

Abstract:

Pea Fusarium wilts disease caused by *Fusarium oxysporum* f. *spiceris* is one of the major diseases of pea. In this study the possible effects of biofertilizers (nitroxin and mycorrhiza) on possible resistance insemination against this pathogen, in a factorial completely randomized design which include eight main factors (applied treatments) and four sub-plots (measured values) with three replications in laboratory conditions was studied. Also, the effects of biofertilizers on agronomic traits, disease severity, chlorophyll and carotenoid in a completely randomized design, with eight treatments and three replications in a greenhouse condition were studied. Excel and SAS softwares were implemented for data analysis and mean comparison of data was performed by Duncan. The result indicated that biofertilizers has significant effects on different agronomic traits, virulent, chlorophyll and carotenoid rate. Likewise, in this study the effects of biofertilizers (nitroxin and mycorrhiza) on inseminated resistance indicators, such as enzymes catalase, peroxidase, polyphenol oxidase, total phenol content, leaf soluble protein the gene involved in resistance to disease, chitinase and Super oxidase superoxide's antioxidant gene in texture of the treated plants, was investigated. The evaluation of Total phenolictotal phenolic content and total protein and the activities of enzymes and genes involved in resistance in plants that were treated by biological fertilizers (nitroxin and mycorrhizal) at insemination with infected patients compared with healthy control plants was increased. The highest phenol content was after 168 hours infection, the highest amount of total protein and catalase in 72 hours after sampling and the highest peroxidase and polyphenol oxidase were 120 hours after the biopsy. Most of the chitinase and Superoxide dismutase gene expression were 72 hours after sampling. The results showed that, the nitroxin pathogens have the highest total phenol and mycorrhizal treatment has the highest total protein, catalase, polyphenol oxidase, and peroxidase and superoxide dismutase gene expression.

Keywords: nitroxin, mycorrhiza, sceoundry metabolic, pea, Fusarium.



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**The effects of biofertilizers in the induction of resistance
chickpea wilt disease caused by fungus “*Fusarium oxysporum* f. sp.
ciceris”**

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