

Role of Arbuscular Mycorrhiza in Heavy Metal Tolerance in Sweet Basil Plants

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Abstract : The effects of phosphorus amendments and arbuscular mycorrhizal (AM) fungi *Glomus intraradices* on the sweet basil (*Ocimum basilicum* L.), chemical composition and percent of volatile oil, and metal accumulation in plants and its availability in soil were investigated in field experiment at two seasons 2012 and 2013 under contaminated soil with Pb and Cu. The content of essential oil and shoot and root dry weights of sweet basil was increased by the application of mineral phosphorus as compared to control. Inoculation with AM fungi reduced the metal concentration in shoot, recording a lowest value of (33.24, 18.60 mg/kg) compared to the control (46.49, 23.46 mg/kg) for Pb and Cu, respectively. Availability of Pb and Cu in soil were decreased after cultivation in all treatments compared to control. However, metal root concentration increased with the inoculation, with highest values of (30.15, 39.25 mg/kg) compared to control (22.01, 33.57mg/kg) for Pb and Cu, respectively. The content of linalool and methyl chavicol in basil oil was significantly increased in all treatments compared to control. We can thus conclude that the AM-sweet basil symbiosis could be employed as an approach to bioremediate polluted soils and enhance the yield and maintain the quality of volatile oil of sweet basil plants.

Keywords : arbuscular mycorrhizal fungus, heavy metals, sweet basil, oil composition

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