Integrative study on suckers in maize

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Two field experiments were conducted at the Research and Experim~ntal Station of the Faculty of Agricultureat Moshtohor, Zagazig University during 1985 and 1986 seasons, to investigate suckers formation under different maize popUlations. The varieties used wereAmerican Early, Nab El-Gamal, Giza 2, Double Cross 202 Double Cross 204, Pioneer 514, Ciba Geigy 4405 and CibaGeigy 4141 were grown under 12000, 15000, 20000 and 30000plant/ faddan using a split- plot design with four replications,where varieties were in the main plots and plant densities were in the sub-plots. Each SUb-plot was 21 m2(3.5 x 6 m) with 5 ridges.
R-e-s-u~lt-s--C-o-u-l-d--B-e--Su~m~m~ar-i-z-e-d--a~s--F-ol-l-o-ws-:--~----1- Varieties varied in number of suckers/ plant, sucker height, sucker diameter, weight of sucker ear andgrain weight of sucker ear, but with no significant differences.D.C. 204 was superior and Ciba 4141 was the inferior in their effect on percentage of sucker bearingear. 2- Dry weight of stem, leaves, ears, tassels and whole plant at 60 and 75 days from planting were differedby maize varieties without significant, except the dry weight of leaves and stems at the two samples in thesecond season. D.C. 204 surpassed the other varieties in the dry weight of leaves while, A. Early producedthe highest stems dry weight, whereas, Ciba 4141 gave the lowest leaves and stem dry weights. 3- Varieties did not differ significantly in NAR,whereas, LAI in the second sample, CGRand RGR were significantin the second season. D.C. 204 and Giza 2 surpassed the other varieties while, A. Early and N. EIGamalgave the lowest values in LAI. Hybrids D.C. 204 and Ciba 4405 were superior, while A. Early and N. EIGamalwere the inferior in their effect of CGR and RGR. 4- Varieties differed significantly In the timeof mid~asseling and silking. N. El- Gamal was the earliestone while, D.C. 204 and Pioneer 514 were the latest. 5- Plant height, ear height, No. of green leaves!plant, percentage of lodged plants, barren plants anddouble- eared plants were significantly by maize varietiesin both seasons. A. Early was superior and Pioneer 514 was the inferior in plant and ear heights and lodgedplants~ while D.C. 204 surpassed the other varieties InNo. of green leaves! plant and double-eared plants. Giza 2 and D.C. 202 gave the highest values of barrenplants and Pioneer 514 gave the lowest. The differencesbetween varieties in stem diameter were significant in the second season. D.C. 202 was thicker and A. Earlywas thiner than other varieties.6- Maize varieties differed significantly In numberof ears/plant, ear length, ear diameter, edr weight, grain weight / ear, number of rows/ear and number ofgrains/ row and per ear. D.C. 204 and Pioneer 514 were the superior and A. Early and N. El- Gamal were the inferiorin their effect of these characters.7- Shelling percentage, weight of 100 - grain, weight of grain/ plant and yields of grains, straw andbiological were significantly affected by maize varieties.D.C. 204 surpassed the other varieties, whereas~ the open-pollinated varieties produced the lowest valuesin these characters.8- The differences between varieties in N, P, K and protein content of the different parts of maize plantsas well as grains were not significant.1- Plant densjty had a marked effect on percentage of suckers/ plant, perdentage of ear- bearing suckers andsucker ear weight significantly in both seasons. All values of the previous characters decreased with increasingnumber of plants/ fad. On the other hand, sucker height, sucker diameter and grain weight per sucker earwere not significantly affected by plant density. Thedifferences in weight of sucker ear due to different densitieswas significant in the second season. However, these characters were inversely correlated with plantdensity. 2- The dry weight of leaves, stem, tassels, earsand whole plant decreased significantly by increasing ~ant density. Low population tended to produce higher means of dry weight of plant organs than high population.3- LAI

signficantly increased, while, OGR, RGR and NAR tended to decrease significantly as plant density increased 4- Time of mid- tasseling and silking tended to increased by increasing plant density.5- Plant densities had no marked effect on plant hiehgt and ear height.6- Number of green leaves/ plant, double- earedplants, stem diameter and number of ears/ plant significantlydecreased, while, number of lodged and barren plants was increased by increasing plant density.7- Ear length, ear weight, number of grains/row and per ear, ~ight of grains/ ear, 100- grain weightand shelling percentage were significantly decreased byincreasing plant density.8- Ear diameter and number of rows/ ear were not significantly affected by plant density. 9- Weight of grains/ plant significantly decreasedby increasing plant density, whereas, grain yield/ faddan, straw and biological yields significantly increased by increasing plant density.10- Nitrogen content in leave samples as well as protein content in maize grains decreased significantlyby increasing plant population density. Nevertheless, plant density had no marked effect on P and K- contentin leave samples as well as maize grains 111----E-f-fe-c-t---o-f---t-h-e--I-n-t-e-r-a-c-ti-o-n-:-1- Dry weight of leaves and stems were significantly affected by the interaction between varietiesand plant density. D.C. 204 at 20000 plants/faddan aswell as Pioneer 514 at 15000 plant! fad. produced the maximum dry weight of leaves! plant, whereas, Ciba 4405and 4141 produced the highest averages of dry weight of stem! plant at 60 and 75 days from planting. 2- LAI, CGR, RGR and NAR were significantly affectedby the interaction between varieties and plant density. LAI at 60 and 75 days from planting was increasedby increasing number of plants! fad. for all tested VArieties, except Giza 2 and Ciba 4405 were producedthe highest LAI at 60 days from planting obtained by 20000 plant! fad. The maximum CGR was obtained by Giza2, Pioneer 514 and Ciba 4141 at low density (12000 plantIfad.). While, Giza 2, Pioneer 514 and D,C. 202 were produced the highest values of RGR at 12000 plant! fad.With respect to NAR all tested varieties except A. Earlyproduced the highest values at 15000 plant! faddan. 3- Shelling percentage, weight of grains! plantand straw and biological yields! fad. were significantlyaffected by the interaction in the first season, whilegrain yield! fad. was significant in the second season.D.C. 204 produced the highest values of shelling percentageat low density (12?00 plant! faddan), and weight ofgrains! plant at low density (12000 plant! faddan). Alltested varieties were produced the highest grains yield/ fad. a t h ig h den sit Y (300 00 p lan t / fad.) except D _C . 202 and Ciba 4405. The maximum strRw and biological yieldslfad. were obtained by D.C. 204 at higher plant density. 4- Phosphorus and potassium content in grains were significantly affected by the in t e rae t ion between varietiesand plant densities. Ciba 4405 was produced highest value of P- content at 15000 plant / fad. in the firstseason, while in the second season, D.C. 202 at higher plant density produced highest P-content. The maximumK- content was obtained by Ciba 4141 and Pioneer 514 at 20000 plant / fad. in the first and second seasons,respectively.