Stability parameters of some maize hybrids grown under different planting dates

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ABSTRACT

The presence of hybrid × environment (H × E) interaction is a main challenge to plant breeders, since large interaction can reduce gains from selection and complicate the identification of superior hybrids. Ten maize hybrids (five single crosses and five three way crosses) were grown in a randomized complete block design with four replications under five planting dates (March 10th, March 30th, April 20th, May 10th and May 30th) during 2015 and 2016 summer seasons at SdmentElgabal Horticulture Research Station, Beni-SuefGovernorate. The objectives were to determine the magnitude of (H × E) interaction and to investigate the stability of the tested hybrids using eight stability statistics derived from three main groups namely; regression models, variance measures and multivariate analysis models. Results showed significant mean squares due to hybrids environments and (H × E) interaction indicating that the tested hybrids exhibited different responses to environmental conditions. However, the terms of predictable (linear) and unpredictable (non-linear) interaction components were significant indicating that the tested maize hybrids differed considerably in their relative stability. It is noted that the three way crosses yielded more than the single crosses in the present study. This result may be expected because the three way crosses are more tolerant to biotic and abiotic stress. The highest grain yield was obtained by hybrid TWC 325 followed by TWC 324, TWC 310, SC 10 and SC 122 that surpassed the overall mean. It is evident that the two hybrids TWC 325 and TWC 310 gave the heaviest grain yield but they exhibited low stability. Hybrid TWC 325 reflected a specific adaptability in two environments E3 (March 30th 2015) and E4 (March 30th 2016) while hybrid TWC 310 well yielded under E1 (March 10th 2015). In spite of their low grain yield, the three crosses SC 129, TWC 321 and SC 122 reflected high stability.
Key words:*Maize hybrids, stability parameters, planting dates, Yield.*