EFFECT OF NITROGEN AND ZINC LEVELS ON YIELD AND TECHNOLOGICAL CHARACTERS OF SOME PROMISING FLAX GENOTYPES

By

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THESIS

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Name of Candidate: Riham Hamed Hassan Ahmed **Degree:** Ph.D. **Title of Thesis:** Effect of Nitrogen and Zinc Levels on Yield and Technological Characters of Some Promising Flax Genotypes.
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ABSTRACT

This study was carried out at Giza Agric. Res. Station. Field Crops Res. Instit., A.R.C. during two successive seasons (2014/2015 and 2015/2016) seasons to evaluate three flax genotypes (S.541-D/10, S.541-C/3, and S.651) released by Fiber crops Res. where grown under three zinc concentrations (Control, 150 and 300 ppm) and three nitrogen levels (30, 45 and 60 kg N/fed.) to study influence of nitrogen and zinc levels on yield and technological characters of some promising flax genotypes and determine the best treatment for higher yield and quality. Results showed significant differences among the three flax genotypes. Whereas, strain 541-D/10 surpassed the other genotypes in technical stem length, straw yield/plant as well as per feddan, fiber yield/feddan and fiber length in both seasons. While, strain 541-C/3 ranked first in seed yield/plant, seed index, seed yield/feddan, oil yield/feddan and oil percentage. And strain 651 surpassed other genotypes in number of seeds/capsule and total fiber percentage. While there weren't differences between Strain 541-D/10 and Strain 541-C/3 in plant height, and stem diameter in both seasons. The data indicated that, fertilizer with nitrogen and zinc significantly affected all characters under study. Use of (300 ppm) zinc concentration resulted a significant increase in plant height, technical stem length, stem diameter, straw yield/plant as well as per feddan, seed yield/plant as well as per feddan, fiber yield/feddan and oil yield/fed in both seasons. Data showed that highest level of nitrogen gave the highest averages of all characters under study except number of capsules / plant in both seasons. The flax strain 651 ranked first in fiber percentage per the total cross section followed by S. 541- D/10 and S. 541- C/3 when applying zinc 300 ppm and 60 kg N/fed. It is clear also that, added highest zinc and nitrogen quantities promote maximum estimates of fiber and xylem percentages in comparison with the lowest amounts of both elements studied. While, pith percentage decreased with added highest zinc and nitrogen.

Key words: Flax, *Linum usitatissimum* L., Nitrogen, Zinc, Straw, Fibers, Seed, Oil, Flax Anatomy