

# Abhishek R Singh

## Research Institute of Biology

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## Language skills

English

## Work experience

Institution	Research Institute of Biology
Period of time	2024 till now
Rank/degree	Researcher

Institution	Research Institute of Biology
Period of time	2023 - 2024
Rank/degree	Junior Researcher

## Publications

Article

### Fluid-specific detection of environmental pollutant moxifloxacin hydrochloride utilizing a rare-earth niobate decorated functionalized carbon nanofiber sensor platform

Shen-ming Chen, Mariya Antony John Felix, Chandini Ragumoorthy, Tse-Wei Chen, G. Kiruthiga,

Abhishek Singh, Karen Ghazaryan, Amal M. Al-Mohaimeed, Mohamed S Elshikh

Environmental Research 2025 120349

Article

### Impact of Nanofertilizers for the Mitigation of Multiple Environmental Stresses

Abhishek Singh, Sapna Rawat, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Al Tawaha, Ashi Varshney

Nanofertilizers for Sustainable Agroecosystems 2024 431-454

Article

### Green Synthesis of Nanofertilizers and Their Application for Crop Production

Abhishek Singh, Ragini Sharma, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Al Tawaha, Ashi Varshney

Nanofertilizers for Sustainable Agroecosystems 2024 205-231

Article

### Impact of Salinity Stress and Zinc Oxide Nanoparticles on Macro and Micronutrient

### Assimilation: Unraveling the Link between Environmental Factors and Nutrient Uptake

Abhishek Singh, Rakesh Singh Sengar, Vishnu D. Rajput, Uday Pratap Shahi, Abdul Latief Al-Ghzawi,

Karen Ghazaryan, Tatiana Minkina, Abdel Rahman Mohammad Al Tawaha, Omar Mahmoud Al Zoubi,  
Talaat Habeeb  
Journal of Ecological Engineering 2024 1-9

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**Advancing Agricultural Resilience in Ararat Plain, Armenia: Utilizing Biogenic Nanoparticles and Biochar under Saline Environments to Optimize Food Security and Foster European Trade**

Abhishek Singh, Gohar Margaryan, Anna Harutyunyan, Hasmik S. Movsesyan, Hrant Khachatryan,  
Vishnu D. Rajput, Tatiana Minkina, Athanasios Alexiou, Dimitrios Petropoulos, Athanasios Kriemadis,  
Hassan El-Ramady, Karen Ghazaryan  
Egyptian Journal of Soil Science 2024 459-483

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**Zinc Oxide Nanoparticles Influence on Plant Tolerance to Salinity Stress: Insights into Physiological, Biochemical, and Molecular Responses**

Abhishek Singh, Vishnu D. Rajput, Shivani Lalotra, Shreni Agrawal, Karen Ghazaryan, Jagpreet Singh,  
Tatiana Minkina, Priyadarshani Rajput, Saglara Mandzhieva, Athanasios Alexiou  
Environmental Geochemistry and Health 2024 148

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**Effects of environmental metal and metalloids on plants and human health: exploring nano-remediation approach**

Priyadarshani Rajput, Abhishek Singh, Shreni Agrawal, Karen Ghazaryan, Vishnu D. Rajput,  
Hasmik Movsesyan, Saglara Mandzhieva, Tatiana Minkina, Athanasios Alexiou  
Stress Biology 2024 1-25

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**Nanotechnology applications for enhanced crop growth and yield. Chapter 4**

Sapna Rawat, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan, Tatiana M. Minkina,  
Abdel Rahman Mohammad Al-Tawaha, Athanasios T. Alexiou, Priyadarshani Rajput  
Sustainable Agriculture: Nanotechnology and Biotechnology for Crop Production and Protection 2024  
53-68

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**Nanobiotechnology combined approaches for sustainable agriculture. Chapter 1**

Vishnu D. Rajput, Abhishek Singh, Shivani Lalotra, Karen Ghazaryan, Hasmik S. Movsesyan,  
Tatiana Minkina, Rahman Mohammad Al-Tawaha, Athanasios T. Alexiou, Priyadarshani Rajput  
Sustainable Agriculture: Nanotechnology and Biotechnology for Crop Production and Protection 2024  
1-16

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**Impact of nano-enzyme and nanomics for sustainable agriculture: Current status and future prospective**

Shivangi Singh, Omkar Singh, Sakshi Singh, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan,  
Vaishali Singh, Athanasios Alexiou, Abdel Rahman Mohammad Said Al-Tawaha, Aleksandr Yesayan,  
Armine David Chakhmakhchyan, Hassan El-Ramady  
Harnessing NanoOmics and Nanozymes for Sustainable Agriculture 2024 1-18

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### **Nano-omics-based abiotic and biotic stresses management**

Priyanka Upadhyay, Sonia Navvuru, Praveen Kumar Yadav, Shivani Lalotra, Abhishek Singh,

Vishnu D. Rajput, Tatiana Minkina, Karen Ghazaryan

Harnessing NanoOmics and Nanozymes for Sustainable Agriculture 2024 348-371

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### **Detoxification of Biomedical Waste**

Abhishek Singh, Neha Chakrawarti, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Said Al-Tawaha, Abdel Razzaq Al-Tawaha, Marwa Adel Qotb, Arun Karnwal

Microbial Applications for Environmental Sustainability 2024 137-149

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### **Microbial Enzymes for Eco-Friendly Recycling of Wastepaper by Deinking**

Sapna Rawat, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Said Al-Tawaha, Abdel Razzaq Al-Tawaha, Marwa Adel Qotb, Arun Karnwal

Microbial Applications for Environmental Sustainability 2024 165-176

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### **Microbial Manganese Peroxidase: Ligninolytic Enzymes for Bioremediation**

Abhishek Singh, Ragini Sharma, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Said Al-Tawaha, Shreni Agrawal, Ashi Varshney, Abdel Razzaq Al-Tawaha,

Arun Karnwal

Microbial Applications for Environmental Sustainability 2024 189-199

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### **Nanoparticles in revolutionizing crop production and agriculture to address salinity stress challenges for a sustainable future**

Abhishek Singh, Shreni Agrawal, Vishnu D. Rajput, Karen Ghazaryan, Aleksandr Yesayan,

Tatiana Minkina, Yufei Zhao, Dimitrios Petropoulos, Athanasios Kriemadis, Marios Papadakis,

Athanasios Alexiou

Discover Applied Sciences 2024 317

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### **Carbon Nanodot-Microbe-Plant Nexus in Agroecosystem and Antimicrobial Applications**

Prokisch József, Duyen H. H. Nguyen, Arjun Muthu, Aya Ferroudj, Abhishek Singh, Shreni Agrawal,

Vishnu D. Rajput, Karen Ghazaryan, Hassan El-Ramady, Mahendra Rai

Nanomaterials 2024 1-37

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### **Nanoparticles Mediated Salt Stress Resilience: A Holistic Exploration of Physiological, Biochemical, and Nano-omics Approaches**

Abhishek Singh, Vishnu D. Rajput, Shreni Agrawal, Karen Ghazaryan, Tatiana Minkina,

Abdel Rahman Mohammad Al Tawaha, Avnish Chauhan, Saglara S. Mandzhieva, Rupesh Kumar Singh,

Marios Papadakis, Athanasios Alexiou

Reviews of Environmental Contamination and Toxicology 2024 1-50

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### **Green Remediation Harnessing Plant-Based Strategies for Removal of Emerging Soil**

## **Contaminants**

Karen Ghazaryan, Aman Verma, Sapna Rawat, Amrit Warshini, Priyadarshani Rajput, Tatiana Minkina, Mohamed S. Elshikh, Hrant Khachatryan, Rupesh Kumar Singh, Athanasios Alexiou, Abhishek Singh  
Nanotechnology Applications and Innovations for Improved Soil Health 2024 57-71

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#### **Nanoparticle-mediated approaches in agriculture addressing abiotic stress from soil to plant cells**

Vishnu D. Rajput, Abhishek Singh, Bhavana Tomar, Tatiana Minkina, Hasmik S. Movsesyan, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh, Karen Ghazaryan  
Nanotechnology Applications and Innovations for Improved Soil Health 2024 72-89

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#### **In-depth Exploration of Nanoparticles for Enhanced Nutrient Use Efficiency and Abiotic Stresses Management: Present Insights and Future Horizons**

Abhishek Singh, Aishwarya Sharma, Omkar Singh, Vishnu D. Rajput, Hasmik S. Movsesyan, Tatiana Minkina, Athanasios Alexiou, Marios Papadakis, Rupesh Kumar Singh, Sakshi Singh, João Ricardo Sousa, Hassan Ragab El-Ramady, Faisal Zulfiqar, Rahul Kumar, Abdullah Ahmed Al-Ghamdi, Karen Ghazaryan  
Plant Stress 2024 1-24

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#### **Addressing hidden hunger via improving soil health and crop nutrients through nanofortification**

Aishwarya Sharma, Abhishek Singh, Vishnu D. Rajput, Tatiana Minkina, Saglara Mandzhieva, Mohamed S. Elshikh, Hassan Ragab El-Ramady, Karen Ghazaryan  
Nanotechnology Applications and Innovations for Improved Soil Health 2024 90-108

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#### **Emerging technologies for sustainable soil management and precision farming**

Abhishek Singh, Bhavana Tomar, Gohar Margaryan, Priyadarshani Rajput, Tatiana Minkina, Saglara Mandzhieva, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh, Hassan Ragab El-Ramady, Anil Kumar Singh, Omkar Singh, Karen Ghazaryan  
Nanotechnology Applications and Innovations for Improved Soil Health 2024 210-235

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### *Article*

#### **Unveiling nanomaterial-induced toxicity: Navigating challenges to modern cultivation and soil management practices**

Aman Verma, Abhishek Singh, Sapna Rawat, Priyadarshani Rajput, Tatiana Minkina, Saglara Mandzhieva, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh, Hassan Ragab El-Ramady, Karen Ghazaryan  
Nanotechnology Applications and Innovations for Improved Soil Health 2024 236-253

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### *Article*

#### **Revolutionizing agricultural sustainability and food security and management to achieve sdgs goals via nanotechnology**

Aishwarya Sharma, Abhishek Singh, Priyadarshani Rajput, Tatiana Minkina, Saglara Mandzhieva, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh, Hassan Ragab El-Ramady,

Karen Ghazaryan

Nanotechnology Applications and Innovations for Improved Soil Health 2024 276-288

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**Crop Biofortification Innovative Solutions for Micronutrient Deficiency**

Aishwarya Sharma, Abhishek Singh, Vishnu D. Rajput, Tatiana Minkina, Saglara Mandzhieva,

Mohamed S. Elshikh, Hassan Ragab El-Ramady, Karen Ghazaryan

Nanotechnology Applications and Innovations for Improved Soil Health 2024 289-304

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**Revolutionizing sustainable agriculture with nano-priming technology: A leap towards resilient and high-yield crops**

Divya Pandey, Abhishek Singh, Nare Darbinyan, Armine David Chakhmakhchyan, Shipra Singh Parmar,

Karen Ghazaryan

Nanotechnology Applications and Innovations for Improved Soil Health 2024 305-315

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**Implementing sustainable nano-bioremediation for emerging pollutants: An environmentally friendly remediation strategy**

Karen Ghazaryan, Aman Verma, Sapna Rawat, Priyadarshani Rajput, Tatiana Minkina,

Saglara Mandzhieva, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh,

Hassan Ragab El-Ramady, Abhishek Singh

Nanotechnology Applications and Innovations for Improved Soil Health 2024 316-332

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**Utilizing nanotechnology in agriculture: A balancing approach between environmental health and risks**

Abhishek Singh, Bhavana Tomar, Anna Harutyunyan, Priyadarshani Rajput, Tatiana Minkina,

Saglara Mandzhieva, Mohamed S. Elshikh, Shen-Ming Chena, Rupesh Kumar Singh,

Hassan Ragab El-Ramady, Karen Ghazaryan

Nanotechnology Applications and Innovations for Improved Soil Health 2024 380-399

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**Additive-Mediated Phytoextraction of Copper-Contaminated Soils Using Medicago lupulina L.**

Hasmik Vardumyan, Abhishek Singh, Vishnu D. Rajput, Tatiana Minkina, Hassan Ragab El-Ramady,

Karen Ghazaryan

Egyptian Journal of Soil Science 2024 599-618

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**Carbon Sequestration through Organic Amendments, Clay Mineralogy and Agronomic Practices: A Review**

Shivangi Omkar Singh, Uday Pratap Shahi, Omkar Singh, Praveen Kumar Singh, Abhishek Singh,

Vishnu D. Rajput, Tatiana Minkina, Hassan El-Ramady, Karen Ghazaryan

Egyptian Journal of Soil Science 2024 581-598

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**Enhancing Crop Production: Unveiling the Role of Nanofertilizers in Sustainable Agriculture and Precision Nutrient Management**

Karen Ghazaryan, Divya Pandey, Sakshi Singh, Vahagn Varagyan, Athanasios Alexiou,

Dimitrios Petropoulos, Athanasios Kriemadis, Vishnu D. Rajput, Tatiana Minkina, Rupesh Kumar Singh, João Ricardo Sousa, Sandeep Kumar, Hassan El-Ramady, Omkar Singh, Abhishek Singh  
Egyptian Journal of Soil Science 2024 981 - 1007

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**Earthworms As An Emerging Biotechnological Intervention in the Mitigation of Microplastics**

Aishwarya Sharma, Shailja Kumar, Abhishek Singh, Ragini Sharma, Vishnu D. Rajput,

Hasmik S. Movsesyan, Tatiana Minkina, Rupesh Kumar Singh, Hassan El-Ramady, Karen Ghazaryan

Egyptian Journal of Soil Science 2024 1219-1238

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**Nanotechnology Products in Agriculture and Environmental Protection: Advances and Challenges**

Abhishek Singh, Sapna Rawat, Vishnu D. Rajput, Tatiana Minkina, Saglara Mandzhieva,

Arevik Sh. Eloyan, Rupesh Kumar Singh, Omkar Singh, Hassan El-Ramady, Karen Ghazaryan

Egyptian Journal of Soil Science 2024 1355-1378

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**Unveiling the salinity tolerance potential of Armenian Dandur (*Portulaca oleracea* L.) genotypes: Enhancing sustainable agriculture and food security**

Gohar Margaryan, Abhishek Singh, Hrant Khachatryan, Vishnu D Rajput, Tatiana Minkina,

Dimitrios Petropoulos, Athanasios Kriemadis, Athanasios Alexiou, Mohamed S. Elshikh,

Abd El-Zaher M.A. Mustafa, Karen Ghazaryan

Journal of King Saud University - Science 2024 103332

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**Nanotechnology in the soil system: An ecological approach towards sustainable management**

Hassan El-Ramady, J'ozsef Prokisch, Daniella S'ari, Abhishek Singh, Karen Ghazaryan, Vishnu D. Rajput,

Eric C. Brevik

Applied Soil Ecology 2024 1-22

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**Eco-Friendly Solutions: Integrating Wild Vegetables for Sustainable Agriculture Food Security and Human Health**

Shipra Singh Parmar, Impa H.R., Ramesh Kumar, Abhishek Singh, Aleksandr Yesayan, Vishnu D Rajput,

Tatiana Minkina, Karen Ghazaryan, Hassan El-Ramady

Egyptian Journal of Soil Science 2024 739 - 756

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**Impact nano- and micro- form of CdO on barley growth and oxidative stress response**

Kirill Azarin, Alexander Usatov, Tatiana Minkina, Ilya Alliluev, Nadezhda Duplii, Saglara Mandzhieva,

Abhishek Singh, Vishnu D. Rajput, Sandeep Kumar, Marwa A. Fakhr, Mohamed S. Elshikh, M. Ajmal Ali,

Karen Ghazaryan

Journal of King Saud University - Science 2024 103493

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**Bioremediation of heavy metals contaminated soils using nanotechnology**

Amin Fathi, Seyede Roghie Ghadirnezhad Shiade, Ghasem Parmoon, Yasser Yaghoubian,

Hemmatollah Pirdashti, Vishnu D. Rajput, Abhishek Singh, Karen Ghazaryan, Tatiana Minkina  
Bio-organic Amendments for Heavy Metal Remediation: Water, Soil and Plant Approaches and  
Technologies  
2024 611-628

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**Climate change and drought: challenges for agriculture in arid environments**

Samar Shawaqfeh, Abdel Rahman Mohammad Al Tawaha, Hikmet Gunal, Abdel Razzaq Al-Tawaha,  
Marwa Adel Qotb, Arun Karnwal, Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan,  
Tatiana Minkina, Iftikhar Ali, Amjad M. Husaini, Tauseef A. Bhat, Ekaterina Kozuharova, Rizwan Rashid  
Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024  
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**Agricultural water scarcity: an emerging threat to global water security**

Rahul Kanaoujiya, Olivia Saha Roy, Amit Jaiswal, Sani Kumar Singh,  
Abdel Rahman Mohammad Al Tawaha, Shekhar Srivastava, Abdel Razzaq Al-Tawaha, Arun Karnwal,  
Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali,  
Devarajan Thangadurai  
Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024  
15-22

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**Optimizing irrigation scheduling: strategies for sustainable water management in agriculture**

Riham Fouzi Zahalan, Abdel Rahman Mohammad Al Tawaha, Hikmet Gunal, Abdel Razzaq Al-Tawaha,  
Marwa Adel Qotb, Arun Karnwal, Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan,  
Tatiana Minkina, Iftikhar Ali, Samar Shawaqfeh, Amjad M. Husaini, Ekaterina Kozuharova, Rizwan Rashid  
Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024  
49-59

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**Soil fertility in arid lands: strategies for sustainable management and fertilization**

Hikmet Gunal, Mesut Budak, Elif Gunal, Mirac Kilic, Abdel Rahman Mohammad Al Tawaha,  
Abdel Razzaq Al-Tawaha, Arun Karnwal, Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput,  
Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali, AmjadM. Husaini, Tauseef A. Bhat, Rahul Kanaoujiya,  
Rizwan Rashid  
Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024  
61-69

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**Impacts of climate change and drought stress on plant metabolome**

Shah Khalid, Abdel Rahman Mohammad Al Tawaha, Nadia, Hikmet Gunal, Abdel Razzaq Al-Tawaha,  
Amanullah, Marwa Adel Qotb, Arun Karnwal, Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput,  
Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali, Samar Shawaqfeh, Amjad M. Husaini, Rizwan Rashid  
Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024  
105-113

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**Biofertilizers: a sustainable solution for enhancing soil fertility and crop productivity**

Abdel Rahman Mohammad Al Tawaha, Arun Karnwal, Siddhartha Pati, Abdel Razzaq Al-Tawaha,

Atul Kumar Upadhyay, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali,

Amjad M. Husaini, Tauseef A. Bhat, Rizwan Rashid

Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024

209-217

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**Resilience in the face of drought: strategies for optimizing plant resilience and enhancing nutrient transfer**

Abdel Rahman Mohammad Al Tawaha, Abdel Razzaq Al-Tawaha, Marwa Adel Qotb, Arun Karnwal,

Nataliia Nesterova, Abhishek Singh, Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali,

Amjad M. Husaini, Tauseef A. Bhat, Ekaterina Kozuharova, Rizwan Rashid

Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024

221-236

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**Drought resilience in agriculture: mechanisms and adaptation strategies in a changing climate**

Abdel Rahman Mohammad Al Tawaha, Ibrahim Alrawashdeh, Doaa Abu-Darwish,

Abdel Razzaq Al-Tawaha, Alla Aleksanyan, Arun Karnwal, Nataliia Nesterova, Abhishek Singh,

Vishnu D. Rajput, Karen Ghazaryan, Tatiana Minkina, Iftikhar Ali, Amjad M. Husaini, Tauseef A. Bhat,

Ekaterina Kozuharova, Rizwan Rashid, Marwa Adel Qotb, Abeer Jubily

Sustainable Agriculture under Drought Stress: Integrated Soil, Water and Nutrient Management 2024

489-498

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**Revolutionizing Crop Production: Nanoscale Wonders-Current Applications, Advances, and Future Frontiers**

Abhishek Singh, Vishnu D. Rajput, Ashi Varshney, Ragini Sharma, Karen Ghazaryan, Tatiana Minkina,

Athanasios Alexiou, Hassan El-Ramady

Egyptian Journal of Soil Science 2024 221-258

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**In-vitro Digestibility Organic Materials: Relation with Field Mass Loss Litter Bag Method**

João Ricardo Sousa, Abhishek Singh, Karen Ghazaryan, Rupesh Kumar Singh, Henrique Trindade,

João Coutinho

Journal of Ecological Engineering 2024 253-263

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**Soil Pollution: An Agricultural and Environmental Problem with Nanotechnological Remediation Opportunities and Challenges**

Karen Ghazaryan, Shreni Agrawal, Gohar Margaryan, Anna Harutyunyan, Priyadarshani Rajput,

Hasmik Movsesyan, Vishnu D. Rajput, Rupesh Kumar Singh, Tatiana Minkina, Mohamed S. Elshikh,

Mona S. Alwahibi, Athanasios Alexiou, Marios Papadakis, João Ricardo Sousa, Abhishek Singh

Discover Sustainability 2024 1-33

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**Study of tolerance and phytodesalination potential of wheat, oat, emmer, and barley for**



**sustainable saline agriculture**

GHAZARYAN, K.A., HARUTYUNYAN, A.S., KHACHATRYAN, H.E., SINGH, A., MINKINA, T.M., RAJPUT, V.D.,

MOVSESYAN, H.S.

Applied Ecology and Environmental Research 2023 4853-4882

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**Small Tech, Big Impact: Agri-nanotechnology Journey to Optimize Crop Protection and Production for Sustainable Agriculture**

Աբիհշէկ Սիւնի, Vishnu D Rajput, Ashi Varshney, Կարէն Ղազարյան, Tatiana Minkina

Plant Stress 2023 1-26

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**Green Nanofertilizers: the Need for Modern Agriculture, Intelligent, and Environmentally-Friendly Approaches**

Abdel Rahman Mohammad Al Tawaha, Abhishek Singh, Vishnu D. Rajput, Ashi Varshney, Shreni Agrawal,

Karen Ghazaryan, Tatiana Minkina, Omar Mahmoud Al Zoubi, Talaat Habeeb, Lysenko Dionis,

Hanan Aref Hasan, Samar Shawaqfeh

Ecological Engineering and Environmental Technology 2023 1-21

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