

CONTENTS

Volume 63 Numbers 8–14 December

Articles

- The role of oxidative stress in spring barley cross-adaptation to different heavy metals
Giedrė Kacienė, Romualdas Juknys and Irena Januškaitienė 1037
- Effects of drought on the accumulation and redistribution of cadmium in peanuts at different developmental stages
Caifeng Liu, Rugang Yu and Gangrong Shi 1049
- Isolation and characterization of multi-potential *Rhizobium* strain ND2 and its plant growth-promoting activities under Cr(VI) stress
Chinnannan Karthik, Mohammad Oves, Kumar Sathya, Vijayan Sri Ramkumar and Padikasan Indra Arulsevi 1058
- Cadmium adsorption as influenced by poultry manure addition in soils of South-Western Nigeria
A. O. Shokalu, M. T. Adetunji, J. G. Bodunde, H. A. Akintoye and J. O. Azeez 1070
- Biochar concomitantly increases simazine sorption in sandy loam soil and lowers its dissipation
Hongguang Cheng, Davey L. Jones, Paul Hill and Mohd Sauffi Bastami 1082
- Ryegrass yield and nutrient status after biochar application in two Mediterranean soils
Ioanna Manolikaki and Evan Diamadopoulos 1093
- Effects of coated and non-coated ZnO nano particles on cucumber seedlings grown in gel chamber
Sahar Moghaddasi, Amir Fotovat, Fathallah Karimzadeh, Hamid Reza Khazaei, Reza Khorassani and Amir Lakzian 1108
- Broiler litter and inorganic fertilizer effects on seed yield and productivity of buckwheat and fenugreek in row intercropping
Aliyeh Salehi, Seyfollah Fallah and Hans-Peter Kaul 1121
- Prediction of tillage operation strategies for dryland wheat production in a degraded loess soil
Muhammad Sharif, Shahzada Sohail Ijaz, Saifdar Ali, Muhammad Ansar and Asma Hassan 1137
- Tillage and N application effects on crop yield, N uptake and soil properties in a corn-based rotation
Sayyed Shahaboddin Moinoddini, Alireza Koocheki, Mehdi Nassiri Mahalati and Azam Borzooei 1150
- Soil erosion risk assessment using GIS and CORINE model: a case study from western Shiraz, Iran
Mohboobeh Tayebi, Mohammad H. Tayebi and Abdolmajid Sameni 1163
- Effect of nitrogen and phosphorus application on agricultural soil food webs
Fang Sun, Akash Tariq, Hui Chen, Qiongle He, Yixin Guan, Kaiwen Pan, Siyu Chen, Jiangtao Li, Cancan Zhao, Hao Wang and Yanfang Gu 1176
- Underground communication of root hormones by common mycorrhizal network between trifoliate orange and white clover
Qiang-Sheng Wu, Yi-Can Zhang, Ze-Zhi Zhang and Anoop Kumar Srivastava 1187
- The effects of cultivation methods and water regimes on root systems of drought-tolerant (RD6) and drought-sensitive (RD10) rice varieties of Thailand
Hayat Ullah, Avishek Datta, Sangam Shrestha and Siraj Ud Din 1198
- Influences of irrigation, nitrogen and zeolite management on the physicochemical properties of rice
Taotao Chen, Lloyd Ted Wilson, Qian Liang, Gulmin Xia, Wei Chen and Daocal Chi 1210
- Combined effect of deficit irrigation and foliar-applied salicylic acid on physiological responses, yield, and water-use efficiency of onion plants in saline calcareous soil
Wael M. Semida, Taia A. Abd El-Mageed, Sabry E. Mohamed and Nevein A. El-Sawah 1227
- Efficiency of foliar selenium application on oilseed rape (*Brassica napus* L.) as influenced by rainfall and soil characteristics
Jiřina Száková, Lukáš Praus, Jana Tremlová, Martin Kuliáněk and Pavel Tuostoš 1240
- Improving iron bioavailability and nutritional value of maize (*Zea mays* L.) in sulfur-treated calcareous soil
Pia Muhammad Adnan Ramzani, Muhammad Khalid, Shazia Anjum, Waqas-ud-Din Khan, Muhammad Iqbal and Salma Kausar 1255
- Amelioration of saline-sodic soil with gypsum can increase yield and nitrogen use efficiency in rice-wheat cropping system
Behzad Murtaza, Ghulam Murtaza, Muhammad Sabir, Gary Owens, Ghulam Abbas, Muhammad Imran and Ghulam Mustafa Shah 1267
- Differential response of soybean genotypes to two lime rates
Adônis Moreira, Larissa Alexandra Cardoso Moraes, Isabelle Cristina Vilarino Lara and Thiago Assis Rodrigues Nogueira 1281
- Agronomic evaluation of testcrosses of drought-tolerant maize (*Zea mays* L.) inbred lines using different selection index methods
Moses Adeolu Adebayo, Adesika Oladoyin Kolawole, Ibraheem Raji and Joseph Ajayi 1292
- Assessment of AquaCrop model in the simulation of seed yield and biomass of Italian ryegrass
Ruzica Stricovic, Aleksandar Simic, Alpaslan Kusvuran and Marija Cosic 1301

Promoting deep-sowing germinability of corn (<i>Zea mays</i>) by seed soaking with gibberellic acid <i>Binrong Pan, Tailin Zhong and Guangwu Zhao</i>	1314
Impact of top-pruning time on the fertilizer N use efficiency of flue-cured tobacco as assessed by ¹⁵ N tracing technique <i>Maomao Hou, Qiu Jin, Xueshan Wu, Yao Yao and Zikun Zhang</i>	1324
Landuse impacts on soil organic carbon fractions in different rainfall areas of a subtropical dryland <i>Sara Niaz, Shahzada Sohail Ijaz, Asma Hassan and Muhammad Sharif</i>	1337
A simple digital imaging method for estimating black-soil organic matter under visible spectrum <i>Caiwu Wu, Yue Yang and Jianxin Xia</i>	1346
Soil quality assessment under shifting cultivation and forests in Northeastern Himalaya of India <i>Gaurav Mishra, Rossana Marzajoli, Krishna Giri, Rinkumoni Borah, Antara Dutta and R.S.C. Jayaraj</i>	1355
Changes in the composition and diversity of topsoil bacterial, archaeal and fungal communities after 22 years conventional and no-tillage managements in Northern China <i>Wenyi Dong, Enke Liu, Changrong Yan, Hengheng Zhang and Yanqing Zhang</i>	1369
Liquid organic fertilizer sprayed on shoots of <i>Phaseolus vulgaris</i> stimulates arbuscular mycorrhiza colonization and phosphate solubilizing microorganisms in soil <i>Lucas Carvalho Basilio Azevedo, Simone Cristina Braga Bertini, Bruno Silva Ferreira, Isadora Sanchez Maia Carneiro and Milton Sérgio Domelles</i>	1382
Effectiveness of native <i>Rhizobium</i> on nodulation and yield of faba bean (<i>Vicia faba</i> L.) in Eastern Ethiopia <i>Anteneh Argaw and Abere Mnalku</i>	1390
Effect of halotolerant endophytic bacteria isolated from <i>Salicornia europaea</i> L. on the growth of fodder beet (<i>Beta vulgaris</i> L.) under salt stress <i>Agnieszka Piemik, Katarzyna Hryniewicz, Anna Wojciechowska, Sonia Szymarska, Marta Izabela Lis and Adele Muscolo</i>	1404
Zn fractionation and availability in different soil aggregate fractions from Isfahan region, Central Iran <i>Akram Farshadrad, Ali Reza Hosseinpour, Hamid Reza Motaghian and Shoja Ghorbani Dashtaki</i>	1419
Effect of humic acid amendment on cadmium bioavailability and accumulation by pak choi (<i>Brassica rapa</i> ssp. <i>chinensis</i> L.) to alleviate dietary toxicity risk <i>Kiran Yasmin Khan, Barkat Ali, Xiaoqiang Cui, Ying Feng, Petter Joseph Stoffella, Lin Tang and Xiaoe Yang</i>	1431
Hazard identification of coal fly ash leachate using a battery of cyto-genotoxic and biochemical tests in <i>Allium cepa</i> <i>Aditi Jana, Manoj Ghosh, Sonali Sinha, Manivannan JothiramaJayam, Anish Nag and Anita Mukherjee</i>	1443
Effect of plastic mulch and burial depth on purple nutsedge (<i>Cyperus rotundus</i>) emergence and growth <i>Mohammad Roozkhosh, Seyed Vahid Eslami and Majid Jami Al-Ahmadi</i>	1454
Growth and physiology of basmati rice under conventional and water-saving production systems <i>Khawar Jabran, Ehsan Ullah, Nadeem Akbar, Muhammad Yasin, Umar Zaman, Wajid Nasim, Muhammad Riaz, Tuba Arjumand, Muhammad Farooq Azhar and Mubshar Hussain</i>	1465
Soil quality indicators in Vertisols under sugarcane <i>Pedro Cairo-Cairo, Bladimir Diaz-Martin and Alianny Rodriguez-Urrutia</i>	1477
Characterizing spatial variability of soil properties in alluvial soils of India using geostatistics and geographical information system <i>S.K. Reza, D.C. Nayak, S. Mukhopadhyay, T. Chattopadhyay and S.K. Singh</i>	1489
Near-infrared spectroscopy for determination of soil organic C, microbial biomass C and C and N fractions in a heterogeneous sample of German arable surface soils <i>Deborah Linsler, Anja Sawallisch, Heinrich Höper, Harald Schmidt, Michael Vohland and Bernard Ludwig</i>	1499
Soil carbon sequestration and crop yield in response to application of chemical fertilizer combined with cattle manure to an artificially eroded Phaeozem <i>Yueyu Sui, Jian Jin, Xiaobing Liu, Xingyi Zhang, Yansheng Li, Keqin Zhou, Guanghua Wang, Guoli Di and Stephen James Herbert</i>	1510

(Continued on inside back cover)

(Continued from outside back cover)

Soil and nutrient losses due to root crops harvesting: a case study from southwestern Iran <i>Mohammad Faraji, Alireza Amirian Chakan, Masoud Jafarzadeh and Ali Mohammadian Behbahani</i>	1523
Nitrogen leaching from grassland ecosystems managed with organic fertilizers at different stocking rates <i>Hana Bilošová, Bořivoj Šarapatka, Marie Štýbnarová, Pavlína Mičková and Marie Svozilová</i>	1535
Carbon and nitrogen mineralisation from green manures as alternative nitrogen sources in Mediterranean farming <i>Adelaide Perdigão, José Pereira, Nuno Moreira, Henrique Trindade and João Coutinho</i>	1546
Integrated effect of potassium humate and α -tocopherol applications on soil characteristics and performance of <i>Phaseolus vulgaris</i> plants grown on a saline soil <i>Khaulood A. Hemida, Abdullah Z. A. Eloufey, Mohamed A. Saif El-Yazal and Mostafa M. Rady</i>	1556
Interaction study of biochar with phosphate-solubilizing bacterium on phosphorus availability in calcareous soil <i>Mehdi Beheshti, Hassan Etesami and Hossein Ali Alikhani</i>	1572
Morphological and physiological characteristics of rice leaves in response to PASP-urea and optimized nitrogen management <i>Fei Deng, Li Wang, Xiu-Feng Mei, Shu-Xian Li, Shi-Lin Pu and Wan-Jun Ren</i>	1582
Response of wheat genotypes to zinc fertilization for improving productivity and quality <i>Prakash Chand Ghasal, Yashbir Singh Shivay, Vijay Pooniya, Mukesh Choudhary and Rakesh Kumar Verma</i>	1597
Evaluation and management of acetyl-CoA carboxylase inhibitor resistant littleseed canarygrass (<i>Phalaris minor</i>) in Pakistan <i>Tasawer Abbas, Muhammad Ather Nadeem, Asif Tanveer, Hafiz Haider Ali and Amar Matloob</i>	1613
Short Communication	
Use of a three-compartment model to evaluate the dynamics of cover crop residues <i>Eduardo de Sa Pereira, Juan Alberto Galantini and Matias Ezequiel Duval</i>	1623
Articles	
Geostatistical analysis of soil mechanical properties in Ardabil plain of Iran <i>Shokrollah Asghari, Gholam Reza Sheykhzadeh and Mahmood Shahabi</i>	1631
Greenhouse gases emission, soil organic carbon and wheat yield as affected by tillage systems and nitrogen management practices <i>Chaityanya Prasad Nath, Tapas Kumar Das, Kuldeep Singh Rana, Ranjan Bhattacharyya, Himanshu Pathak, Sangeeta Paul, Mahesh Chand Meena and Shashi Bala Singh</i>	1644
Effect of long-term cropping systems on soil organic carbon pools and soil quality in western plain of hot arid India <i>P. C. Moharana, R. K. Naitam, T. P. Verma, R. L. Meena, Sunil Kumar, B. L. Tailor, R. S. Singh, S. K. Singh and S. K. Samal</i>	1661
Impacts of termites on selected soil physicochemical characteristics in the highlands of Southwest Ethiopia <i>Abdeta Jembere, Gezahegn Berecha and Alemayehu Flegassa Tolossa</i>	1676
Variations in pore distribution of reconstructed soils induced by opencast mining and land rehabilitation based on computed tomography images <i>Jinman Wang, Lingli Guo and Zhongke Bai</i>	1685
Lipid biomarkers and their environmental significance in mine soils from Eastern Europe <i>Irena Atanassova, Biser Hristov, Toma Shishkov and Stefan Doerr</i>	1697
¹⁵ N-labelled fertiliser recovery by maize (<i>Zea mays</i> L.) and leaching of nutrients as influenced by oil palm empty fruit bunch biochar in a mini-lysimeter under controlled tropical environment <i>Sherwin Chan Kit Lee, Abu Bakar Rosenani, Che Fauziah Ishak, Azni Idris, Khairuddin Abdul Rahim and Andreas Meyer-Aurich</i>	1711
Effect of nitrogen forms on reduction of manganese oxides in an Oxisol by plant root exudates <i>Yuan Liu, Zhong-yi Li, Kai-ying Deng, Qin Zhou and Ren-kou Xu</i>	1725
Interactive effect of salinity and silver nanoparticles on photosynthetic and biochemical parameters of wheat <i>Abdel Kareem S. H. Mohamed, Muhammad Farooq Qayyum, Ahmed Mustafa Abdel-Hadi, Rabia Abdur Rehman, Shafaqat Ali and Muhammad Rizwan</i>	1736
Optimization of irrigation and nutrient concentration based on economic returns, substrate salt accumulation and water use efficiency for tomato in greenhouse <i>Ikram Ullah, Mao Harping, Zhang Chuan, Qaiser Javed and Ahmad Azeem</i>	1748
Soil moisture index improves models of forage production in central Iran <i>Zahra Jaberlansar, Mostafa Tarkesh and Mehdi Bassiri</i>	1763
Short Communication	
Effect of grazing intensity and soil characteristics on soil organic carbon and nitrogen stocks in a temperate long-term grassland <i>Anja Nüsse, Deborah Linsler, Michael Kaiser, Dorothee Ebeling, Bettina Tonn, Johannes Isselstein and Bernard Ludwig</i>	1776

Articles

- Yield, yield formation, and blackleg disease of oilseed rape cultivated in high-intensity crop rotations
Hannes Hegewald, Barbara Koblenz, Monika Wensch-Dorendorf and Olaf Christen 1785
- Evaluation of the spatial pattern of surface soil water content of a karst hillslope in Southwest China using a state-space approach
Sheng Wang, Hongsong Chen, Zhiyong Fu and Kelin Wang 1800
- Least limiting water range for different soil management practices in dryland farming in Iran
Fereshte Haghighi Fashi, Manouchehr Gorji and Forood Sharifi 1814
- Soil aggregate stability and organic matter as affected by land-use change in central Iran
Eftekhar Baranian Kabir, Hossein Bashari, Mohammad Reza Mosaddeghi and Mehdi Bassiri 1823
- Evaluation of aggregate stability of Haplic Stagnosols using dynamic light scattering, phase analysis light scattering and color coordinates
Zinaida Artemyeva, Anna Zigova, Natalia Kirillova, Martin Štátný, Ondřej Holubík and Vilém Podrázský 1838
- Reducing sampling intensity in order to investigate spatial variability of soil pH, organic matter and available phosphorus using co-kriging techniques. A case study of acid soils in Eastern Croatia
Igor Bogunovic, Ivica Kisc, Milan Mesic, Aleksandra Percin, Zeljka Zgorelec, Darja Bilandžija, Antonija Jonjic and Paulo Pereira 1852
- Changes in soil pH and phosphorus availability during decomposition of cover crop residues
Juan I. Vanzolini, Juan A. Galantini, Juan M. Martínez and Liliana Sufier 1864
- Organic amendments decomposability influences microbial activity in saline soils
Shaminder Singh Chahal, Om Parkash Choudhary and Manpreet Singh Mavi 1875
- Jasmonic acid alleviates negative impacts of cadmium stress by modifying osmolytes and antioxidants in faba bean (*Vicia faba* L.)
Parvaiz Ahmad, Mohammed Nasser Alyemani, Leonard Wijaya, Pravej Alam, Mohammad Abass Ahanger and Saud A. Alamri 1889
- Root zone selenium reduces cadmium toxicity by modulating tissue-specific growth and metabolism in maize (*Zea mays* L.)
Sumaira Qutab, Muhammad Iqbal, Rizwan Rasheed, M. Arslan Ashraf, Iqbal Hussain and Nudrat Aisha Akram 1900
- Response of baby corn genotypes to soil and foliar nitrogen application schedule
Madhav Prasad Neupane, Shiv Prakash Singh and Sai Sravan Uppu 1912
- Elevated carbon dioxide level along with phosphorus application and cyanobacterial inoculation enhances nitrogen fixation and uptake in cowpea crop
Sumit Kumar Dey, Bidisha Chakrabarti, Radha Prasanna, Devesh Pratap, Shiv Dhar Singh, Tapan Jyoti Purakayastha and Himanshu Pathak 1927
- Assessing the impact of soil amendments made of processed biowaste digestate on soil macrofauna using two different earthworm species
Christina-Luise Ross, Verena Wilken, Stefanie Krück, Kerstin Nielsen, Karen Sensel-Gunke and Frank Ellmer 1939
- Effects of avocado (*Persea americana* Mill.) scion on arbuscular mycorrhizal and root hair development in rootstock
Bo Shu, Liqin Liu, Dengwei Jue, Yicheng Wang, Yongzan Wei and Shengyou Shi 1951
- Management practices of macronutrients for potato for smallholder farming system at alluvial soil (Entisols) of India
Lalita Rana, Hiral Banerjee, Sudarshan Kumar Dutta, Krishnendu Ray, Kaushik Majumdar and Sukamal Sarkar 1963
- Impact of highly varying seeding densities on grain yield and yield stability of winter rye cultivars under the influence of delayed sowing under sandy soil conditions
Janna Macholdt and Bernd Honermeier 1977
- Energy efficiency, productivity and profitability of rice (*Oryza sativa* L.) based cropping systems for selected conservation practices
Sachin Kanta Rautaray, Atmaram Mishra and Om Prakash Verma 1993
- Long-term effect of crop rotation and nutrient management on soil-plant nutrient cycling and nutrient budgeting in Indo-Gangetic plains of India
Madasur Subbhat Venkatesh, Kali Krishna Hazra, Probir Kumar Ghosh, Bhisham Lal Khuswah, Arakalagud Nanjundiah Ganeshamurthy, Masood Ali, Jagdish Singh and Ram Sewak Mathur 2007
- Soil biological properties and carbon dynamics subsequent to organic amendments addition in sodic black soils
Abhay Omprakash Shirale, Vilas Kashinath Kharche, Rupesh Saktharam Zadode, Bharat Prakash Meena and Selladurai Rajendiran 2023
- Rice straw biochar affects water retention and air movement in a sand-textured tropical soil
Emmanuel Arthur and Fauziatu Ahmed 2035
- Article**
- Effect of wheat and rice straw biochar produced at different temperatures on maize growth and nutrient dynamics of a calcareous soil
Muhammad Asif Naem, Muhammad Khalid, Muhammad Aon, Ghulam Abbas, Muhammad Tahir, Muhammad Amjad, Behzad Murtaza, Aizheng Yang and Saqib Saleem Akhtar 2048
- Changes in biological properties and antioxidant capacity of an agricultural soil amended with sewage sludge
Cardelli Roberto, Arduini Iduna, Marchini Fausto, Masoni Alessandro and Saviozzi Alessandro 2062