



## Effect of silicon application on soil properties and minerals content under drought stress

Amal Ahmed Mohammed Al-Ghamdi and Arwa M. Ashram\*

Department of Biological Sciences, Faculty of Science, King Abdulaziz University, Jeddah 21488, Saudi Arabia.

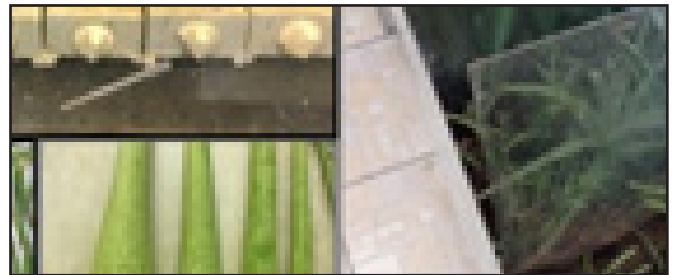
### Abstract:

Drought is the most significant abiotic factor that limits growth, harms growth and crop production. Silicon is the second element mineral and it has shown to improve soil properties under stress conditions. This study shows the effect of silicon application under normal conditions, and different levels of drought stress (75%, 50%, and 25% FC) on soil physical and chemical properties in addition to minerals availability. The results of the study indicated that, the concentration of soil mineral elements (P, K, Ca, Mg, and Fe) increased due to Si treatment. However, this induction in minerals concentration was more pronounced at higher water levels (100%, 75% FC) in case of K, Ca and Fe. While, the enhancement in P and Mg concentration after Si treatment was much remarkable under higher stress conditions (50%, 25% FC).

**Keywords:** Drought, Silicic acid, Mineral ions

### Publication of speakers:

1. Al-Gamdi MAA (2006). The possibility of ameliorating the regeneration of Juniper trees (*Juniperus procera* Hochst. ex Endl.) in the natural forests of Saudi Arabia. Riyadh. MSc. Thesis, University of King Saud, Riyadh, King Saudi Arabia.
2. AL-Ghamdi AAM, Hasnah MJ (2012). Interaction between Arbuscular Mycorrhiza and Heavy Metals in the Rhizosphere and Roots of *Juniperus procera*, *Int.*



*J. Agric. Biol.*, 3: 66-76.

3. Al-Garni SMS (2006). Increased heavy metal tolerance of cowpea plants by dual inoculation of an arbuscular mycorrhizal fungi and nitrogen-fixer *Rhizobium bacterium*, *Afr. J. Biotechnol.*, 5: 133-142.
4. AOAC (1990). Official methods of analysis. 15th ed. Association of Official Analytical Chemists. AOAC Inc. Arlington, Virginia, USA.
5. Bais HP, Weir TL, Perry LG, Gilroy S, Vivanco JM (2006). The role of root exudates in rhizosphere interactions with plants and other organisms, *Annu. Rev. Plant Biol.*, 57: 233-266.
6. Brundrett M, Bougher N, Dell B, Grove T, Malajczuk N (1996). Examining mycorrhizal associations. In: Working with Mycorrhiza in Forestry and Agriculture, M. Brundrett, N. Bougher, B. Dell, T.

Emerging Trends in Plant Science and Natural Products Research, March 19-20, 2020; London, UK

**Citation:** Amal Ahmed Mohammed Al-ghamdi; Effect of silicon application on soil properties and minerals content under drought stress; Natural Products 2020; March 19-20, 2020; London, UK