



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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 الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل

BYEK

**STUDY OF THE DEVELOPMENT OF
ACQUIRED RESISTANCE TO FUNGICIDES
IN *PYRICULARIA ORYZAE* THE CAUSAL
ORGANISM OF RICE BLAST IN RELATION
TO ENVIRONMENTAL FACTORS**

By

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A Thesis submitted for the degree of Ph. D.

IN

ENVIRONMENTAL SCIENCE

**Department of Agricultural Science
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1999

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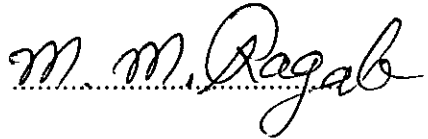
Title of Thesis : Study of the Development of Acquired Resistance to Fungicides in *Pyricularia oryzae* the Causal Organism of Rice Blast in Relation to Environmental Factors.

Degree : Ph.D. in Environmental Science.

This thesis for Ph.D. degree in Environmental Science has been approved by :

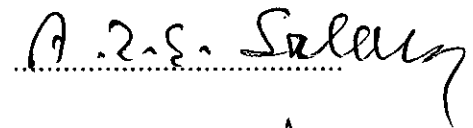
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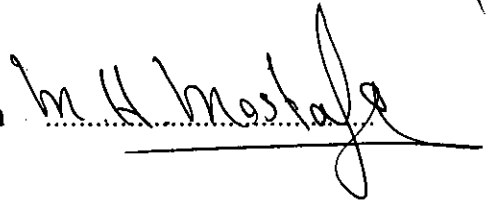
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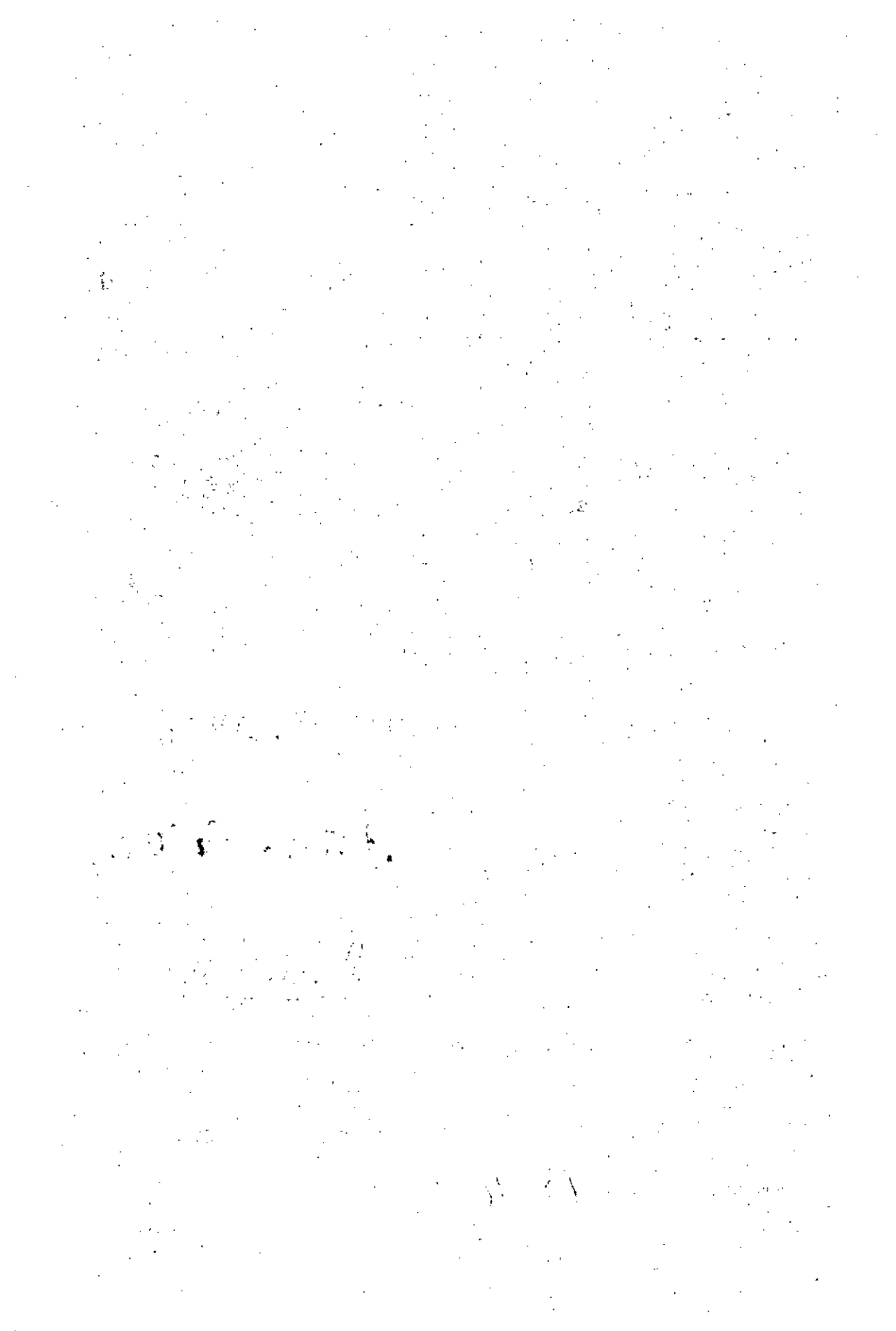
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**Title of Thesis : Study of the Development of Acquired
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Blast in Relation to Environmental
Factors.**

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ABSTRACT

Rice is one of the main cereal crops. In Egypt rice is considered an important source of national income.

In Egypt, rice blast disease was recorded in most governorates to cause great losses. Recently one of the main problems restricting chemical control of plant disease is that pathogens could acquire resistance to many recommended fungicides. The present investigation aimed to estimate the development of acquired resistance in the natural population of *Pyricularia oryzae* to different fungicides to different isolates in relation to acquired resistance level and studying the possible change in the morphological and physiological characteristics of resistant isolates aiming to develop a prediction model and place strategy to control disease.

The resistance level in a natural population of *P. oryzae* to recommended fungicides was established in mycelium as well as in the spores. The different isolates differed markedly in their reaction to different concentration of the tested fungicides.

Successive subcultivation of sensitive isolates of *P. oryzae* (Gemiza93₁) on banana medium agar amended with sublethal dose of each of the yotal fungicides for 6 items resulted in gradually increasing in the resistance.

Successive subcultivation of a resistant isolate of *P. oryzae* (Kellin93₂) on banana medium agar free of any fungicide resulted in gradually loosing of the resistance.

Studying the effect of irradiation with UV rays on the development of the fungicidal resistance indicated that irradiation with UV ray was more induceable to resistant mutants to Beam and Fuji-one but not to Hinosan.

Studying the effect of relative humidity of the fungicidal acquired resistance indicated that the fungus exhibited the

highest resistance level to the fungicides Hinosan, Beam and Fuji-one in 100% humidity.

Studying the effect of temperature on the fungicidal acquired resistance to Hinosan, moderate negative correlation was found between the temperature and the resistance to the fungicide.

Estimated reaction of exo- and endo polyphenol oxidase in five isolates with different levels of fungicidal resistance indicated that the isolates differ greatly in their enzyme activities.

Very weak correlation was found between the peroxidase enzyme either secreted or not by the fungus and the resistance to fungicides.

No great difference was found among the ascorbic oxidase enzyme reaction in the different isolates.

Negative weak correlation was found between the pectin methyl esterase enzyme activity and the resistance to Fuji-one, whereas positive weak correlation was found between the enzyme activity and the resistance to Beam.

While moderate positive correlation between the B1→4 endo cellobiohydrolase enzyme activity and Fuji-one, no correlation was found between the CX enzyme activity and Beam, moderate negative correlation was found between the CX enzyme activity and Hinosan.

Studying the effect of acquisition of the fungicidal resistance on the virulence of the fungus by studying the varietal reaction on three rice varieties to 13 fungal isolate with different fungicidal resistance index showed that there was obvious difference between the reaction of the varieties to the disease.

The obtained data were used to develop a simple model to predict the fungicidal acquired resistance, the model