

A COMPARISON BETWEEN CARBENDAZIM FUNGICIDE AND *TALAROMYCES FLAVUS* IN CONTROLLING VERTICILLIUM WILT OF POTATO UNDER FIELD CONDITIONS

LALEH NARAGHI¹, AMIR ARJMANDIAN², ASGHAR HEYDARI³
KASRA SHARIFI⁴ & HOMAYOON AFSHARI AZAD⁵

^{1,3,4,5}Iranian Research Institute of Plant Protection, Yaman Street, Chamran Free Way, Tehran, Iran

²Agricultural and Natural Resources Research Center of Hamedan, Hamedan, Iran

ABSTRACT

Potato Verticillium wilt, caused by *Verticillium dahliae* and *V. albo-atrum*, possess specific importance and one of its control methods is biological control using antagonistic fungi. In this study, three isolates of *Talaromyces flavus* (TF-Po-V-49, TF-Po-V-50 and TF-Po-V-52) with the most inhibitory effect on Verticillium wilt disease in the greenhouse were selected for evaluation in the field. Rice bran was used for the preparation of different inoculums affected by the above-mentioned isolates. For application in the field, potato tubers were coated with three different inoculums. During 2011 and 2012, field experiments were carried out in randomized complete block design with five treatments and four replications in the agricultural research station of Hamedan province of Iran. Treatments included: 1-3: each inoculum affected by one of three isolates of *T. flavus*; 4: Carbendazim fungicide and 5: control without inoculum and fungicide. According to the results of this study, TF-Po-V-52 was the most effective fungal antagonist in decreasing Verticillium wilt disease severity and incidence (18.04 and 40.31% respectively) and increasing yield of potato (17.48%) and could be a potential biofungicide and biofertilizer in the fields. Statistical groups of the treatments in terms of average yield showed that the yield was increased from 3.69 to 26.27% in all treatments compared to the control. Among all treatments, those affected by carbendazim and TF-Po-V-52 showed the most efficacy in increasing yield (28.74 and 26.74 ton/ha respectively) in comparison with the control (22.76 ton/ha).

KEYWORDS: Biological Control, Potato, *Talaromyces flavus*, *Verticillium albo-atrum*, *Verticillium dahliae*