Abstract

An Egyptian gene pool i.e., composite-21 yellow maize was used to estimate genetic component e. g., additive and dominance component for S_1-lines and Half-sib families generated through recurrent selection for earliness, morphological, physiological and pathological characters as well as yield and yield components. during 3 summer seasons; 1996, 1997 and 1998. One hundred male groups (half-sib families) and at the same time 200 S_1-lines were developed from "composite-21" yellow population in 1996 summer season. The genetic components i.e., variance of males $\delta^2 m$ and females $\delta^2 f$ were employed to estimate additive and dominance genetic components in Half-sib families according to **Comstock and Robinson (1948 and 1952)**. Additive genetic variance and environmental one were estimated in S_1-lines according to **Embig *et al.*, (1972).** Six yellow maize genotypes (C1); 2 S_1-lines, 2 Half-Sib families and S_1-lines (100%) and 1-Half-Sib (100%) as well as three local checks of yellow maize were evaluated under three selection interstices; 10, 20 and 100% in randomized complete block design under early and late sowing dates at Gemmeiza (Middle Delta) and Sids (Upper Egypt).

The obtained results of S_1-lines showed in 1997 that earlier plants was observed for days to 50% tasseling and silking, higher plant height, ear height, ear position, ear leaf area, leaf angle and chlorophyll (b) after flowering at Gemmeiza location as compared to Sids one. Phenotypic variance was higher in Sids location than Gemmeiza one for most studied characters.

Meanwhile, higher and significant genetic (additive) and environmental variance were recorded for most studied characters in Upper Egypt location than Middle Delta one. The results of H.S. families indicated that earliness characters tended to be earlier at Gemmeiza location than Sids. Twelve and ten characters out of 22 gave high and significant genetic variance at Gemmeiza location and Sids, respectively. Additive genetic variance was the prevailed type in the genetics of 17 characters at both locations, meanwhile, dominance genetic variance was the prevailed type in the gene expression of 5 characters at both location. Generally, narrow sense heritability was low for 12 characters at both locations for Half-Sib families. The evaluation during 1998 season indicated that S_1-lines recurrent selection was more effective in improving most studied characters, except earliness characters. These information are of great interest for maize breeder to develop, improve and release genotypes of maize through S_1-lines recurrent selection.

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