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SYNTHESIS OF SOME NOVEL 2- ALKY L/ ARYL QUINAZOLINES AND THEIR EVALUATION AS POTENTIAL SOIL ENHANCERS AND PLANT GROWTH REGULATORS FOR SOY BEAN AND FABA BEAN

By

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THESIS
Submitted in Partial Fulfillment of the Requirements for the Degree of
MASTER

In
AFRICAN STUDIES
(Natural Resources-Soil Resources)

Department of Natural Resources
Faculty of African Postgraduate Studies
Cairo University
EGYPT
2021

ABSTRACT

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Degree: M.Sc.
Title of Thesis: Synthesis of some novel 2- alky l/ aryl quinazolines and their evaluation as potential soil enhancers and plantgrowth regulators for soy bean
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ABSTRACT

The present work reports the chemical synthesis of biologically active chemical compounds (quinazolines) and the experimental methods concerning their application as new potent and powerful plant growth promoters. The current work studies the effect of different structural quinazolines at different concentrations on the growth parameters of faba beans grown on sandy soils in field experiments at Ismailia Research Station, Ismailia Governorate, Egypt. A laboratory germination experiment was performed in the Regional Center for Food and Feed, Agricultural Research Center to obtain the optimum concentrations of quinazolines to be used in the field experiment. In this context, seeds of *Vicia faba* were germinated in different treatments of Q1, Q2, Q3, Q4, Q5, Q6, Q7 and Q8; the concentrations for each treatment were 0.02, 0.04, 0.06, 0.08 and 0.1 (g/100ml). The data of laboratory germination experiment revealed that the germination percentages among treatments and control are significantly different. The results showed that, Q1 (at concentration 0.04g/100 ml), Q2 (at concentration 0.04g/100 ml), Q3 (at concentration 0.02g/100 ml) Q4 (at concentration 0.06 g/100 ml), Q5 (at concentration 0.06g/100 ml)Q6 (at concentration 0.06g/100 ml), Q7 (at concentration 0.04g/100ml),Q8 (at concentration 0.1g/100 ml) recorded the greatest germination percent associated with highest germinated root lengths. At the end of planting period (after 136 days of planting), significant effects of growth promoters, seasons and their interaction were detected for plant heights. Across the two seasons, the highest number of leaves was in the following order: Q5> Q2> Q4> Q1> Q8 recording 297.47, 297.43, 285.00, 284.40, 283.10, respectively, with no significant differences among them. However, the lowest number of leaves was recorded by the control treatments. Regarding the number of nodes and branches, the data revealed, significant effects of growth promoters, seasons and their interaction. Across the two seasons, the highest dry pod weights of plants were obtained by Q5, Q8, Q1, and Q2 recording 113.37, 112.54, 101. 87 and 96.88 g, respectively, with no significant differences among them. Also, the highest number of pods was obtained by Q5, Q2, Q4, and Q8 recording 189.50, 165.30, 151.40 and 147.30, respectively, with significant differences among them. The season and treatment type had significant effect on the weight of 100 seeds whereas, their interaction did not have any significant effect. All treatments recorded significantly higher protein and ash contents compared to their corresponding control treatments. The data showed that the investigated quinazolines did not affect the soil quality thus, the different parameters like pH, EC, CEC have almost close values. Minor variations were due to leaching property coming from irrigation and fertigation.

Key words: Quinazoline; plant growth promoters; faba beans; germination.

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