

Comparison of vegetative traits and root yield of licorice (*Glycyrrhiza glabra*) influenced by different sources of nitrogen in several soilless and soil culture systems

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Abstract

Production of medicinal crops in soilless culture systems and controlled environments provides an opportunity for increasing the quantity and quality of primary materials of medicinal plants. A factorial experiment based on completely randomized design was carried out with four culture systems (aeroponics, nutrient film technique, classic hydroponics and soil) and three different nitrogen sources (nitrate, ammonium nitrate and ammonium) and three replications. Results indicated that vegetative traits such as plant height, stem and root diameter, number of lateral branches and leaf area were affected by culture system and source of nitrogen. Plants grown in aeroponics fed by ammonium nitrate had the highest plant height and root and stem diameter. The results also showed that nitrogen source and culture system had significant effect on root dry and fresh weight, shoot dry and fresh weight and root yield per hectare. Maximum and minimum of these parameters were observed in plants fed with ammonium nitrate in aeroponics and ammonium in aeroponics system, respectively. According to the results, ammonium nitrate is recommended as the most proper nitrogen source for production of licorice in aeroponics system.

Keywords: Nutrient film technique, Licorice, Ammonium nitrate, Aeroponics, Hydroponic.

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