

GENETIC ANALYSIS OF AGRONOMIC CHARACTERS AND RESISTANCE TO BORER FOR GENOTYPES IN CORN (*Zea mays*, L.)

By

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ABSTRACT

A half diallel cross between 9 inbred lines of maize (*Zea mays* L.) was evaluated under two environments (under artificial infestation conditions and normal conditions.) in RCBD with three replications. Highly significant genotypes, parents and crosses were detected for the borer traits. General and specific combining (GCA and SCA) were found to be significant for all studied traits. Additive gene effects seems to play an important role in the expression of percentage of infested plants by pink stem borer, dead hearts %, intensity of damage, yield losses and grain yield/ plant at infestation and non infestation, where the ratio of GCA/SCA found to be more than unity for all traits. The parental inbred line number 6 showed the best combiner lines for percentage of resistance to infested plants and resistance to damage caused by *S. cretica*. Also, it considered as good combiner for grain yield/ plant under infestation and non infestation conditions. The most desirable inter and intra allelic interactions were presented by combinations: $P_1 \times P_3$, $P_1 \times P_4$, $P_1 \times P_5$, $P_2 \times P_3$ and $P_5 \times P_6$ for infested plant%, $P_1 \times P_5$, $P_2 \times P_9$, $P_3 \times P_5$, $P_4 \times P_7$ and $P_5 \times P_7$ for dead heart%, $P_1 \times P_4$ and $P_1 \times P_5$ for intensity of damage, $P_1 \times P_6$, $P_1 \times P_7$, $P_2 \times P_4$, $P_2 \times P_9$, $P_3 \times P_5$, $P_3 \times P_8$, $P_4 \times P_7$ and $P_8 \times P_9$ for grain yield/ plant at infestation and $P_1 \times P_6$, $P_1 \times P_7$, $P_2 \times P_3$, $P_2 \times P_6$, $P_3 \times P_5$, $P_3 \times P_9$, $P_4 \times P_8$, $P_4 \times P_9$, $P_5 \times P_7$, $P_6 \times P_8$, $P_7 \times P_9$ and $P_8 \times P_9$ for grain yield/ plant at non infestation.

Key Words: Diallel Analysis, General and Specific Combining Ability, Additive Genetic Component, Maize Borer.