ralationships of varieties and sowing dates on infestation with borers and yield in maize (zea mays, l.)

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Two field experiments were carried out during ! 985 and 1986 seasons, at the Research and Experimental Station of the Faculty of Agriculture at Moshtohor, Kalubia Governorate. The aim of this study was to investigate the relationships of varieties and sowing dates on infestation with borers and yield in corn (Zea maysL).Each experiment included 30 treatments, which were the combination of six sowing dates and five varieties of maize. Sowing dates were : May 15.!!:!., May 3D!!:!., June l4!b., June 29th, July 14!b. and July 29th. whereas, varieties were : American Early, Giza 2, Pioneer 3 x C 42, Pioneer 3147 and Ciba-Geigy 4141. A split-plot design with four replications was used in both seasons. The main plots were used for sowing dates; wherease the sub-plots were devoted to varieties. The data obtained expect for the percentage of infestation by the borers were statistically analyzed according to Snedecor and Cochran (1967). The treatment means were compared according to the LS.D. as prescribed by Stell and Torrie (1980). The results could be summarized as follows.1. The rate of infestation with the three borers was influenced by the sowing dates. The infestation percentages increased gradually as the sowing date was delayed. The infestation by the three corn borers together was very low for sowing dates occurring on May (Early Summer Plantations). On the other hand, heavy infestation was recorded when maize was sown during July (Neely Sowing Dates).¬Rates of infestation were 47.30 and 51.85 % for July 29 at 105 days sampling date in the first and second seasons, respectively. On the contrary, the lowest counted infestation with borers was 1.2 and 1.4 % when maize was sown on May 30 at 105 days after sowing in both seasons, respectively.It could be pointed out from the relationships between sowing dates of maize and the rate of infestation by the three corn borers, that sowing dates of maize during summer plantation (May 15, May 30 and June 14) are likely to harbour the least infestation with borers. Therefore, these dates could be recommended for Moshtohor.Maize varieties differed in the rate of infestation by borers.The two hybrids, i.e., Pioneer 3 x C 42 and Pioneer 3147 were the relatively resistant to corn borers compared with the open-pollinated variety (American Early) and the composite variety (Giza 2). These results are expected since the varieties differed in their thickness of the epidermis. Moreover, the corre la t ion be tween the ra te of infestation with borers and tho thirknr-ss of tho r-pirk-r mi» of maize stem were significantly negative (r = -0.870 and -0.920).2. Sowing dates showed significant effects on time of 50 % tasseling and silking in both seasons. Maize plants reached mid-flowering earlier as sowing date was delayed.Ciba-Geigy 4141 was significantly the earliest variety, A. Early came in the second rank, whereas, Pioneer 3 x C 42 was the latest one in 50 % tasselling and Silking in the two seasons.significantly variable with varieties. American Early show the highest percentages in comparison with its counterparts, while Pioneer 3147 and Pioneer 3 x C 42 showed the lowest percentages.The inte-raction of sowing date- and var io t ios kId significant effect on percent of lodged stalks and percentage 01 broken plants in both seasons. However the difference in response be-tween varieties was in the degree but not in the direction.5. Early sowing dates gave the highest number of ears/plant.While, plant of the latest sowing of July 2lJ.!b. produced a higher percentage of barreness,American Early exhibited the greatest percentage of barren stalks than the hybrids and

thecornpositc variety. On the other hand, hybrids in general gave more ear/plant than the composite and openpoJJinated varieties.¬Percentage of barren stalks and number of ears/plant were significantly affected with the interaction between sowmg dates and varieties in the two successive seasons. All varieties responded unfavourably to late sowing, however, the magnitude of response differed from one genotype to another.6. Sowing dates had a significant effect on ear characters In both seasons. Ear length, ear diameter, number of rows/ear, IlUlllbpl oj ~r Llill~/ ruw, number uJ grLlill~1 eLl I" , l'Ll/ we- igh l Llld wl'igh t of grains/ear tended to decrease remarkably and consistently bydelaying the time of sowing.In general hybrid varieties, surpassed signi ficantly the A.Early and Giza 2 in the previous characters and this was true for both seasons.The effect of the interaction was significant on ear characters in both seasons. All varieties follow the sallie pa t tor n, that is, as sowing date was delayed a progressive reduction in the previous characters was happened. However, the reduction did not occure among varieties with the same intensity. Hybrids show better tolerance to late sowing than their counterparts.7. Sowing dates showed significant effects on weight of 100 grains as well' as shelling %. Early plantings provided the highest values as compared with the late plantings in both seasons.Similarly, varieties had significant effect on the weight of 100 grains and shelling percentage. The hybrid Ciba-Geigy 4141 produced the greatest means, whereas, the Pioneer 3147 hybrid gave the lowest values.The highest values for the weight of 100 grams and shelling % came from Ciba-Geigy 4141 sown on May 15~, while the lowest one was obtained from the Pioneer hybrids sown on July 29th.8. Weight of grains/plant was significantly affected by sowing dates in the two seasons. The weight of grains/plant decreased when sow ing date' was delayed beyond May 15 in both seasons.Weight of grains/plant was remarkably influenced by varietal characteristics. Therefore, in both seasons, Ciba-Geigy 1+141 ranked first and A. Early came the last.The effect of the interaction between sowing dates and varieties was significant on the weight of grains/plant. And this effect was more pronounced at the first date of sowing (May 15th) but diminished progressively as the sowing date was delayed.9. Number of plants/fed. at harvest tended to decrease as sowing date was delayed. The lowest number was obtained from the latest sowing of July 29 in both seasons.At harvesting stage, there was a significant difference in the number of plants/fed. in the two seasons. It could be observed that hybrids had better stands than the open-pollinated variety A.Early.Number of plants/fed. was significantly affected with the interaction between sowing dates and maize varieties. The highest number of plants was obtained with two Pioneer varieties sown on May 15th and the lowest one was obtained with A. Early Sown on July 29th.10. Sowing dates had a significant effect on harvest index (H.I.) of maize plants in both seasons. There was declining trend for the H.I. as sowing date was delayed.Harvest index was significantly affected by maize varietiesin the two seasons. Clba-Geigy 4141 and Pioneer 3147 surpassed both Giza 2 and A. Early significantly.In both seasons, H.I. was significantly affected by the interaction. The effect of the varieties was more clear with delayed dates of sowing.¬11. Sowing dates had a significant effect on grain yield in both seasons. Yield of grain tended to be decreased remarkably and consistently by delaying the time of sowing. The relative grain yields/ fed. were 100, 83, 78, 58, 43 and 28 % in the first season, and 100, 84, 70, 56, 41 and 41 % were obtained for May 15, May 30, June 14, June 29, July 14 and July 29, respectively.Maize varieties were significantly different In gram yield/. fed. in both seasons. Ciba-Geigy 4141 surpassed the other varieties in grain yield/fed., whereas, A. Early produced the lowest values. Maize varieties could be arranged in a descending order according tu the ir r-] It•[, t 011 till' gr;jill y ie lds •• ~ rllllllw~; (' il).I-Cl•igy 1111,1, l'illlH'er 3 x C 42, Pioneer 3147, Giza 2 and A. Early. The relative yields were 197, 180, 166, 153 and 100 % in the first season and 209, 187, 173, 16 I and 100 % in the second season.Grain yield of maize plants was significantly affected by the interaction between sowing dates and var ir-t ies in the two seasons. However, the response of varieties to dalayed sowing dates varied sigriificant ly with their genotypes. To explain, the r o lu t ivc gr ain yield decreased by 84, 73, 70, 69 and 68 for A. Early, Giza 2, Pioneer3 x C 42, Ciba-Geigy 4141 and Pioneer 3147 when sowing dates was put-off from May 15 to July 29 in the first season. It is evident then that A. Early and Giza 2 were more sensitive to the delay than the hybrids.12. straw as well as biological yields decreased as sowing dates were delayed. The late sowing date gave significantly the lowest yield of straw and the lowest biological yield in comparison with the other dates.Maize varieties

exhibited significant effects on straw and biological yields in the two growing seasons. The variety . Giza 2 was superior and A. Early was inferior in their effect on straw yield. whereas, eiba-Geigy 4141 variety produced the greatest biological yields and A. Early gave the lowest ones.Straw and biological yields were significantly affected by the interaction between sowing dates and varieties of maize. The effect of varieties was more pronounced with delayed sowing dates and the rverse was true with earlier sowing dares.13. The rate of infestation with borers were negatively correlated with stem diameter, thickness of epidermis, number of plants/fed. as well as grain yield/fed.