

**EFFECT OF SOIL MOISTURE STRESS AND FOLIAR APPLICATION  
OF ZINC ON SOME MAIZE VARIETIES**

**II-Yield, yield components and chemical analysis**

**By**

**Hefni, E.M.H.\*; El-Hosary, A.A.\*; Salwau, M.I.M.\* and El-Sabbagh, A.\*\***

\* Dept. of Agron. Fac. Agric. Moshtohor, Zagazig Univ. Egypt.

\*\* Dept. of Water Requirement, Agric. Res. Station Sakha, Egypt

**ABSTRACT**

Three field experiments were carried out during 1988, 1989 and 1990 seasons at Sakha Agricultural Research Station, Kafr El-Sheikh Governorate Egypt. The aim of this investigation was to study the effect of water stress, some maize cultivars and zinc sulphate as foliar application on yield, yield components and chemical analysis in maize grains. The experimental design was split-split plot with four replications. The results could be summarized as follows:-

The average values of plants carried more than one ear percentage, ear length, ear diameter, ear weight, number of rows/ear, number of grains/row, 100-grain weight, grain yield per plant and per feddan significantly decreased by increasing the depletion of available soil moisture up to 80% in combined analysis. On the other hand, the percentage of late wilt disease significantly increased by increasing the depletion of available moisture. Irrigation after 40% depletion in available water gave the lowest protein % and the highest protein yield/feddan, oil % oil yield/feddan and zinc content in grains of maize. T.W.C 310 cultivar gave the highest values of the percentage of plants carried more than one ear, ear length, ear weight, number of grains/row, 100-grain weight, grain yield per plant and per feddan, protein and oil yield/feddan and zinc content when compared with the other cultivars. Giza 2 cultivar gave the highest percentage of infection with late wilt disease than other cultivars. Whereas Karnak cultivar gave the maximum ear diameter, number of rows/ear, protein and oil percentage in grains of maize. The mean values of ear length, ear weight, 100-grain weight, grain yield per plant and per feddan, straw yield, protein yield, oil percentage and oil yield/feddan were increased when received 0.3% zinc sulphate, but the other characters of yield components were not significantly affected. The mean values of infection with late wilt disease percentage significantly increased by increasing level of zinc sulphate up to 0.6%.

The interaction between T.W.C 310 with the application of 0.6% zinc sulphate gave the highest mean values of 100-grain weight, grain yield per plant and per feddan. Also the interaction between irrigation after 40% depletion in available water with T.W.C 310 and applying 0.6% zinc sulphate as foliar gave the highest mean values of number of grains/row, protein and oil yield/feddan. Significant positive correlation values were detected between grain yield/feddan