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شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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Nucleic Acid Variation in Some Fungi Infecting Roots of Two Wheat Cultivars With Aspects of Fungal Development Within Root Tissues.

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ABSTRACT

Fourteen isolates of *Rhizoctonia solani* were isolated from naturally infected roots of wheat plants. Two isolates were also isolated from each of *R. zea* and *R. cerealis*. The isolates were greatly varied in respect to their pathogenicity to two wheat egyptian cultivars cvs. Giza2 and Sakha8. The latter cultivar assumed to be more resistant. Nine isolates belong to four species of *Fusarium* were also isolated from naturally infected wheat roots. The results of their pathogenicity for the two cultivars were varied and also were much the same for the two cultivars used. Morbid anatomy revealed very distinct variation among root tissues in respect to fungal development infected with a particular isolate. Five of twenty oligonucleotide random primers were successful to distinguish between the isolates of each of *Rhizoctonia* and *Fusarium spp.*. The results of agarose gel electrophoretic analysis of PCR products indicated that a good level of polymorphism was found among the isolates. the study demonstrated that RAPD or PCR analysis is a convenient tool to determine the genetic relationships among isolates of *Rhizoctonia* and *Fusarium spp.*; thus the genomic variability is associated or could explain the pathological variation among the isolates for cvs. Giza2 and Sakha8.

Approval Sheet

Nucleic Acid Variation in Some Fungi Infecting Roots of Two Wheat Cultivars With Aspects of Fungal Development Within Root Tissues.

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Introduction

Wheat (*Triticum sativum* L.) is considered one of the major important cereal crop in the world. The area devoted to wheat production in Egypt is increasing annually. It was 2,341,795 feddan in 1999 and became 2,463,265 in 2000 (Ministry of Agriculture, statistical report, Cairo 2001). The plant is subjected to infection with many pathogens causing devastating diseases among these root rot pathogens that attack wheat cultivars in many countries.

In Egypt, wheat is liable to be attack by many diseases which cause great loss in grain yield and quality of seeds. Root rot disease is among the serious diseases that attack different wheat cultivars causing lost of stand plants and seed yield. The spread of this disease was noticed in some wheat fields in some northern governorates of Egypt , i.e. Gharbia, Kaluobia, Menofia and Kafr el-sheikh (Fouly et al., 1996). The disease was also found in many localities in middle Egypt i.e. Beni-sweif. The most important pathogen infecting roots are species *of Rhizoctonia* and *Fusarium.*

The identification and Taxonomy of fungal species and isolates are mainly based on their morphological, physiological characters and the hosts they infect. Recently, molecular techniques have been used to identify species and races of fungi and study their taxonomical

relationship (Mazzola et al., 1996) Randomly amplified polymorphic DNA (RAPD) assay, a modified polymerase chain reaction (PCR) technique has bean increasingly used to study genetic variability of plants and several microorganisms (Turner *et.al.*, 1999). These techniques have accurate, quick and simplify but does require prior sequence information to generate primer/s. Such work was not studied before the commencement of the present study. Therefore the objectives of the present investigation was to differentiate between some different isolates of each of *Fusarium* and *Rhizoctonia* at the DNA levels using techniques of molecular biology. Aspects of fungal development within root tissues of two Egyptian wheat cultivars were also proceeded.