عنوان مقاله:

Effect of some Probiotic Bacteria as Biocontrol Agents of Meloidogyne incognita and Evaluation of Biochemical Changes of Plant Defense Enzymes on Two Cultivars of Pistachio

محل انتشار:

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خلاصه مقاله:

Root-knot nematodes are the most economically important plant pathogens in pistachio. The ability of Pseudomonas fluorescens strains VUPF۵, VUPF۵۲, Bacillus cereus strain PRC۹۵ and Bacillus subtilis strain PRC۹۶ were tested as biocontrol agents for Meloidogyne incognita on the pistachio cultivars Sarakhs and Badami. The effect of these bacterial strains on defense-related enzymes activity in pistachio was also investigated. Pistachio seedlings of both cultivars were treated with bacterial strains and then were inoculated with ۲۰۰۰ second-stage juveniles of nematode after two days. Evaluations were made for changes of Peroxidase (POX), PolyPhenolOxidase (PPO), Phenylalanine Ammonia lyase (PAL) and Total Phenolic Content (TPC) determined at ۲, ۴, ۷, and ۱۰ Days After nematode Inoculation (DAI). Results showed improved activity of POX, PAL and PPO in both cultivars. The most significant result for POX activity in the treated seedlings belonged to Pseudomonas strain VUPF۵ at ۷ DAI for Sarakhs and ۱۰ DAI for Badami. However, this strain displayed an increase in PAL activity at ۲ and ۴ DAI in Badami and Sarakhs, respectively. Seedlings treated by the Pseudomonas strain VUPF۵۲ at ۱۰ DAI had the highest PPO activity among cultivars. TPC concentration was slightly higher, by ۸.۴% at ۴ DAI, in Sarakhs seedlings treated with VUPF۵, but no significant increase could be seen in the Badami cultivar compared with the control. In another experiment, ۴ months after nematode inoculation in seedlings of both cultivars treated by bacterial strains, numbers of galls, egg masses, and second juveniles decreased compared with the non-treated seedlings.

کلمات کلیدی:
Bacillus subtilis, Pistachia vera cvs. Badami and Sarakhs, Root knot nematode