Effect of different artificial infestation levels by the pik borer; sesamia certica (Led.) on zea mays plants and relation with crop yiled

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Maize is one of the important strategic food cereals. The pink stem borer, Sesamia cretica Led. is the most prevalent corn pests in Egypt, larval infestation causes deterioration of plants in the seedling stage. Controlling this pest species by cultivation of resistant varieties is efficient and safe, and could be compatible with using the chemical and / or biological control methods. In order to evaluate different inbred lines, genotypes or varieties, artificial infestation by S. cretica neonate larvae could be used, being successful and superior than depending on the natural infestation.The present investigation was carried out during two successive seasons (1999 and 2000) in the Experimental Farm of the Faculty of Agriculture at Moshtohor, Zagazig University. Three maize genotypes (G 2, S.C. 122 and T.C. 320) were cultivated and evaluated for infestation by measuring different parameters after infestation by S. cretica newly hatched larvae at five levels (5, 10, 15, 20 and 25 larvae/ plant). The obtained results could be summarized as follows:I- Survey of maize insect species at Moshtohor region:Insects that were surveyed on maize plants could be classified to 37 species belonging to 28 families and 12 orders; 10 species were foliage feeders, 3 stem borers, one root feeder,6 sap-sucking, 7 ear feeders, one pollinator and 14 species were categorized as natural enemies (13 predators , one parasitoid) and one used maize plants as shelter.II- Artificial infestation by S. cretica larvae:Maize seedlings of 3 genotypes were artificially infested by newly hatched S. cretica larvae on June, 22” 1999 and July 5th in 2000 corn seasons. Estimations of the percentages of infestation and the intensity of damage started 10 days after artificial infestation, and continued, weekly, up to July, 30th 1999 and August, 11th 2000. Estimations of different parameters of infestation were as follows:1- The percentage of infested plants:The obtained data indicated those 10 days after artificial infestation, the percentages of infested plants of 3 genotypes increased as the number of infesting larvae was increased. This trend remained for one week, but 2 weeks later, it was observed that all percentages of infestation, considerably decreased. This decrease continued, successively, among the subsequent inspections up to five weeks after artificial infestation, when the lowest percentages of infestation were recorded among plants of the 3 genotypes. These successive decreases in percentages of infested plants are, mostly, due tothe new growths of leaves which may lead to recovery of some of the infested plants.According to data, any increases in the number of infesting larvae than 15 larvae / plant (15, 20 or 25 larvae / plant) did not lead to any significant increase in the percentage of infested plants.The two seasons’ data showed, also, that maize seedlings of the three genotypes were susceptible to infestation by S. cretica larvae, but generally, the percentages of infestation varied, insignificantly, between the three tested genotypes.2- The intensity of damage:The increase or decrease in intensity of damage was proportional to that recorded for the percentage of infested plants. After 10 days from infestation, the intensity of damage increased by increasing the number of infesting larvae, and vice versa. The recorded intensities of damage were found to be generally increased in the subsequent sample (17 days after artificial infestation). After 24 days of infestation, inspections showed general decreases in the intensities of damage. The greatest decreases in intensities of damage were recorded 4 weeks after first inspection. The intensity of damage increase as the number of infesting larvae was

increased from 5 to 10 and subsequently to 15 larvae / plant. While, by increasing thenumber of infesting larvae than 15 larvae, no more obvious increase in the intensity of damage was observed. Thus indicating that infestation of maize plants by 10 or 15 larvae / plant is enough to cause the severest damage to maize plants.The differences in the overall seasonal means of intensity of damage between the three genotypes were also found insignificant at each of the tested 5 rates of infestation. Thus indicating that the three genotypes had, almost, the same rate of susceptibility to S. certeca infestation.3- Percentages of dead hearts:The differences between the recorded overall mean percentages of dead heart between the three tested genotypes were insignificant. Thus indicating that maize plants of the 3 genotypes had, almost the same level of susceptibility to show the dead heart phenomenon, but according to the whole means of percentages of dead hearts, it could be observed that plants of G2 variety had the highest percentages (20.5 and 16% in season 1999 and 2000, respectively), T.C. 320 came the next (18.3 & 12.67) while SC 122 had the lowest mean percentage (17.2 & 11.67).The maxima percentages of dead heart 'were detected when the number of infesting larvae were increased to 15 larvae / plant in case of G2 variety in season 2000 (28%)and S.C. 122 in seasons 1999 and 2000 (26.6 & 18.5%, respectively), and to 20 larvae in case of G2 in 1999 (33.3%) and T. C. 320 in both seasons (30 & 22%, respectively).