

# Plant, Soil and Environment

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### Micro plastics in soil ecosystem - A review of sources, fate, and ecological impactReview

Jieru Yu, Samuel Adingo, Xuelu Liu, Xiaodan Li, Jing Sun, Xiaoning Zhang

Plant Soil Environ. 2022, 68(1):1-17

In recent years, environmental experts and stakeholders have paid increased attention to the pollution of micro plastics in the soil. As persistent pollutants, micro plastics have a significant impact on the soil ecology, agricultural production, and the overall health of the ecological environment. Micro plastics can influence soil bio-physicochemical properties and the mobility of other contaminants in soil, with potentially significant implications on soil ecosystem functionality. Thus, functions including litter decomposition, soil aggregation or those related to nutrient cycling can be altered. Furthermore, micro plastics can influence soil biota...

### Changing in the production of anticancer drugs (vinblastine and vincristine) in *Catharanthus roseus* (L.) G. Don by potassium and ascorbic acid treatmentsOriginal Paper

Neda Sahi, Akbar Mostajeran, Mustafa Ghanadian

Plant Soil Environ. 2022, 68(1):18-28

*Catharanthus roseus* seedling was treated with different concentrations (1.5, 3.16, 15, and 30 mmol) and forms ( $K_2SO_4$  and  $KNO_3$ ) of potassium ( $K^+$ ) via Hoagland's nutrient solution. Ascorbic acid (AsA) was sprayed twice (plant days 68 and 78) with different concentrations (750 and 1 500 mg/L) on the leaves. Vinblastine, vincristine, tryptophan contents, *D4H* and *DAT* genes expression, peroxidase activity, and  $H_2O_2$  content of leaves were measured. Potassium in  $KNO_3$  form increased vinblastine (60%) and...

### Decomposition of rice straw residues and the emission of $CO_2$ , $CH_4$ under paddy rice and crop rotation in the Vietnamese Mekong Delta region - A microcosm studyOriginal Paper

Tran Van Dung, Tat Anh Thu, Vu Van Long, Chau Thi Da

Plant Soil Environ. 2022, 68(1):29-35

This study investigated the influence of soil undergoing different crop rotations on the  $CH_4$ ,  $CO_2$  emissions, and decomposition of rice straw. The studied soil undergoing crop rotation systems were rice-rice-rice (SR) and baby corn-rice-mungbean (SB). Two main microcosm set-ups: anaerobic (SR-AN, SB-AN) and aerobic (SR-AE, SB-AE) conditions. Litter bags containing rice stems were inserted into the soil and recollected at different time points for chemical analysing and the gas sampling was collected to measure the  $CO_2$  and  $CH_4$  emissions. The results indicated that the total carbon (TC) decreased around 30%....

## **Regulation of nitrogen balance and yield on greenhouse eggplant under biochar addition in Mollisol****Original Paper**

**Yao Wang, Meng Zhou, Meng Hou, Yimin Chen, Yueyu Sui, Xiaoguang Jiao**

Plant Soil Environ. 2022, 68(1):36-48

Maintaining nitrogen (N) balance and inhibiting N leaching loss in the soil-crop system is crucial to maintaining yield and reducing the environmental pollution. This study investigated the effects of soil NO<sub>3</sub><sup>-</sup>-N content and accumulation, eggplant yield, N leaching and balance response to biochar addition, including regular fertilisation and irrigation (W + F), biochar addition with regular fertilisation and irrigation (W + F + B), and biochar addition with 20% fertilisation and irrigation reduction (0.8W + 0.8F + B) treatments. Compared with W + F, W + F + B and 0.8W + 0.8F + B increased...

## **Nitrogen addition turns a temperate peatland from a near-zero source into a strong sink of nitrous oxide****Original Paper**

**Boli Yi, Fan Lu, Zhao-Jun Bu**

Plant Soil Environ. 2022, 68(1):49-58

Peatlands, as important global nitrogen (N) pools, are potential sources of nitrous oxide (N<sub>2</sub>O) emissions. We measured N<sub>2</sub>O flux dynamics in Hani peatland in a growing season with simulating warming and N addition for 12 years in the Changbai Mountains, Northeastern China, by using static chamber-gas chromatography. We hypothesised that warming and N addition would accelerate N<sub>2</sub>O emissions from the peatland. In a growing season, the peatland under natural conditions showed near-zero N

## **Competitiveness of *Bradyrhizobium japonicum* inoculation strain for soybean nodule occupancy****Original Paper**

**Dragana Miljković, Jelena Marinković, Maja Ignjatov, Dragana Milošević, Zorica Nikolić, Branislava Tintor, Vojin Đukić**

Plant Soil Environ. 2022, 68(1):59-64

The competitiveness of *Bradyrhizobium japonicum* inoculation strain against indigenous rhizobia was examined in a soil pot experiment. The effect of inoculation strain was evaluated under different soil conditions: with or without previously grown soybean and applied commercial inoculant. Molecular identification of inoculation strain and investigated rhizobial isolates, obtained from nodules representing inoculated treatments, was performed based on 16S rDNA and enterobacterial repetitive intergenic consensus (ERIC) sequencing. Inoculation strain showed a significant effect on the investigated parameters in both soils. Higher nodule occupancy...