Evaluation of selenium treatment of maize and sunflower plants in nutrient solution and soil (rhizobox)

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Selenium is an essential microelement, a vital component of an antioxidant system of an organism. Deficiency of selenium is connected to emergence of many diseases among others (the heart and the vascular system and the tumorous diseases). The contradiction of it derives from the above, when a given (too high) concentration of selenium is dangerous to plants and human also. In the periodical system, selenium has the narrowest tolerance concentration range between the essential and toxic concentrations.

On the basis of our experiments, selenium is one of the most mobile elements in a plant-soil system.

Selenium content of plants is dependent on mainly the uptakeable selenium content of soil. In many countries soils are lack of selenium like in Hungary.

In our experiment the effect of selenium treatment in nutrient solution and in soil (in rhizoboxes) was studied applying a monocotyledon (maize) and a dicotyledon (sunflower) plants among controlled conditions.

The doses were calculated and added as selenium in selenite form (concentrations: Ø; 1; 10; 100 mg kg-1) and in selenate form (Ø; 0,1; 1; 10 mg kg-1).

On the basis of our results the selenium content of plants was increased significantly in according to the effect of selenium treatments. This increase of selenium concentration was more intensive by the effect of selenate treatment than by the effect of selenite treatment applying the same level of treatment. The selenium concentration of shoot and root samples was analyzed respectively. Se content was higher in roots than in shoot samples in the case of maize and sunflower as well. This shows that the selenium accumulation in roots was more intensive than in shoots of the applied plants among the applied conditions.

Acknowledgements: The research work was supported by the TÁMOP 4.2.1./B-09/1/KONV-2010-0007 and TÁMOP-4.2.2/B-10/1-2010-0024 projects. The project was co-financed by the European Union and the European Social Fund.

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