8) x M 199
2- M 8 x M 200
3- M 46 x M 210
4- M 234 x M 56
5- M 183 x M 199
6- M 8 x M 201

b. Three-way-crosses :

7- M 210 x S.C. 10
8- M 373 x S.C. 10
9- M 344 x S.C. 10
10- M 360 x S.C. 10

The parental inbred lines of these hybrids, i.e., Moshtohor-1 (M1) through M6 represented new inbred lines

developed from different sources on maize breeding program at Moshtohor. The source and stage of inbreeding of these lines are presented in Table (1).

Table (1): Source and stage of inbreeding of parental inbred lines .

#	Code number	Source	Stage of inbreeding
1	Moshtohor-8 (M 8)	D.C 202	S_{10}
2	M 46	D.C 202	S_{10}
3	M 56	Giza 2	S_{10}
4	M 183	D.C 215	S_{10}
5	M 199	D.C Taba	S_{10}
6	M 200	D.C Taba	S_{10}
7	M 201	T.W.C 310	S_8
8	M 210	T.W.C 310	S_8
9	M 234	T.W.C 320	S_8
10	M 344	D.C 204	S_8
11	M 360	D.C 215	S_8
12	M 373	D.C 215	S_8

The other parent of the three way crosses was S.C. 10 which was developed by crossing between Sids 7 and Sids 63 inbred lined by the Maize Research Section of the Agricultural Research Center, Giza Egypt.

The three check varieties used in this investigation were : S.C. 10, T.W.C. 310 and Giza-2 which were developed by the Maize Research Section of the Agricultural Research Center, Giza Egypt.

The thirteen maize genotypes were sown on June 10 th and 15 th in the first and second summer seasons, respectively. The experimental design was Randomized Complete Block Design with four replications in both seasons. Each experimental plot consisted of four ridges of 3 meter long and 70 cm width. The distance between hills were 25 cm apart. Plants were thinned to one plant per hill before the first irrigation. Nitrogen fertilizer (120 kg/ fad) was applied in two equal doses, before the first irrigation and the second one in the form of urea (46% N). Other cultural practices were done properly as recommended for growing maize in the region.

Data Colleted:

Ten guarded plants were taken at random in each plot to recording the following characters :

1- Date of silking, number of days from planting to 50% silking.
2- Plant height (cm).
3- Ear height (cm).
4- Ear length (cm).
5- Ear diameter (mm).
6- Number of rows/ ear.

7- Number of kernels/ row.

8- 100- kernel weight

9- Shelling percentage

10- Grain yield (g/ plant).

Grain yield (kg/ fad) was recorded on a whole plot basis and adjusted to 15.5 % moisture content.

Statistical Analysis :

Analysis of Variance:

Data were analyzed separately for each season and combined analysis over both seasons was performed after testing homogeneity for experimental errors using Bartlitt's test of homogeneity (Steel and Torrie, 1960). The treatment means were compared using Least Significant Difference (L.S.D) for each trait.

Correlation and Path Analysis:

The simple correlation coefficient matrix between grain yield/ plant and other studied traits was estimated according to Snedecor and Cochran (1981). Correlation coefficients were used to calculate path coefficients. Path coefficient analysis as suggested by Dewey and Lu (1959) was used to estimate the relative importance of characters contributing to yield. A path coefficient is simply a standardized partial regression coefficient as it measures the direct influence of one variable upon another and permits the separation of the correlation coefficient into components of direct and indirect effects.