

**EFFECT OF CATTLE MANURE, ACTIVE DRY  
YEAST AND HUMIC SUBSTANCES ON THE  
GROWTH, YIELD AND CHEMICAL  
CONSTITUENTS OF *Oenothera biennis* PLANT**

**By**

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**Date: 28 /2 /2017**

## **SUPERVISION SHEET**

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## DEDICATION

*This thesis is dedicated to the spirit of my father, who taught me that the best kind of knowledge to have is that which is learned for its own sake.*

*It is also dedicated to my mother, who taught me that even the largest task can be accomplished if it is done one step at a time.*

## *ACKNOWLEDGEMENT*

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*Special thanks to my friends and everyone who encouraged and helped me to make this work possible.*

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### ABSTRACT

This study was conducted at the farm of the Medicinal and Aromatic Plants Research Department in El-Kanater El-Khaireya, Kalyubeia Governorate, Horticulture Research Institute and Ornamental Horticulture Department, Agriculture Faculty, Cairo University, during the two successive seasons of 2012/2013 and 2013/2014. A field experiment was carried out to study the effect of cattle manure at the rates of 15 or 30 m<sup>3</sup>/fed., active dry yeast at 4 or 8 g/l water, humic substances at 1 l/fed., or combinations of these treatments, on the growth, seed yield, oil productivity, fatty acid content, germination of seeds and chemical constituents of evening primrose (*Oenothera biennis*), compared to those obtained with the recommended dose of inorganic NPK fertilization [150 kg fed.<sup>-1</sup> ammonium nitrate (33%), 60 kg fed.<sup>-1</sup> calcium superphosphate (15.5%) and 60 kg fed.<sup>-1</sup> potassium sulphate (48%)]. The obtained results showed that the pair cobination of cattle manure at the rate of 30 m<sup>3</sup>/fed. and humic substances 1L/fed. increased values of plant growth and seed yield parameters as well as chemical constituents (viz. chlorophyll a, b and carotenoid contents in fresh leaves and N, P, K , protein, total carbohydrate and total phenol contents in seeds). Also, the highest values of plant growth, yield parameters (viz. plant height, number of branches/plant, fresh and dry weights/plant, number of capsules/plant, seed yield/plant, seed yield/fed., oil percentage, oil yield per plant and oil yield per fed.) and chemical constituents (viz. chlorophyll a, b and carotenoid contents in fresh leaves and N, P, K , protein, carbohydrate,  $\gamma$ -Linolenic acid and total phenol content in seeds). were obtained with using the triple combination of cattle manure at 15 m<sup>3</sup>/fed., yeast at 8 g/L water and humic substances at 1 L/fed.

**Key words:** Evening primrose (*Oenothera biennis*), cattle manure, active dry yeast, humic substances.

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