سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

سامية محمد مصطفى

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة

سامية محمد مصطفى

بالرسالة صفحات لم ترد بالأصل

بسم الله الرحمن الرحيم

﴿قالوا سبحانك لا علم
لنا إلا ما علمتنا إنك
أنت العليم الحكيم﴾

صدق الله العظيم

سورة البقرة: ٣٢

STUDIES ON THE INTERACTION BETWEEN SOIL MICROFLORA AND THE PATHOGENIC ORGANISMS CAUSING SORGHUM DISEASES

By

Ettimad Abd-El-Halim Hussien Osman
B.Sc. Agric. Sci. (Plant Pathology), Faculty of Agriculture
Ain Shams Univ., 1972

Thesis
Submitted in partial fulfillment of the
Requirements for the Degree of
Master of Science

In
Agricultural Science
(Agricultural Microbiology)

To

Department of Agricultural Microbiology
Faculty of Agriculture, Cairo University

2004

Cairo University
Faculty of agriculture
Dept. of Agric Microbiology

-.-.-.-.-.-.-.-

Approval Sheet

-.-.-.-.-.-

Title: **Studies on the Interaction Between Soil Microflora and the Pathogenic Organisms Causing Sorghum Diseases**

Name: **Ettimad Abd-El-Halim Hussien Osman**

Degree: **M.Sc. in Agricultural Microbiology**

Approved by

Prof. Dr. Mohamed Abd El-Latif Nofal

Prof. Dr. Zakaria Jehia Daw

Prof. Dr. Gamil Abd El-Fattah Amin

Prof. Dr. .....

(Committee in charge)

Date: 26 / 06 / **2004.**

Cairo University
Faculty of Agriculture
Dept. of Agric. Microbiology

-.-.-.-.-.-.-.-

Supervision Committee

-.-.-.-.-.-

Title: **Studies on the Interaction Between Soil Microflora and the Pathogenic Organisms Causing Sorghum Diseases**

Name: **Ettimad Abd-El-Halim Hussien Osman**

Degree: **M.Sc. in Agricultural Microbiology**

Under supervision of

Prof. Dr. Gamil Abd El-Fattah Amin
Professor of Agric. Microbiology, Dept. of Agric. Microbiology, Fac. of Agriculture, Cairo University

Dr. Mohamed Abdel-Alim Ali
Lecturer of Agric. Microbiology, Dept. of Agric. Microbiology, Fac. of Agriculture, Cairo University

Prof. Dr. Thanaa Fahmy Ibrahim
Chief Researcher of Plant Pathology, Maize, Sugar and Forage Crops Dis. Res. Dept., Plant Pathol. Res. Institt, Agric. Res. Center, Giza, Egypt

Name of Candidate: Ettimad Abd-El-Halim Hussien Osman. **Degree:** M.Sc.
Title of Thesis: STUDIES ON THE INTERACTION BETWEEN SOIL MICROFLORA AND THE PATHOGENIC ORGANISMS CAUSING SORGHUM DISEASES.
Supervisors: 1. Prof. Dr. Gamil A. Amin. .....2. Dr. Mohamed A. Ali .....
..... 3. Prof. Dr. Thanaa F. Ibrahim .....
Department: Agricultural Microbiology .....
Branch : ..... **Approval:** ...../...../2004.....

ABSTRACT

Acremonium wilt disease caused by *Acremonium strictum* has been an important disease of grain sorghum in Egypt and many of the sorghum-growing countries.

Eighteen isolates of *A. strictum* were collected from 7 governorates in middle and upper Egypt and they were evaluated under greenhouse conditions for virulence on two sorghum cultivars EGH-2 (resistant) and Giza 114 (susceptible). Isolate No. 9 was the most aggressive one. Reaction of 20 commercial and promising grain sorghum cultivars were evaluated for resistance to *A. strictum* (isolate No. 9) at Giza and Sids Stations using soil infestation technique. Dorado was the highest resistant cultivar and Giza 113 was the highly susceptible one.

General survey for associated fungi with non sterilized grains of the two cultivars (Dorado and Giza 113) using standard blotter method indicated that Giza 113 grains had more load of associated pathogenic fungi than that of Dorado grains. Among fungi isolated, *Alternaria alternata, Fusarium moniliforme, F. roseum, F. semitectum, Acremonium strictum, Bipolaris bicolor, Cephalosporium* sp., *Aspergillus flavus, A. niger, Curvularia* sp. and *C. lunata*, were the most dominant associated fungi with grains of the two cultivars with different frequencies. Three seed health testing methods (agar plate, blotter and freezing method) were evaluated for detecting the most prevailing pathogenic fungi associated with sterilized Giza 113 grains. Freezing method was the most sensitive technique for detection of *F. moniliforme, F. roseum* and *A. strictum* which are considered the most important pathogens as they cause wilt diseases.

Out of 367 isolates (291 bacteria, 51 actinomycetes and 25 fungi) isolated from soil and the rhizosphere of Dorado and Giza 113 plants, 183 isolates (151 bacteria and 32 actinomycetes) proved to be effective against *A. strictum*. Twenty isolates of bacteria (identified as *Bacillus* sp.) and 9 isolates of actinomycetes (identified as *Streptomyces* sp.) showed the highest antagonistic effect. Isolate No. (9) of *Bacillus* sp. (identified as *B. subtilis*) and *Streptomyces* sp. No. (3) were the most antagonistic isolates. Culture filtrate as well as broth culture of both bioagents singly or in combination (1:1) inhibited the mycelial growth of *A. strictum*. Suspensions of the two bioagents and mixture of both of them (1:1) effectively enhanced germination and reduced associated pathogenic fungi of Giza 113 sorghum grains, as well as they effectively reduced Acremonium wilt disease incidence and increased grain yield/plant. Vermiculite proved to be the most effective carrier among the tested six carriers followed in descending order by talc powder and peat-moss.

Seed coated with vermiculite based formulation of a combination of *B. subtilis* and *Streptomyces* sp. (1:1) gave a partial similar efficiency to that of the fungicide Occidor Plus (carbendazim 50% S.C.) in controlling the disease incidence and increasing grain yield/plant, this indicated that biological control can be successfully exploited as an effective method for soil-borne plant pathogens control to avoid the hazardous effects of chemical control.

(Cairo Univ. Press. 1524-1984-5000 ex.)

Use Other Side if Necessary

نموذج رقم (٤)