

Abstract

one of the most common and widespread cucurbits products of the world is Cucumber which scientifically named *Cucumis sativus*. Cucumber damping-off disease which is created by *Phytophthora melonis* soil Mushroom, is a prevalent disease of cucumber. Using fungicides beside environmental problems, is not considered a sustainable method to control disease. In last half century, Using biological compounds has been reported an effective and certain method to reduce pollution to diseases. Biological fertilizers such as *Glomus mosseae* and *Trichoderma harzianum* mushrooms were utilized as biologic control factors versus *Phytophthora melonis* mushroom-liked of cucumber bush-damping factor. Usage of the fertilizers was performed in planting Rasm Kayhan cucumber seed bed in the form of a completely random plan with three repeats. The bushes were inoculated with the disease factor in a three-leaf stage. The experiment was performed as factorial in the form of a completely random plan with three repeats and data variance were analyzed using SPSS software and the means were compared using LSD test in %5 level. The results showed that both care had a significant difference with witness sample. In order to survey resistance molecular mechanism of cucumber seedlings against disease, Changes in expressing PAL, *chitinase*, Lipoxygenase, Gals genes were measured using qRT-PCR method. Data were analyzed by method pffaf and the extent of expressing considered genes were surveyed for all cares and it's measured total amount of protein, total phenol, peroxidase enzyme, polyphenol oxidase in next stage and finally, the role of fertilizer was specified in creating resistance and expressing the resistance genes. The results represented that expressing the genes have been influenced by cares and trichoderma cares had more increasing effects than other cares on expressing the genes. According to the achieved results, the fertilizers can be used as both plant boosters and bio control factors of disease.

keywords: biological fertilizers, expressing Resistance genes, inducing resistance, cucumber bush-damping , *Phytophthora melonis*.



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**Effects of Bio-fertilizers on induction of cucumber
resistance to damping-off disease caused by *Phytophthora
melonis*.**

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