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INTEGRATED CONTROL OF SUGAR BEET ROOT-ROTS

BY

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B.Sc. Faculty of Agric. (Plant Pathology) Tanta Univ.

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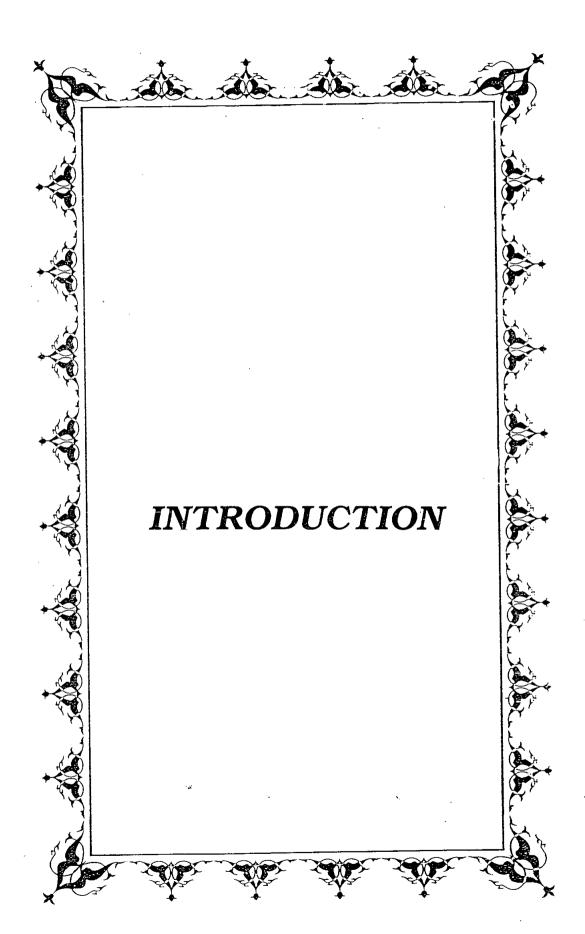
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INTRODUCTION

Sugar beet (*Beta Vulgaris* L.) is one of the important sugar crops in the world. In Egypt, sugar production was depended only on sugar cane crop; but in the last few years, sugar beet was introduced to increase sugar production to meet the increasing demand of the population and to decrease the import of sugar. The cultivarted area of sugar beet in Egypt was 16 943 Feddans in 1982. This area was increased sharply to 40 622 Feddans in 1985. In 1994 sugar beet area reached to 42210 Feddans. Also the average yield per feddan was 12.614 tons in 1982 which was increased sharply to 16.861 tons and 19.533 tons in 1990 and 1994, respectively, (according to the statistical data of Sugar Crops Council, Ministry of Agriculture, 1994).

Sugar beet is liable to be attacked by many soil-borne fungi at all stages of growth causing damping-off and root-rot. *Sclerotium rolfsii* Sacc. is the most destructive pathogen of sugar beet and causes heavy losses in root yield, (Ghillini, 1952; Chu et al., 1960; Mukhopadhyay, 1971; Abada, 1980; Fahim et al., 1981 and Coe and Neil, 1983). Sugar beet is also susceptible to *Rhizoctonia solani* and *Fusarium oxysporum* (Ashour et al., 1967; Hedjaround and Alizadeh, 1970; Abada, 1980; Hutton and Brien, 1986 and Martyn et al., 1989). *Macrophomina phaseolina* was also reported on sugar beet, but at less virulence (Abada, 1980 and Fahim et al., 1981).

Damping-off and root rot of sugar beet were controlled chemically by fungicides (Singh *et al.*, 1974; Agnihotri *et al.*, 1975; El-Arosi *et al.*, 1975; Sen *et al.*, 1975; Konency and Rimsa, 1981 and Waraitch *et al.*, 1986).

The application of such fungicides is uneconomic and causes soil and ground water pollution and also disturbs soil and ecological balance.

Trichoderma harzianum Rifai has been found antagonistic and

successfully used as a biocontrol agent of the above mentioned pathogens in several crops including sugar beet, under greenhouse and field conditions (Wells *et al.*, 1972; Chet *et al.*, 1979; Elad *et al.*, 1980a; Mirkova, 1982; Maiti and Sen, 1985; Upadhyay and Mukhopadhyay, 1986 and Khalifa, 1987 and 1991).

Therefore, the present work was planned to study the following:

- 1. Isolation of the frequent fungi from sugar beet roots showing root rot symptoms in different locations.
- 2. Differences among the most frequent pathogens in their virulence to sugar beet.
- 3. Reaction of some sugar beet cultivars to the infection with the most frequent pathogens.
- 4. Biological control by the biological control agent(Trichoderma harzianum).
- 5. Control by soil solarization.
- 6. Integreated control.

