

Evaluation mycorrhizal symbiosis and root traits of barely (*Hordeum vulgare* L.) under heavy metals stress

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Heavy metals uptake by plants root depends on plant and edaphic factors consist of soil microorganisms. According to many studies, plant's potential and its ability for growing under heavy metals stress could increase by mycorrhizal symbiosis. So, in this study we have focused on mycorrhizal symbiosis with barley and its related root traits. With this view of point a greenhouse experiment was set up in a 2×8 factorial completely randomized design, with three replicates in 2007 at Nuclear Science and Technology Institute, Iran. First factor was non-inoculation (I0) and inoculation (I) with *G. mosseae* and second factor was consisted of seven levels of heavy metals contaminants (Co=50 mgkg⁻¹ dried soil, Cd=8 mgkg⁻¹ dried soil, Pb=400 mgkg⁻¹ dried soil, Co*Cd, Cd*Pb, Pb*Co and Pb*Co*Cd) plus control treatment (C) (without contamination). Some traits like root length, mycorrhizal root length and mycorrhizal root dry weight were investigated. Findings showed barely root length, mycorrhizal root length and mycorrhizal root dry weight impressed by interaction between applied heavy metals and inoculation. Results indicated inoculation with *G. mosseae* increased root growth and development because mycorrhizal relationship cause enhancement of root uptake for water and nutrients.

Keywords: root traits, mycorrhiza, barely, heavy metals