PROMOTION OF GROWTH CHARACTERISTICS IN GREENHOUSE CUCUMBER AND TOMATO BY TALAROMYCES FLAVUS

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ABSTRACT

Beneficial plant microbe interactions in the rhizosphere are primary determinants of plant health and soil fertility. Some antagonistic fungi have shown great effects towards the growth of plant crops. In this study, two major crops, tomato and greenhouse cucumber were selected to evaluate their growth promotion by antagonistic fungus, Talaromyces Flavus. For each plant, five T. flavus isolates were selected from our fungal collection which had previously shown antagonistic activities against the causal agent of wilt diseases on these plants. In next step, for every crop, five isolates were used in the greenhouse condition. For evaluation of the plant growth promotion ability of T. flavus isolates, a split plot trial was arranged in a randomized complete block design with four replications. The main-factor was methods of application of T. flavus as soil treatment, seed treatment and combining both methods. The sub-factor was the use of different fungal isolates. Measured parameters were root length, crown length, plant height, plant fresh weight and plant dry weight. Results showed that for both above mentioned crops, there were no significant differences among various levels in main factor. Results obtained from sub-factor section, showed that most effective isolates were TF-To-V-31 and TF-Cu-V-55 in tomato and greenhouse cucumber respectively. In interaction between main factor and sub-factor, TF-To-V-31 increased plant dry weight by 2.49 folds when it was applied as soil treatment. However, TF-Cu-V-55 increased plant dry weight by 2.93 folds as seed treatment or soil and seed treatment combined. The overall results of this study suggest that it may be possible to promote tomato and greenhouse cucumber growth characteristics by using the antagonistic fungus T. flavus.

KEY WORDS: Plant Growth Promotion, Talaromyces Flavus, Tomato, Cucumber.