

عنوان مقاله:

Application of plant growth-promoting rhizobacteria to protect bell pepper against Tobacco mosaic virus

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خلاصه مقاله:

Tobacco mosaic virus (TMV) is one of the economically important plant viruses which causes disease in various crops throughout the world. It has been reported that plant growth-promoting rhizobacteria (PGPR) can be used as potential biocontrol agents against plant viruses. Herein, greenhouse experiments were conducted to undertake the trilateral interactions among PGPR, bell pepper, and TMV. To this end, four-leaf-stage bell pepper seedlings were pre-treated by the PGPR, including *Pseudomonas fluorescens*, *P. putida*, and *Bacillus subtilis* in single and multiple application methods. The plants were then mechanically inoculated with TMV and visually inspected for symptom development till 28 days post-inoculation (dpi). The TMV accumulation in inoculated plants was quantitatively measured by Indirect-ELISA 28 dpi. Analysis of the extinction values showed that application of the PGPR was associated with the least significant ($p < 0.05$) value (0.08) compared to the positive control (0.77). Inoculation of PGPR triggered the biosynthesis of the defense-related enzymes such as catalase, peroxidase, ascorbate peroxidase, and superoxide dismutase, mediating the biochemical protection against TMV in bell pepper plants. In addition to the disease control, a significant ($p < 0.05$) increase in growth parameters was observed in PGPR-treated plants compared to the control plants. In conclusion, these results indicated that multiple applications of PGPR strains enhanced the plant vigor and provided an increased level of TMV suppression in bell pepper plants.

کلمات کلیدی:

PGPR, Indirect-ELISA, virus accumulation, enzyme

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