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Biocontrol Effectiveness of Indigenous Trichoderma Species against Meloidogyne javanica and Fusarium oxysporum f. sp. radicis lycopersici on Tomato

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Abstract : In this study, three local isolates of Trichoderma (Tr1: T. viride, Tr2: T. harzianum and Tr3: T. asperellum) were isolated and evaluated for their biocontrol effectiveness under in vitro conditions and in greenhouse. In vitro bioassay revealed a biopotential control against Fusarium oxysporum f. sp. radicis lycopersici and Meloidogyne javanica (RKN) separately. All species of Trichoderma exhibited biocontrol performance and (Tr1) Trichoderma viride was the most efficient. In fact, growth rate inhibition of Fusarium oxysporum f. sp. radicis lycopersici (FORL) was reached 75.5% with Tr1. Parasitism rate of root-knot nematode was 60% for juveniles and 75% for eggs with the same one. Pots experiment results showed that Tr1 and Tr2, compared to chemical treatment, enhanced the plant growth and exhibited better antagonism against root-knot nematode and root-rot fungi separated or combined. All Trichoderma isolates revealed a bioprotection potential against Fusarium oxysporum f. sp. radicis lycopersici. When pathogen fungi inoculated alone, Fusarium wilt index and browning vascular rate were reduced significantly with Tr1 (0.91, 2.38%) and Tr2 (1.5, 5.5%), respectively. In the case of combined infection with Fusarium and nematode, the same isolate of Trichoderma Tr1 and Tr2 decreased Fusarium wilt index at 1.1 and 0.83 and reduced the browning vascular rate at 6.5% and 6%, respectively. Similarly, the isolate Tr1 and Tr2 caused maximum inhibition of nematode multiplication. Multiplication rate was declined at 4% with both isolates either tomato infected by nematode separately or concomitantly with Fusarium. The chemical treatment was moderate in activity against Meloidogyne javanica and Fusarium oxysporum f. sp. radicis lycopersici alone and combined.

Keywords : trichoderma spp., meloidogyne javanica, Fusarium oxysporum f.sp.radicis lycopersici, biocontrol
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