

**THE ROLE OF SELENIUM IN THE
DEVELOPMENT OF *FUSARIUM*
TABACINUM ROOT ROT OF
LUPINE AND ITS
BIOLOGICAL CONTROL**

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE

MASTER OF SCIENCE (M.Sc.)

IN

(MICROBIOLOGY)

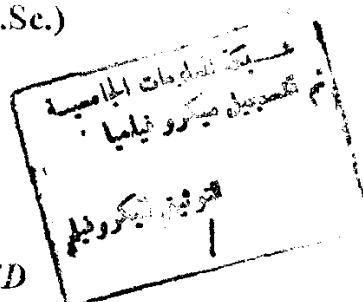
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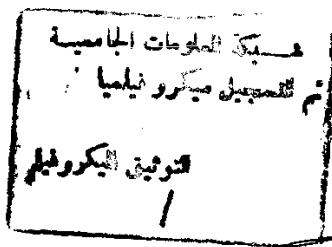
**THE ROLE OF SELENIUM IN THE DEVELOPMENT OF
FUSARIUM TABACINUM ROOT ROT OF LUPINE AND ITS
BIOLOGICAL CONTROL**

Thesis Advisors

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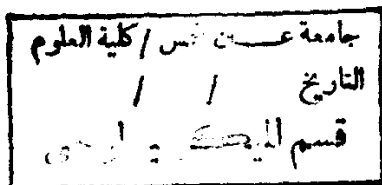
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جامعة عين شمس
كلية : العلوم

رسالة ماجستير /

أسم الطالب : أيمن فراج أحمد
عنوان الرسالة : دور السيلينيوم في نمو مرض العفن الفيوزاري
لجذور نبات الترمس ، ومقاومته البيولوجية

أسم الدرجة : ماجستير
لجنة الاشراف

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معلوم الازهر

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موافقة مجلس الجامعة
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موافقة مجلس الكلية
/ / ١٩٩٩

Abstract

AYMAN FARRAG - AHMED . On The role of selenium in the development of *Fusarium tabacinum* root rot of lupine and its biological control . Unpublished M. Sc. of Microbiology, University of Ain Shams , Microbiology department .

The work aims at studying a biochemical ways for controlling the root rot of lupinus termis by *Fusarium tabacinum* .

The pathogenicity of *Fusarium tabacinum* has been carried out at the laboratory using soil pots, the pathogen exerted symptoms similar to that at the field ; dwarfness , yellowing , wilting and seedling root rotting . The adventitious roots rotting was observed first then the main root of the plant.

The antagonistic activities of *Streptomyces griseoplanus* and *Streptomyces murinus* against the pathogen *Fusarium tabacinum* were studied . The results showed that both organisms produced inhibitory metabolites against *Fusarium tabacinum* growth on synthetic solid medium . Moreover, selenium showed an inhibitory action against *Fusarium tabacinum* gross growth and conidiogenesis. Nevertheless, their antagonistic activities were

increased against the pathogen in the presence of low concentration of selenium (5 and 10 ppm).

The application of 10 ppm selenium into an infested soil with the pathogen inhibited its pathogenicity; no symptoms were observed. Alternatively, the plant growth parameters as well as chlorophyll content were improved considerably. The presence of selenium inhibited the fungal productivities of pectinase and cellulase enzymes.

The fungal growth was drastically inhibited when cultivated in lupinus roots cell free extract in the presence of selenium.

Also, pectinase enzyme fractionation on Sephadex G 200 showed that fraction contain high pectinase enzyme activity contain low selenium content at certain selenium concentrations.

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Special acknowledgment must be made to all my colleagues in Physiology and Microbiology Departments, Faculty of Science, Al Azhar University for their kind help to me.

TO MY FAMILY ...
TO WHOM I OWE WITH
EVERY THING AND TO OMNIA
AYMAN

