

**THE ROLE OF IRANIAN *TRICHODERMA* ISOLATES IN
BIOLOGICAL CONTROL OF *RHIZOCTONIA SOLANI***

H. ROUHANI, A. KARIMI AND F. NOAPARAST.

College of Agriculture, University of Bu- Ali- Sina
Plant pests and Diseases Research Institute

Summary:

From a number of isolates of *Trichoderma* which were isolated on the selective meium from potato tubers and the soil surrounding them, 10 isolates belonging to two species: *T. harzianum* and *T. Viride* were selected. These isolates related to samples taken in Hamedan, Tuysarkan, Damavand, Gorgan, and Tehran. Each isolate was tested *in vitro* from the standpoints of parasitic activity and inhibitory effect of extracellular on *Rhizoctonia solani* The results showed that the mentioned characters vary independently from an isolate to another. These isolates can be grouped as strong, moderate, and weak on the basis of any of the characters. Among the 10 isolates only isolate no. 2. belonging to *T. harzianum*, was considered strong on the basis of both parasitic activity and inhibitory effect on *R. solani*.

The capacity of this isolate in control of potato sprout rot caused by *R. solani* was established. This isolate was propagated in great volume under aseptic conditions in order to use in the field. The ability of this isolate was comared in

a field experiment with the effect of three fungicides Benomyl Thiabendazol and PCNB in the control of sclerotia of *R.solani* on the tuber, and their influence on the yield of tubers . Results demonstrated that application of *R. solani* by 58 - 76% as compared with the control . This decrease was 30-36% when the seedtubers were disinfected by any of the fungicides. The tuber yield was only increased significantly when the seedtubers were coated by *Trichoderma* or disinfected by any of the three fungicides, while adding the *Trichoderma* to the seedbed rows had no significant influence on the yield.

References

- BAKER, R., T. PAULITZ and M. WINDHAM, 1986. EFFECT of Peat: Vermiculite mixes containing *Trichoderma harzianum* on increased growth responses of Radish. J. Amer. Soc. Hort. Sci., 111 (S): 810-816.
- CHANG, Y.C., Y. CHANG, R. BAKER, O. KLEIFIELD and I. CHET, 1985. Increased growth of plant induced by the biological control agent, *Trichoderma harzianum*. Plant Dis. 70: 145-148
- DAVET, P. 1979. Technique pour l'analyse de populations de *Trichoderma* et de *Gliocladium virens* dans le sol. Ann. Phytopathol., 11, 529-533.
- DAVET, P. 1983. Introduction et conservation des *Trichoderma* dans le sol. INRA, 2^e eme colloque SFP., Bordeaux, 26-28 mai 1983, Ed. INRA (Les colloques de l' INRA, no. 18), France, 159-163.
- DENNIS, C. WEBSTER, J., 1971a. Antagonistic properties of species - group of *Trichoderma*, I-Production of nonvolatile antibiotic. Trans. Br. Mycol. Soc., 64, 27, 26-39.
- DENNIS, C. WEBSTER, J., 1971b. Antagonistic properties of species - group of *Trichoderma*, II-Production of volatile antibiotics . Trans. Br. Mycol. Soc., 57, 41-48.
- ELAD, Y. CHET, I., HENIS, Y., 1982. Degradation of Plant pathogenic fungi by *Trichoderma harzianum*. Can. J. Microbiol., 28, 719-725.
- GROSS, G.R., JOSHI, M.M. HILLEBRENNER, S.N., 1981. Antagonism of *Rhizoctonia Solani* by *Trichoderma harzianum* in two soil. Phytopathol., 71(8), 877.

- HADAR, Y., CHET, I., HENIS, Y., 1979. Biological control of *Rhizoctonia Solani* damping off agent of wheat bran culture with *Trichoderma harzianum*. *Phytopathol.* 69(1), 64-68.
- PAYGHAMI, E., NEISHABOURY, M.R., 1990. Biological control of cucumber *Fusarium* wilt by *Trichoderma harzianum*. *Sci. Agro. Tabriz univ.* (under press).
- RICCI, P., TORINIO, J.A., MESSIAEN, C.M., 1979. La dynamique des populations de *Pythium* dans les sols maraicheres de Guadeloup, I-Methodes d'elude. *Ann. Phytopathol.* 8(1), 51-63.
- RIFAI, M.A., 1969. A revision of the genus *Trichoderma*. *Mycological Paperes* no. 116. 56pp., commonwealth Mycological Institute. Kew, Surrey, England.
- ROUHANI, H. KARIMI, A., 1989. A sample of potato tuber Mycoflora in Iran. *Proceeding of the Eighth plant Protection congress of Iran.* Isfahan univ. p. 76.
- WEINDLING, R., 1934. Studies on lethal principle effective in the Parasitic action of *Trichoderma lignorum* on *Rhizoctonia solani* and other soil fungi. *Phytopathol.* 24(11). 1153-1179.
- WEINDLING, R. EMERSON, O.H. 1936. The isolation of a toxic substance from the culture filtrate of *Trichoderma*. *Phytopathol.* 26, 1068-1070.
- ZAKII, Z. 1977. The antagonistic effect of *Trichoderma viride* and *T. album* on *Pyricularia oryzae*. *Msc Thesis.* Agricultural college Tehran University. Iran. 67 PP.

Address of the authors:

Dr. H. ROUHANI. Plant Protection Department, College of Agriculture
Bu- Ali- Sina University, Hamadan, Iran.

Eng. A. KARIMI and F. NOAPARAST. Plant Diseases Research Department.
Plant Pests & Diseases Research Institute. P.O. Box : 1454, Tehran- 19395,
Iran.