

عنوان مقاله:

Changes in Antioxidant Enzymes Activity and Physiological Traits of Wheat Cultivars in Response to Arbuscular Mycorrhizal Symbiosis in Different Water Regimes

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خلاصه مقاله:

This study was conducted to evaluate changes in antioxidants, free proline, relative water content and determination of root colonization of four commercial wheat (*Triticum aestivum* L.) cultivars (Azar^۲, Darab^۲, Shiraz, and Falat) inoculated with the fungus *Glomus intraradices*, under four water regimes of ۱۰۰، ۷۵، ۵۰، and ۲۵% of field capacity in the year ۲۰۱۰ at the School of Agriculture, Shiraz University. The means for leaf area, shoot fresh weight, root fresh weight, shoot dry weight and root/shoot ratio were ۶.۰، ۱۰.۲، ۱۵.۶، ۲۵.۲، and ۱۰.۳۱% respectively higher in the mycorrhizal as compared to non-mycorrhizal cultivars. Water deficit stress reduced root colonization percentage and the highest root colonization (۲۸.۱۰%) was observed in the cultivar Azar^۲. Compared to the non-mycorrhizal plants, inoculation increased the average values for relative water content, proline content, total chlorophyll content, total protein, superoxide dismutase, peroxidase, and catalase activities of mycorrhizal plants by ۵.۵، ۳۵.۶، ۱۳.۸، ۲۱.۶، ۲۲.۵، ۲۲.۷، and ۱۵.۵% respectively. The highest peroxidase (۹.۷۷ U mg^{-۱}), catalase (۹.۸۲ U mg^{-۱}), and super oxide dismutase (۱۹.۸۰ U mg^{-۱}) activities were obtained by Azar^۲. The results indicated that inoculation with *Glomus intraradices* alleviated the deleterious effects of water deficit stress on wheat cultivars via proline accumulation and increased antioxidant activities. The cultivars Azar^۲ and Darab^۲ had higher values for most of the antioxidants and root colonization. Consequently, these cultivars could be used in wheat breeding programs for better symbiosis and drought tolerance

کلمات کلیدی:

antioxidant enzymes, *Glomus intraradices*, Symbiosis, Water regime, Wheat

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