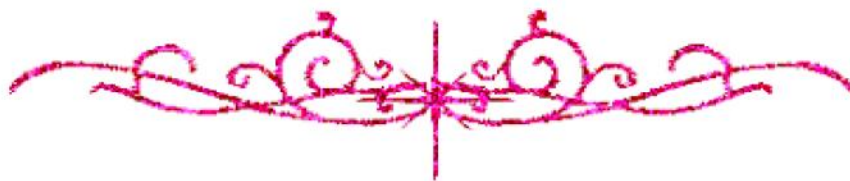


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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Enhancement productivity of Potato plant using electromagnetic pulses

A Thesis

**Submitted for partial fulfillment for the Degree of Master of Science in
Botany**

By

Moustafa Refaat Ahmed Fahmy Nassar

B.Sc. (Chemistry and Botany 2012)

Faculty of Science, Minia University

Supervisors

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This thesis has not been submitted for a degree at this or any other university.

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Acknowledgment

Greatest thanks to Allah for allowing me to do this work.

I am greatly indebted to my professors and supervisors. Prof. Dr. Hosny Abdel Aziz Mosallam for encouragement and great support; Prof. Dr. Fadel Mohammed Ali for guidance and great support; and Dr. Hend Ahmed Kamel for help and support.

Deep gratitude appreciation is due to Dr. Naglaa Balabel and her team for Support and generosity, great thanks to EMBT Co. for the generous support.

A great thanks to the great people in my life: My Dear Parents, brother and sister for their great support, and patience; my fiancée for her help and support, and all my family specially Dr. Ahmed Hegazy for his support.

My immense gratitude and indebtedness to All professors and staff members of the Botany Department, Faculty of Science, Ain Shams University, for their continuous support and help.

Table of Abbreviation

Abbreviation	Complete word
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
EMF	Electromagnetic field
EF	Electric Field
MF	Magnetic Field
EM	Electromagnetic
ICNIRP	International Commission on Non-Ionizing Radiation Protection
Hz	Hertz
V	Volt
DC	Direct current
eV	Electron volt
Chl a	Chlorophyll a
Chl b	Chlorophyll b
PI	Post Implantation
GST	Glutathione S-transferase
GSH	reduced glutathione
CDNB	1-chloro 2,4-dinitrobenzene

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Name: Moustafa Refaat Ahmed Fahmy Nassar

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Abstract

Potatoes are a very important vegetable crops in Egypt both for local consumption and for export. Potato crop is suffering from destructive bacterial wilt disease called brown rot. Control of that potato brown rot has proven to be a serious task. Chemical control was tried without much success with risk of hazardous effects on Human and environment. Recently, a new study indicated that the exposure to 1.0 Hz positive electric fields for one hour caused significant inhibition in bacterial growth causing brown rot. However, the environmentally friendly new method Raises the importance to study the effect on healthy potato plants. In this work the effects of 1.0 Hz electric field on the physiological properties of healthy potato (*Solanum tuberosum* L.). plant is studied. Lab and field experiment were done to test the effect of 1.0 Hz Electric field. the Lab exposure done on (Spunta) in clay and sand soil, Results indicated significant increase in shoot, root, and tuber weights and lengths and increase of plant and tuber N, P, K⁺ and Ca²⁺ content along with total chlorophyll, carbohydrates, proteins, amino acids, ascorbic acid and anti-oxidant enzymes. However, no change in tuber per plant number was detected. The second experiment were done on two potato varieties (Spunta and