شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

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

Prof. Dr. Hosny Abdel Aziz Mosallam

Professor of Plant Ecology

Botany Department - Faculty of Science - Ain Shams University

Prof. Dr. Fadel Mohammed Ali

Professor of Biophysics

Biophysics Department - Faculty of Science - Cairo University

Dr. Hend Ahmed Kamel

Lecturer of Botany

Botany Department - Faculty of Science – Ain Shams University

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Approval Sheet

Title: Enhancement productivity of Potato plant using electromagnetic pulses

Degree: Master of Science in Botany

Student Name: Moustafa Refaat Ahmed Fahmy Nassar

Supervision Committee

Prof. Dr. Hosny Abdel Aziz Mosallam
Professor of Plant Ecology (Botany Department) Faculty of Science.
Ain Shams University.

Prof. Dr. Fadel Mohammed Ali
Professor of Biophysics (Biophysics Department) Faculty of Science.
Cairo University.

Dr. Hend Ahmed Kamel
Lecturer of Botany (Botany Department) Faculty of Science.
Ain-Shams University.

Examination Committee

Prof. Dr. Hosny Abdel Aziz Mosallam

Professor of Plant Ecology (Botany Department) Faculty of Science.
Ain Shams University.

Prof. Dr. Fadel Mohammed Ali
Professor of Biophysics (Biophysics Department) Faculty of Science.

Cairo University.

Prof. Dr. Lotfy Mohsen Hassan

Professor of Ecology (Botany and Microbiology Department) Faculty of Science. Helwan University.

Prof. Dr. Magdy Ibrahim El-Banna

Professor of Plant Ecology (Botany Department) Faculty of Science.
Port Said University.

Head of Botany Department

Prof. Dr. Mohamed El-Sayed Tantawy Khalifa

DECLARATION

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

Moustafa Refaat

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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 Ca^{2+} 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