

Abstract

Tomato with the scientific name of *Lycopersicon esculentum* Miller belongs to the solanaceae. Tomato, after potato is the world's second economic yield. This research in order to identify fungal and bacterial pathogens of tomato in Sistan region and biological control agents antagonists isolated from the rhizosphere of the plants were completed during the growing season in 2013-2014. To identification pathogens, several sampling of aerial and underground parts of plants were obtained from tomato fields and greenhouses. Suspected cases were transferred to the laboratory and after washing under gentle stream of water and disinfect superficial, fungal samples were plated on PDA and bacterial samples on NA culture medium. Purified Fungi and bacteria were identified at level species using the valid keys. Then, the pathogenicity test was performed. The species *Fusarium solani*, *Fusarium compactum*, *Fusarium tucumaniae*, *Fusarium virguliforme*, *Fusarium pseudoantophilum*, *Fusarium acuminatum*, *Fusarium heterosporum*, *Fusarium semitectum*, *Fusarium oxysporum*, *Rhizoctonia solani*, *Pythium aphanidermatum* and *Macrophomina phaseolina* identified as wilt, plants die, charcoal rot agents and the species namely *Alternaria alternate*, *Alternaria tomatocola*, *Alternaria dumosa*, *Alternaria mimicula*, *Alternaria arborescens*, *Alternaria tenuissima* and *Cladosporium cladosporioides* as agents of leaf spot and *Xanthomonas campestris* and *Pseudomonas syringae* were identified as bacterial pathogens. The species *F. virguliforme*, *F. compactum* and *C. cladosporioides* were isolated from tomato for the first time in Iran and *F. tucumaniae* is the new specie for mycoflora of Iran. Sampling to isolation antagonists from rizospher of infected and safe plants was done. The antagonists isolated are belong to two species *Trichoderma harzianum* and *Trichoderma virens* and bacterial isolates belonging to the *Bacillus subtilis*. To determine the effects of antagonistic agents against fungal and bacterial pathogens dual culture on PDA were used in the laboratory. Two species namely *T. harzianum* and *T. virens* and eight isolates of *Bacillus* which were more effective antagonists were selected to next examinations. The experiments were conducted in a completely randomized design with three replications. Analysing of variance was performed using SAS software and characteristics were compared using Duncan's test at the 5 percent level. Greenhouse trials results showed that the soil treated with the antagonist fungi *T. harzianum* and *T. virens* and two bacterial isolates BS1 and BS2 reduced the severity of patogenicity caused by pathogens compared with infected witness. In soils treated with antagonistic agents observed a significant increase in plant growth factors without pathogen.

Keyword: Biocontrol, Inhibition, Fungistatic



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**Identification of fungal and bacterial pathogens and
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