

**CONTENTS**

**Review Article**

- 905 Beneficial elements for agricultural crops and their functional relevance in defence against stresses  
*Simranjeet Kaur, Navneet Kaur, Kadambot H. M. Siddique and Harsh Nayyar*

**Articles**

- 921 Development of a land suitability model for saffron (*Crocus sativus* L.) cultivation in Khost Province of Afghanistan using GIS and AHP techniques  
*Emal Wali, Avishek Datta, Rajendra P. Shrestha and Sangam Shrestha*
- 935 Effect of drought pretreatment before anthesis and post-anthesis waterlogging on water relation, photosynthesis, and growth of tomatoes  
*Guangcheng Shao, Xi Cheng, Na Liu and Zhenhua Zhang*
- 947 Improvement in physical quality of a Sahelian Arenosol and implications on millet yield  
*Maman Garba, Vincent Logah, Jasmien Wildemeersch, Sabiou Mahaman, Guéro Yadjji, Charles Quansah, Mensah Bonsu, Wim Cornelis and Robert C Abaidoo*
- 963 Soil penetrating quality in cultivated and forested coastal plain sands of Southern Nigeria  
*Bassey Udom and Johnson Kayode Adesodun*
- 972 Spatial distribution of soil physical properties of alluvial soils: a geostatistical approach  
*S.K. Reza, D.C. Nayak, T. Chattopadhyay, S. Mukhopadhyay, S.K. Singh and R. Srinivasan*
- 982 Pedo-transfer functions for estimating the hydraulic properties of paddy soils in subtropical central China  
*Ganghua Zou, Yong Li, Yi Wang, De Li Liu, Xinliang Liu, Yuyuan Li and Jinshui Wu*
- 994 Comparing System of Wheat Intensification (SWI) with standard recommended practices in the northwestern plain zone of India  
*Shiva Dhar, B.C. Barah, Abhay K. Vyas and Norman T. Uphoff*
- 1007 Greenhouse gas emissions after application of digestate: short-term effects of nitrification inhibitor and application technique effects  
*Maxmilian Severin, Roland Fuß, Reinhard Well, Reinhardt Hähndel and Herman Van den Weghe*
- 1021 Soil CO<sub>2</sub> emission and its relationship to soil properties under different tillage systems  
*Xingli Lu, Xingneng Lu and Yuncheng Liao*
- 1033 Soil acidification under long-term tobacco plantation results in alterations of mineralogical properties in an Alisol  
*Yuting Zhang, Xinhua He, Jian Zhao, Yueqiang Zhang and Xiaojun Shi*
- Short Communication**
- 1041 High colonization by native arbuscular mycorrhizal fungi (AMF) of rubber trees in small-holder plantations on low fertility soils in North East Thailand  
*Laetitia Herrmann, Lambert Bräu, Agnès Robin, Henri Robain, Wanpen Wiriyakitnatekul and Didier Lesueur*
- 1049 Erratum

## CONTENTS

- 1051 Heavy metals mobility, sources, and risk assessment in soils and uptake by apple (*Malus domestica* Borkh.) leaves in urban apple orchards  
*Ali Sungur*
- 1066 Rhizosphere and green manure effects on soil chemical attributes and metal bioavailability as a function of the distance from plant roots in mono and mixed corn and canola cultures  
*Yaser Azimzadeh, Mehran Shirvani and Hossein Shariatmadari*
- 1082 The effect of winery solid waste compost application on maize growth, biomass yield, and nutrient content under greenhouse conditions  
*Manare M. Masowa, Funso R. Kutu, Philisiwe L. Shange, Reckson Mulidzi and Frank M.G. Vanassche*
- 1095 Biochar and crop residue application to soil: effect on soil biochemical properties, nutrient availability and yield of rice (*Oryza sativa* L.) and wheat (*Triticum aestivum* L.)  
*Sudeshna Bhattacharjya, Ramesh Chandra, Navneet Pareek and Kiran P. Raverkar*
- 1109 Long-term effects of fertilization and manuring on productivity and soil biological properties under rice (*Oryza sativa*)–wheat (*Triticum aestivum*) sequence in Mollisols  
*Babita Bhatt, Ramesh Chandra, Shri Ram and Navneet Pareek*
- 1123 Evaluation of methods of nutrient and water management on tea performance and nutrient loss in the Danjiangkou Reservoir area, China  
*Ronghao Liu, Yaohu Kang, Shuqin Wan and Liang Pei*
- 1136 Inducing waterlogging tolerance in cotton via an anti-ethylene agent aminoethoxyvinylglycine application  
*Ullah Najeeb, Daniel K. Y. Tan and Michael P. Bange*
- 1147 Evaluation of porous medium hydraulic properties using experimental methods and RETC code  
*George Bourazanis, Paraskevi Londra, George Kargas, Ioannis Argyrokastritis and Petros Kerkides*
- 1158 Diversity and abundance of springtails (Hexapoda: Collembola) in soil under 90-year potato monoculture in relation to crop rotation  
*Jacek Piotr Twardowski, Michał Hurej and Iwona Gruss*
- 1169 Salinity tolerance of earthworms and effects of salinity and vermi amendments on growth of *Sorghum bicolor*  
*Faiza Sharif, Madiha Usman Danish, Adnan Sakhawat Ali, Amin ulhaq Khan, Laila Shahzad, Habib Ali and Abdul Ghafoor*
- 1182 Effect of cutting frequency on species richness and dry matter yield of permanent grassland after grazing cessation  
*Marie Stybnarova, Josef Hák, Hana Bilosova, Pavlína Micova, Oldrich Latal and Jan Pozdisek*

**CONTENTS**

**Articles**

- 1195 Effects of ambient gaseous pollutants on photosynthesis, growth, yield and grain quality of selected crops grown at different sites varying in pollution levels  
*Muhammad Adrees, Farhan Saleem, Fariha Jabeen, Muhammad Rizwan, Shafaqat Ali, Sofia Khalid, Muhammad Ibrahim, Nazish Iqbal and Farhat Abbas*
- 1208 Excessive application of farmyard manure reduces rice yield and enhances environmental pollution risk in paddy fields  
*Susumu S. Abe, Seiko Hashimoto, Takayuki Umezane, Takeshi Yamaguchi, Sadahiro Yamamoto, Satoshi Yamada, Tsuneyoshi Endo and Noboru Nakata*
- 1222 Nitrogen requirement of fodder and sugar beet (*Beta vulgaris* L.) cultivars under high-yielding conditions of northwestern Europe  
*Heinz-Josef Koch, Daniel Laufer, Otto Nielsen and Peter Wilting*

**Written Articles**

- 1236 Concentrations and uptake of macronutrients by oat and pea in intercrops in response to N fertilization and sowing ratio  
*Reinhard W. Neugschwandtner and Hans-Peter Kaul*

**Articles**

- 1250 Differential competitive and allelopathic ability of *Cyperus rotundus* on *Solanum lycopersicum*, *Solanum melongena* and *Capsicum annuum*  
*Kico Dhima, Ioannis Vasilakoglou, Stefanos Stefanou, Thomas Gatsis, Konstantinos Paschalidis, Stamatis Aggelopoulos and Ilias Eleftherohorinos*
- 1264 Effects of naturally and microbially decomposed cotton stalks on cotton seedling growth  
*Yanbin Li and Qin Zhang*

**Original Article**

- 1271 Suppression of the fungal pathogen *Magnaporthe grisea* by *Stenotrophomonas maltophilia*, a seed-borne rice (*Oryza sativa* L.) endophytic bacterium  
*Hassan Etesami and Hossein Ali Alikhani*

**Articles**

- 1285 Carbon mineralization in response to nitrogen and litter addition in surface and subsoils in an agroecosystem  
*Naila Kaneez-e-Batool, Tanvir Shahzad, Faisal Mahmood, Sabir Hussain, Muhammad Riaz, Zahid Maqbool, Faiza Anwar, Khadeeja Rehman and Muhammad Imtiaz Rashid*
- 1293 Effect of biochar amendment on soil physical, chemical and biological properties and groundnut yield in rainfed Alfisol of semi-arid tropics  
*Kannan Pandian, Ponmani Subramaniyan, Prabukumar Gnasekaran and Swaminathan Chitraputhirapillai*
- 1311 Improved soil-plant water dynamics and economic water use efficiency in a maize field under locally water stress  
*Fatemeh Karandish*
- 1324 Evaluation of gas diffusivity models for no-tilled and tilled volcanic ash soils  
*Linlin Guo, Taku Nishimura, Hiromi Imoto and Zhigang Sun*