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# Response of different corn populations to fertigated nitrogen and certain micronutrients in sandy soil

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## ABSTRACT

A field study was conducted during 2008 and 2009 at El-Khattara farm station, Zagazig Uni-versity, Sharkyia, Egypt (30 ° 36' N, 32 ° 15' E) to determine the effect of three N rates (214, 273, and 333 kg N ha-1), four micronutrients spray treatments (Check, Zn, Mn, and Zn + Mn), and three planting density levels ( 4.76, 5.71, and 6.66 plant m-2) on growth and grain yield of corn (Zea mays, L). The soil was sandy (Entisols) and groundwater was used for irrigation. Response to N was maximized to 214 kg ha-1 without a significant effect on most growth traits and grain yield. Agronomic efficiency of N use for grain yield was negatively related to N rate (r2 = 0.49). Application of micronutrients had no ef-fect on most growth and yield characters except a significant increase by 9.5, 8.7, and 9 % in plant weight (g plant-1), biomass yield (kg m-2), and N agronomic efficiency for biomass yield, respectively. Growth was decreased by in-creasing plant density without affecting harvest index, agronomic efficiency, biomass yield, and grain yield. The application of Zn to the highest maize plant density increased grain yield by 16 % as compared to the check. It is recommended, as predicated by the linear model, that N ferti-gation rate should be around 220 kg ha-1 with plant density of 6.66 plant m-2 accompanied by Zn application for maximum irrigated corn grain yield in sandy soil. Abbreviations: DAS, days after sowing; LA, leaf area; LAI, leaf area index; RPP, relative photosynthetic potential; HI, har-vest index; BW, plant weight g plant-1, GYP, grain yield g plant-1, BYM, biomass yield kg m-2, GYM, grain yield kg m-2, NAE, nitrogen agro-nomic efficiency.

## KEYWORDS

Fertigation; Micronutrients; Plant Density; Sandy Soil

## Cite this paper

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