

Silver nanoparticles improve growth and protect against oxidative damage in eggplant seedlings under drought stressOriginal Paper

Nadiyah M. Alabdallah, Md. Mahadi Hasan, Abdalrhaman M. Salih, S.S. Roushdy, Aisha S. Al-Shammari, Sumayah I. Alsanie, Mohamed El-Zaidy

Plant Soil Environ. 2021, 67(11):617-624.

Drought stress is a significant abiotic stressor that has a negative impact on crop production and global food security systems. Drought stress was applied to eggplant seedlings with various field capacities (FC), 80% FC as control, 50% FC, 35% FC, and 20% FC. AgNPs were synthesised from green chemical methods, whereas different concentrations of AgNPs (0, 0.1, 0.2, 0.5 μmol) were applied exogenously on drought-stressed eggplants. Drought stress decreased the growth parameters (plant height, fresh mass, dry mass, leaf area), photosynthetic pigments (Chl *a*, Chl *b*, carotenoids), and protein content while increased the proline,...

Residual effect of superphosphate on the sulphur status of soil and plants in a long-term NPK fertilisation experiment on a Chernozem in HungaryOriginal Paper

Evelin Kármén Juhász, Rita Kremper, Áron Béni, Andrea Balláné Kovács

Plant Soil Environ. 2021, 67(11):625-632

Recently, plant-available sulphur (S) in the soil is decreasing due to the limited use of S containing fertilisers and the reduction of atmospheric S deposition. The aim of this work was to evaluate the S status in a long-term fertilisation experiment on a Chernozem in Hungary, with control and 2 NPK rate treatments, considering that after 27 years of superphosphate (SP) use, SP was replaced by monoammonium phosphate in 2010. Plant and soil sampling were performed in 2017 at three different development stages of winter wheat. To assess the S status, the S balance was estimated (for 34 years), KCl soluble soil sulphate, S as well as nitrogen (N) concentration...

Praseodymium enhanced the tolerance of maize seedlings subjected to cadmium stress by up-regulating the enzymes in the regeneration and biosynthetic pathways of ascorbate and glutathioneOriginal Paper

Qidi Zhu, Yanyan Li, Shang Gao, Changjuan ShanPlant Soil Environ. 2021, 67(11):633-642

To test whether praseodymium (Pr) regulates cadmium (Cd) tolerance, we explored the effects of Pr on enzymatic activities in the regeneration and biosynthetic pathways of ascorbate and glutathione in maize seedlings under Cd stress. The findings demonstrated that Cd stress...

Optimisation of the amount of nitrogen enhances quality and yield of pepper **Original Paper**

Shuang Han, Xiaoqin Zhu, Dongmei Liu, Libo Wang, Dongli Pei

Plant Soil Environ. 2021, 67(11):643-652

The goals of this study were to explore the characteristics of nitrogen (N) absorption and utilisation of chilli peppers (*Capsicum annuum* L.), improve the utilisation rate of nitrogen, and provide a theoretical basis for scientific fertilisation. In this experiment, pepper cv. Huoyanjiaowang was used as the material, and potted sand cultures and field randomised block experiments were conducted to study the effects of fertilisation of different forms of nitrogen on the photosynthetic characteristics, chlorophyll, nitrate nitrogen, alkaline nitrogen, capsaicin, dihydrocapsaicin and yield. In the pot experiment, the nitrogen application...

Antioxidant properties of pepper (*Capsicum annuum* L.) depending on its cultivar and fruit colouration **Original Paper**

Agnieszka Żurawik, Dorota Jadczyk, Nikolay Panayotov, Piotr Żurawik

Plant Soil Environ. 2021, 67(11):653-659

Due to its nutritional, health-promoting and taste-related values, new cultivars are introduced every year. The aim of the study was to assess the biological value of Polish and Bulgarian cultivars of pepper grown in moderate climate conditions and collected at different degrees of maturity. Ascorbic acid, carotenoids, polyphenols, chlorophyll *a*, chlorophyll *b*, total chlorophyll and antioxidant activity (DPPH) were determined in air-dried fruit. The investigation included five Polish cultivars: Roberta, Marta Polka, Etiuda, Trapez, and Cyklon and five Bulgarian cultivars: Bulgarski Ratung, Sivriya, Kurtovska Kapiya, Delikates, and...

Effect of low-molecular-weight organic acids on phosphorus soil activation: A laboratory study of the soils from Wangbeng section of the Huaihe River Basin, China **Original Paper**

Jinxin Zhang, Liangmin Gao, Zhendong Pang, Linghan Liu, Xiaoqing Chen, Shuo Wang, Hui Wang, Rongrong Tong, Chuang Shi, Xudong Chen

Plant Soil Environ. 2021, 67(11):660-667

Farmland soil samples from the northern and southern banks of the Wangbeng section of the Huaihe River Basin, China, were collected and treated with three different low-molecular-weight organic acids (LMWOAs) (malic acid, citric acid, oxalic acid). This study aimed to determine how these acids affect soil phosphorus activation. The results showed that the average activation rate of total phosphorus, inorganic phosphorus, Fe/Al-P and Ca-P in soil samples from the southern bank treated with malic and citric acid was above 162%, except for organic phosphorus, with the highest at 192.04%. The three organic acids displayed significantly greater phosphorus...

Element contents and health risk assessment in wild edible mushrooms of Bosnia and Herzegovina

Mirsada Salihović, Mirha Pazalja, Aida Šapčanin, Biljana P. Dojčinović, Selma Špirtović-Halilović

Plant Soil Environ. 2021, 67(11):668-677

The content of macro- and microelements in dry samples of mushrooms of the species *Macrolepiota procera*, *Boletus edulis* and *Cantharellus cibarius*, collected at different areas in Bosnia and Herzegovina, was determined using the ICP-OES method (inductively coupled plasma optical emission spectrometry). Of the macroelements, K is the most represented, followed by S, P, Mg, and the least represented Ca and Na. Zn is the most represented of the essential microelements, followed by Fe, Se, Cu, Mn and Co. Al is the most abundant of the other trace elements followed by Ni and Cr. Of the toxic metals, the most represented is Cd,...