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Pathological and rhizospheric studies on root-rot disease of squash in Saudi Arabia and its control

(2007) *African Journal of Biotechnology*, 6 (3), pp. 219-226. Cited 2 times.

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Abstract

Isolations from diseased squash roots revealed the presence of *Alternaria tenuis*, *Aspergillus niger*, *Fusarium oxysporum*, *F. solani* and *Rhizoctonia solani*. The last two fungi were more frequent than any of the other fungi. Pathogenicity tests proved that squash plants were highly vulnerable to attack by *Fusarium solani* and *Rhizoctonia solani* in descending order, during the pre- and post-emergence stages. Isolates No.1 of *F. solani* and No.2 of *R. solani* were the most virulence pathogen and significantly retard the morphogenesis of survived squash plants. The in-vitro antagonistic effect of *Trichoderma harzianum* on root-rot pathogens revealed the presence of clear antagonistic action between them. The highest mean inhibition values were 78.86 and 41.94% RI against *F. solani* and *R. solani*, respectively. *T. harzianum* also exhibited a mycoparasitism associated with high level of growth reduction by its filtrate on the two pathogens. In vitro, benlate fungicide was found to be very toxic to the root-rot pathogens. Untreated squash seeds grown in the infested soil (positive control) with *F. solani* and *R. solani* showed higher percentage of infection. The plants grown under this treatment were significantly shorter with lesser weight than the corresponding figures of the other treatments. Soil or seed coated with *T. harzianum* and benlate had a significant lower percentage of infection (pre, post, dead plants and developed plants), significantly longer in height and better plant growth parameters. *T. harzianum* applied as soil or seed treatments enhancing the total microbial flora of squash rhizosphere at the first 30 days of plant growth and greatly increased the total fungal counts comparing with the corresponding figures of negative and positive controls. As the density of *T. harzianum* reached 99.3% and 100.0% in cultivated plants soil infested with *F. solani* and *R. solani* respectively, the other genera or species of fungi become greatly reduced or disappeared. © 2007 Academic Journals.

Author Keywords

Root-rot disease; Saudi Arabia; Squash

Document Type: Article