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Synthesis and characterisation of some new non-conventional materials as low-cost adsorbents for removal of nitrates from groundwater in Al-Qurayyat city northern Saudi Arabia**Original Paper**

Salwa E. Garamon

Plant Soil Environ. 2022, 68(2):65-72

Groundwater in Saudi Arabia contains high concentrations of nitrates. Nitrates are respected as the main groundwater pollutant causing dangerous health and environmental influences. The removal of nitrate from groundwater in Al-Qurayyat, Saudi Arabia, was investigated in this work using palm wastes. Palm fibers (PFI) and palm fronds (PFR) were initially employed as feedstock for the manufacturing of adsorbents, which were activated by heating to 300 °C. The activation of PFI and PFR resulted in an increase in surface area. Batch tests were used to determine the best environment for nitrate adsorption on PFI and PFR. The best factors for nitrate removal...

Responses of nitrogen accumulation and translocation in five cytoplasmic hybrid rice cultivars**Original Paper**

Noor Muhammad, Yating Zheng, Farhan Nabi, Guotao Yang, Sumbal Sajid, Abdul Hakeem, Xuechun Wang, Youlin Peng, Zartasha Khan, Yungao Hu

Plant Soil Environ. 2022, 68(2):73-81

To study the difference among cytoplasm at the different nitrogen conditions, a research experiment was conducted using five different cytoplasmic male sterile (CMS) hybrid rice with nitrogen levels at N0, N1, N2, and N3; the nitrogen application rates were 0, 90, 180, and 270 kg/ha, from 2018 to 2019. Results showed that among tested cultivars of CMS hybrid rice, JW (J803A × Chenghui727) showed the highest yield in both years for the low nitrogen and high nitrogen treatments. The dry matter accumulation and translation of JW type in nutritive organs were higher than that of others during the low nitrogen level (N1). We concluded that the nutrient...

Effect of auxin foliar application on seed yield and fatty acids composition of two safflower genotypes under late-season drought**Original Paper**

Seyed Basir Mousavi, Saeed Sayfzadeh, Hamid Jabbari, Seyed Alireza Valadabadi, Esmaeil Hadidi Masouleh

Plant Soil Environ. 2022, 68(2):82-88

To assess the response of two safflower genotypes to auxin foliar application under late-season drought stress using a factorial split-plot experiment with the randomised complete block design, a two-year experiment (2016-2017 and 2017-2018) was conducted in Iran. The watering regime as specified in two levels including, regular irrigation and drought stress in main plots and two safflower genotypes and auxin foliar application in two levels

Rotary and subsoiling tillage rotations influence soil carbon and nitrogen sequestration and crop yield**Original Paper**

Shuwei Zhu, Tianping Gao, Zhen Liu, Tangyuan Ning

Plant Soil Environ. 2022, 68(2):89-97

Long-term single tillage causes serious deterioration of land quality and reduction of crop yield. Tillage rotation can alleviate the problems caused by long-term single tillage. However, the effects of different tillage rotations are still very limited. A tillage rotation experiment was conducted in the North China Plain to evaluate the impacts of tillage rotation on soil organic carbon (SOC), soil total nitrogen (STN) and crop yield. There were eight treatments with two main factors: tillage practice (four types: rotary tillage (R, 2002-2017), subsoiling tillage (S, 2002-2017), rotary to subsoiling tillage (RS, 2015-2017) and subsoiling to rotary...

Optimising the root traits of summer maize to improve nutrient uptake and utilisation through rational application of urea ammonium nitrate solution**Original Paper**

Zhentaο Ma, Baizhao Ren, Bin Zhao, Peng Liu, Jiwang Zhang

Plant Soil Environ. 2022, 68(2):98-107

The production of summer maize is greatly affected by nitrogen (N) sources through regulating root growth and distribution. Four N treatments in the field experiment were designed as UAN (urea ammonium nitrate solution was applied under traditional side-dressing method), urea (urea was applied under traditional side-dressing method), UWFI (UAN was applied underwater and fertiliser integration technology) and CK (no N applied). The results showed that the root length density, surface area density and volume of DH605 (mid-late hybrid) and DH518 (mid-early hybrid) under UWFI were higher than other treatments, especially in shallow layers. The root absorption...

Soil organic carbon characteristics affected by peanut shell biochar in saline-sodic paddy field**Original Paper**

Wenhao Zhu, Cuilan Li, Shun Zhou, Yan Duan, Jingjing Zhang, Feng Jin

Plant Soil Environ. 2022, 68(2):108-114

Biochar exhibits a profound impact on soil organic carbon (SOC) turnover and dynamics, but the underlying mechanism under field conditions is still unclear. A three-year field experiment was performed to evaluate the impact of peanut shell biochar applied at rates of 0, 33.75, 67.5, and 101.25 t/ha (referred to as B0, B1, B2, and B3, respectively) on SOC content and chemical composition in a saline-sodic paddy field using stable carbon isotope composition and ¹³C nuclear magnetic resonance technology. With increasing rates of biochar, SOC and aromatic carbon contents and alkyl carbon/oxygen-alkyl carbon...