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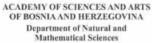
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EFFECT OF WATER AND SALINITY STRESSES ON GERMINATION INDICES AND SEEDLING GROWTH IN ARTICHOKE (CYNARA SCOOLYMUS) AND PURPLE CONEFLOWER (ECHINACEA PURPUREA)

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Drought and salinity are widespread problems around the world [4]. Germination is one of the most critical phases of plant life in which greatly influenced by stress [2]. Poor germination and decreased seedling growth result in poor establishment and occasionally crop failure [4]. Therefore, the objective of this research was to study the effects of water and salinity stress on germination properties and early seedling growth in Artichoke and Purple coneflower medicinal plants. For this four laboratory's experiments were conducted in completely randomized design with four replications at Ferdowsi University of Mashhad in 2009. Treatments were eight levels of water stress (0, -2, -4, -6, -8, -10, -12 and -14 bar) for first and second experiments and six levels of salinity stress (0, 50, 100, 150, 200 and 250 Mmol of NaCl) for third and fourth experiments. Results showed that germination percentage in two studied plants was decreased with increas in stress levels. The decrease in germination under drought and salt stress conditions is due to the fact that seeds develop an osmotically enforced dormancy in these conditions [3]. Artichoke was more resistance than Purple coneflower to water and salinity stress, where amount of germination in Artichoke and Purple coneflower were 72 and 5% in -10 bar of water stress, these amounts were 75 and 8% in 150 Mmol of salinity stress. Moreover, mean germination time (day¹) increased by increasing in water stress in Artichoke but there were not significantly different in Purple coneflower. Radicle to plumule length ratio was increased by increasing in water and salinity levels in artichoke, while this ratio was without difference in water stress and was decreased in salinity stress in purple coneflower. Reported that an increased root/shoot ratio appears to be an adaptation to stress, resulting in more efficient water and nutrient uptake under stress conditions [1]. Also, seedling dry weight was decreased by increasing water and salinity stress in two studied plants. Overall, it seems that germination indices and seedling growth in Artichoke were superior than Purple coneflower.

Keywords: Drought, Mean Germination Time, Radicle, Plumule

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