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عنوان مقاله:

Silicon and Selenium supplementations modulate antioxidant systems and mineral nutrition to mitigate salinity-alkalinity stresses in cucumber (Cucumis Sativus L.) plants under hydroponic conditions

محل انتشار:

مجله فرآیند و کارکرد گیاهی, دوره 10, شماره 46 (سال: 1400)

تعداد صفحات اصل مقاله: 9

نویسندگان:

سید علی اصغر موسوی - *Department of Horticultural Science, Faculty of Agriculture, Vali Asr University, Rafsanjan. Iran*

حمید رضا روستا - *Department of Horticultural Science, Faculty of Agriculture and Natural Resources, Arak University, Arak. Iran*

مجید اسماعیل زاده - *Department of Horticultural Science, Faculty of Agriculture, Vali Asr University, Rafsanjan. Iran*

سعید عشقی - *Department of Horticultural Science, Faculty of Agriculture, Shiraz University, Shiraz. Iran*

خلاصه مقاله:

Experiments were conducted to investigate the role of silicon (Si, ۷۵, ۱۰۰ mg. L-۱ sodium silicate) and selenium (Se, ۴, ۶ mg. L-۱ sodium selenate) in ameliorating the salinity (۷۵ mM NaCl and ۷۵ mM NaHCO۳) caused strong detrimental effects on mineral ions uptake and the oxidative damage in cucumber (Cucumis Sativus L.) plants. Salinity and alkalinity stresses reduced macro and micro elements content which were significantly improved by Si and Se supplementation. Further, peroxide hydrogen was more in salinity- alkalinity stressed plants without Si and Se as compared to those supplemented with Si and Se. Si protected cucumber plants from NaCl induced oxidative damage by improving the activity of antioxidant enzymes (glutathione reductase, guaiacol peroxidase, ascorbate peroxidase). More importantly Si and Se supplementation improved the accumulation of P, Mg, Ca, Fe, Zn, Mn and Cu. In conclusion, Si and Se mitigate the negative effects of NaCl and NaHCO۳ in cucumber plants by modifying nutrient uptake and up-regulating antioxidant system.

کلمات کلیدی:

Ascorbate peroxidase, NaCl stress, NaHCO۳ stress, Nutrient uptake, Selenate, Ascorbate peroxidase, NaCl stress, NaHCO۳ stress, Nutrient uptake, SelenateAscorbate peroxidase, NaCl stress, NaHCO۳ stress, Nutrient uptake, Selenate

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