شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

Photosensitization Process With Laser and Sunlight For Control Of *Rhizoctonia solani*

THESIS

Submitted in partial fulfillment of master degree in laser science photobiology

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ABSTRACT

Rhizoctonia solani, the most widely recognized species of Rhizoctonia was originally described by Julius Kühn on potato in 1858. *R. solani* is a very common soil borne pathogen with a great diversity of host plants.
R. solani can survive for many years by producing small (1 to 3 mm diameter), irregular-shaped, brown to black structures (called sclerotia) in soil and on plant tissue.

In this work, the results of testing of hematoporphyrine as photofungicide, these compound have been already approved for medical use in the photodynamic therapy of tumors and other disease, HP becomes toxic only when it is activated by sunlight.
We used natural and artificial light with porphyrine derivative and laser radiation for controlling *R . solani*

Hematoporphyrine (IX) several favorable features for such application as photofungicide due to:

1)- it is endowed a high quantum yield for generation of highly cytotoxic intermediates.
2)- absorb essentially all wavelengths in the sun emission spectrum.
3)- typically act at the level of cell membranes minimizing the induction of mutagenic effects.
4)- have high photosensitizing activity towards biological systems in addition, its already approved for medical use in photodynamic therapy of tumors and another disease.

The efficiency of the photosensitization reaction depends on the concentration of HP, the fluence rate of irradiation and exposure time.

The result reveal that, the sclerotia of *R. solani* treated with lowest concentration of HP and photoirradiated by solar simulator at highest intensity rate was exhibited 100% mortality during exposure time (3 hour).

But the highest concentration was more efficiency when the sample which exposed to direct sunlight, it is found that the survival percentage of linear growth of *R. solani* was zero % when irradiation at sunlight for 4 hour (fluence rate 504 w/m^2) after treatment with concentration 10^{-2} of HP.

It is found that the average solar irradiation in a sunny day in Cairo about 650 W/m^2 and 250 W/m^2 in summer and winter respectively.

On another hand the laser radiation reaction depended on the exposure time and power of radiation, as show in result the mortality increased by increase the exposure time, the power radiation.

Chapter : 1

INTRODUCTION AND REVIEW OF LITERATURE

A:- Introduction

Disease are considered the major factor among those limiting bean production in Egypt, as they cause enormous losses in the yield and its quality. Root rot is the most important disease attacking bean plantations everywhere, either in open field or under protected cultivation , in young and relatively aged plants. Therefore, much attention must be given the hinder the spread and severity of bean diseases, especially root rot and damping-off diseases caused by the soil-borne fungus Rhizoctonia solani, by using the possible methods of plant disease control.

The major objective of the modern Egyption agriculture is offering a strategy which would lead , with the minimum use of pesticides, to increase the yield of vegetables and field crops. In Egypt, it is difficult to increase the cultivated area of bean, as this will be on the account of the other important crops. Chemical control mostly causes environmental pollution, highly affects the growth of the treated plants andmay induce aquiried resistance in the causal pathogens. This may render such chemicals ineffective after a short time of their use. Moreover, chemicals (fungicides) are harmfull for both man and his animals. In addition, chemicals and their applicationare costly in the light of modern agriculture.

Furthermore, several investigators tested several compounds to control this disease, but with little success.

Unfortunately, all of bean varieties grown in Egypt are vulnerable to infection with damping-off and root rot diseases. Breeding for developing resistant or tolerant bean varieties is an important method for plant